# CATALOGUE
## 2025 & 2026 EDITION

TREADWELL™









ENGINEERING THE FUTURE IN COMPOSITES

ISO 9001 CERTIFIED

2025.1

COMPLETE **“Fit & Forget”** SOLUTIONS

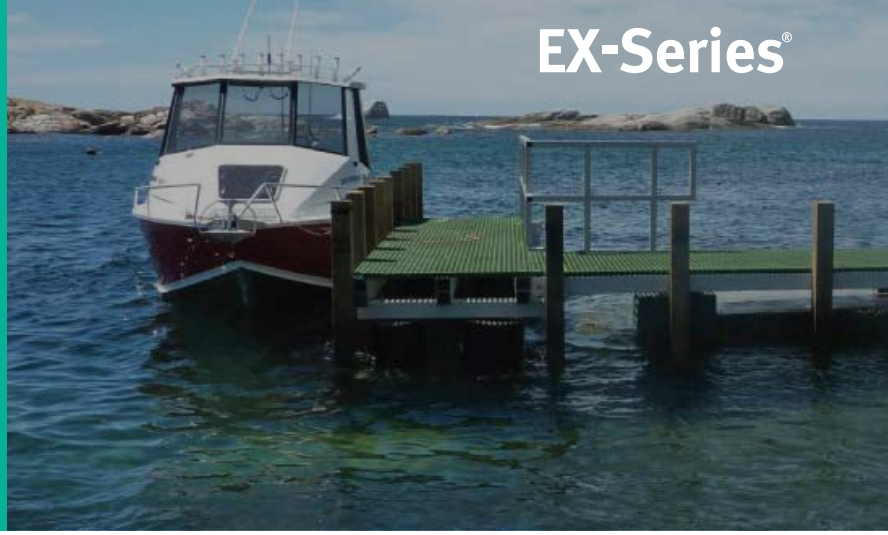
## Treadwell History

Treadwell Group is an established name in the Fibreglass Reinforced Plastic (FRP) industry throughout Australia. First established in 1994, we started as a small office and factory in Adelaide, specialising in rubber and industrial flooring, and have evolved to include Fibreglass Reinforced Plastic (FRP) products and solutions that have been successfully installed across Australia and New Zealand.

Our presence now includes multiple offices and warehouses in major cities in Australia and New Zealand. The Treadwell team has also expanded beyond these borders into the broader pacific region, and is remotely based in the Philippines, Malaysia and India.

Our Quality Management System maintains consistency to high levels of care to our clients and service and product solutions. Treadwell is ISO9001 certified.

## EX-Series®



Treadwell's EX-Series® range of products include a wide selection of FRP grating types, handrails and ladders that can be customised according to the application.

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## Structural Profiles & Structures

This is our unique range of FRP structural profiles. The complete range of ArchitEX™ FRP solutions boosts the strength of a framework and infrastructure with its columns, beams and more.

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## Cable & Instrumentation Management

Treadwell offers an assortment of cable instrumentation systems based on the latest technology with the EXduro™ range. EXduro™ encompasses fibreglass cable trays, instrumentation stands & FRP support accessories.

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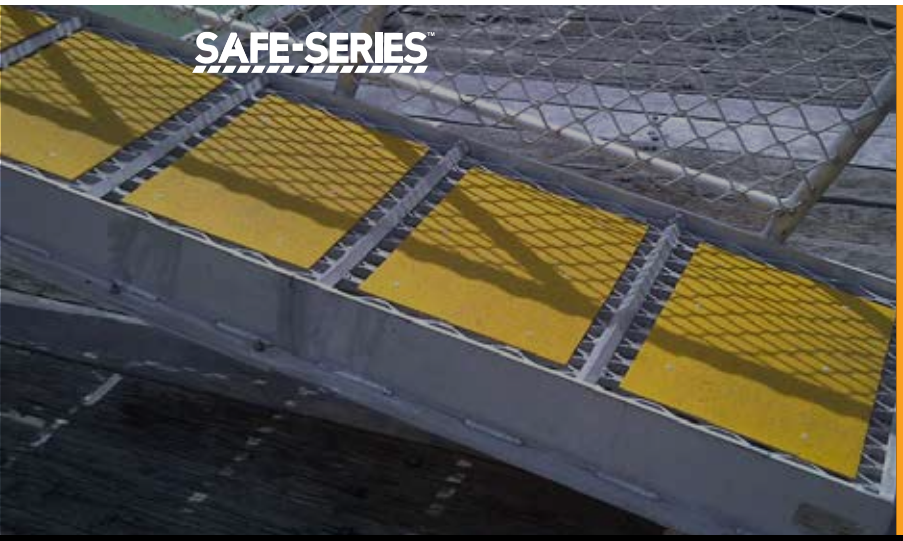


## Industrial Anti-Slip Solutions

Specialist in a variety of anti-slip solutions for every type of surface application. The encompassing range of SAFE-SERIES™ products is minimalistic, flexible with colours and styles and has the ability to suit any environment.

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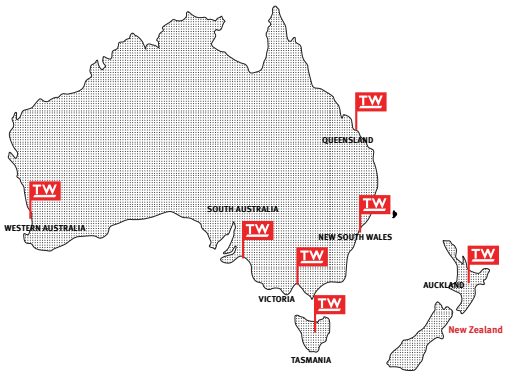
## Treadwell Overview

Fibre Reinforced Plastics (FRP) is the revolutionary construction material that has untapped potential to reach out into uncharted territories, where its exceptional benefits will provide higher returns not associated with homogenous products or metallic alternatives. Further, we believe that it will leave a smaller carbon footprint on our planet.

With a strong culture of innovation and resourcefulness, we implement solutions that are the complete 'Fit & Forget' solution everywhere.


## Locations

Treadwell has been applying excellent engineering strategies and design tactics since 1994 to extend both time and cost-efficient solutions to our clients across the globe. We provide complete access (i.e., walkways and platforms) and structural solutions that are increasingly being used in waste water treatment plants, public infrastructure, marine, and mineral sectors to name a few.

With offices and warehouses located throughout Australia and New Zealand, we offer quicker response times, and there is a Treadwell representative located near you.

## Large Stockholdings

We maintain large stockholdings of products that are consistently in high demand, and ready access to special order items. With the growing demand for long lasting, cost efficient and sustainable products and solutions, we are continually revaluating our range of stocked products to ensure our holdings accurately reflect customer demand.

## Dedicated Customer Service

Our experienced and dedicated customer service team is ready to assist with your project enquiries. Our team includes specialists in technical details, project updates and product knowledge. With a wide range of readily available resources, we are able to provide you with the information you require.

Call us with your project requirements today!

**Australia Free Call - 1800 246 800**
**New Zealand Free Call - 0800 244 600**

Treadwell has been applying excellent engineering strategies and design tactics since 1994 to extend both time and cost-efficient solutions to our clients across the globe. We specialise in Fibreglass Reinforced Plastics (FRP), providing complete access and structural solutions that are used in water and wastewater treatment plants, public infrastructure, marine, and mineral sectors to name a few. Cultivating a strong culture of innovation and resourcefulness, we implement complete **'Fit & Forget'** solutions.

## Vision

To disrupt the world of composites as the new fibreglass benchmark globally.

## Mission

Evolving composite solutions through focus on growth, efficiency and people.

## Core Values

With a powerful concentration on growth, the Treadwell attitude and our core values are built around being **F**uture-focused, **R**eliable and **P**roactive.

With these compelling principles guiding us every step of the way to excellence, we can help corporations and individuals like you to develop and flourish.

## Future-Focused

We embrace innovative technology and best practices to create solutions prepared for tomorrow's challenges.

## Reliable

Our commitment to quality ensures we deliver resilient results that withstand the test of time.

## Proactive

Our experience allows us to anticipate challenges and act proactively to address potential concerns.

## Quality Assurance

Quality is at the forefront of Treadwell's working practices. Stringent checks are performed from manufacture to fabrication, ensuring that only products that meet or exceed our quality requirements are delivered to our clients.

We pride ourselves on our implementation of strict quality control measures.

**ISO 9001 CERTIFIED**

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## Online Tools


Treadwell's team of engineers have compiled extensive calculations and made them easily available on the Treadwell website. Our selection tools allow users to fill in selection criteria based on the related product brand, and results in a recommendation of a product to suit your needs.

Our product information has been imprinted in these tools to provide ease of outline and inspiration to architects, engineers, designers and other users. Users can also download the results in PDF, DWG, STEP formats.

Under our **ArchitEX™** FRP Structural Profiles brand, we have two separate tools – the **Selection and Deflection Calculation Tool** and the structural beams and column library.

Under our EX-Series® Grating brand, we have two separate tools – the **Selection & Deflection Calculation Tool**, and the **Clip Selection Tool.**

ArchitEX™
STRUCTURAL FRP
SELECTION AND DEFLECTION CALCULATION TOOL

ArchitEX™
ArchitEX Library

EX-Series®
FRP GRATING
SELECTION & DEFLECTION CALCULATION TOOL

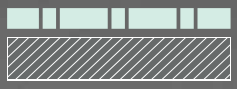
EX-Series®
FRP GRATING
CLIP SELECTION TOOL

RailEX®
STEP Library

TreadSpec™

# Let Treadwell Help You Release the Power of Engineered Composites on Your Next Project

## Corrosion Resistant



- Manufactured from premium isophthalic and vinylester resin systems.

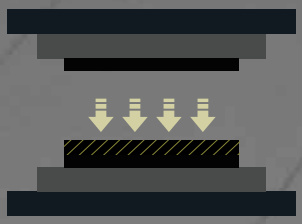
## Cost Savings

- Longer service life, less maintenance, and life cost savings as compared to other materials.
- Allows better and viable components into the associated framework.

## Turnkey Solutions

- Pre-fabricated to eliminate field fabrication and make installation quick and easy.
- Solutions include all necessary accessories.

## High Strength

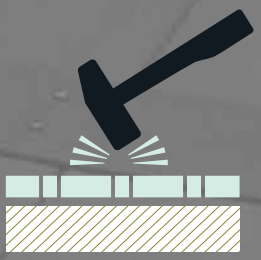


- Manufactured by automated pultrusion process.
- Utilises high glass-fibre content and results in unparalleled product consistency.
- Compression moulding and vacuum moulding processes are used.

## Customised System

- Our experienced technical team customises designs to meet project specific load requirements.

## Durability

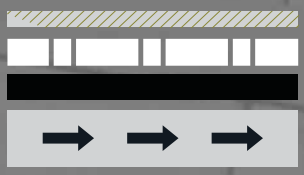


- Highly durable.
- Greater resistance to breaks and twists which ensure better longevity.
- Reduce the harmful effects of added tension on the surface and reliving the framework.

## UV Protection

- Exterior coatings and stabilisers provide UV protection and ensure long service life.

## Low Profile

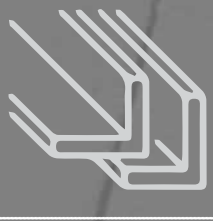


- Aesthetically pleasing flat covers.
- Eliminate confined-entry issues.
- Provide protection for equipment located on top of the cover instead of below.

## Light Weight

- Strength-to-weight properties of FRP reduce loads on tank walls and floors.
- Ease cover removability and installation.
- Can be transported anywhere easily and installed seamlessly.

## No Dissimilar Metals



- Eliminates issues surrounding dissimilar metals

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# Resin Selection Guide

**When choosing a resin type for your application, we highly recommend you consult us to ensure that the correct resin is specified. Considerations such as corrosion, environment, temperature, fire resistance, smoke and smoke toxicity requirements must be taken into account, and will dictate which resin system should be utilised for optimum performance over time.**
**Below is an overview of the resin systems offered in the Treadwell Resin Systems Range.**

## Options Overview

O-Series® is an architectural grade polyester resin system with an intermediate level of chemical resistance, and is a good choice for commercial or light industrial applications, especially where moisture is prevalent. O-Series® is often utilised for public infrastructure applications were it has been proven to outperform traditional timber decking products. This system is manufactured with fire retardant additives. This resin system is only available upon request.

I-Series® is a premium isopthalic resin system. This system provides an intermediate level of chemical resistance and is the correct choice for areas subjected to splash and spill contact with harsh chemicals. This system is an excellent general-purpose resin and is a more favourably priced alternative to the vinyl ester system. This system has a flame spread of 25 (Approximately 15) or less.

V-Series® is a vinylester resin system that provides the highest chemical resistance offered in the industry and has been developed for use in environments where FRP products are subject to frequent and direct contact with the harshest of chemicals including a broad range of acids and caustics. This system has a flame spread of 25 (Approximately 15) or less.

P-Series® is a phenolic resin system that is designed specifically for use where fire resistance, low smoke and low toxic fumes are critical. P-Series® is typically used in offshore applications and confined spaces where such criteria are an absolute necessity. This system is tested in accordance to ASTM E-84. Various products also conforming to US Coast Guard Approvals, Level 2 and 3, are also offered by Treadwell. This particular resin system has a flame spread rating of 5 and a smoke density rating of 5.

In addition to our standard resin systems, we also offer customised solutions based on your project requirements and application.

### Quality Policy

Quality is at the forefront of Treadwell's working practices. With 30 years of manufacturing to the highest quality standards, Treadwell prides itself on its implementation of strict quality control measures, and strives to supply products that surpass customers' expectations. The company works on a policy of continuous improvement.

### Environmental Policy

Treadwell is conscious of the impact it has on the environment and its associated responsibilities. The company is committed to ensuring its operations satisfy both legal obligations and moral duties. Treadwell has been committed to sustainability for many years and is not just responding to current trends.

# EX-Series® Grating

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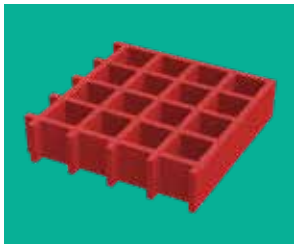
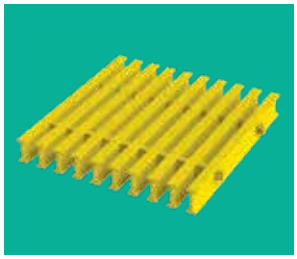


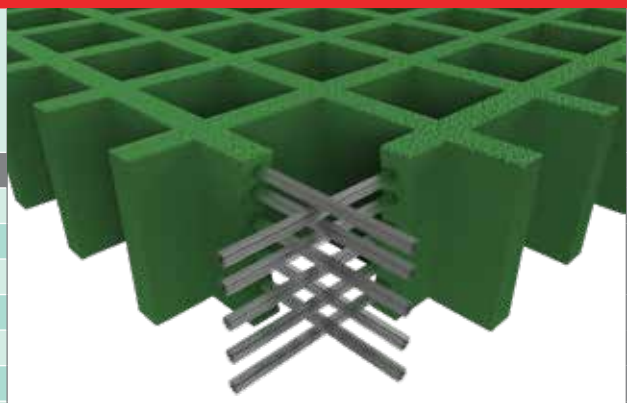


# EX-Series® Grating Key Selection Considerations

Treadwell EX-Series® Fibreglass Reinforced Plastic (FRP) grating products are recommended for areas where physical properties are paramount to design and longevity. Treadwell offers a very extensive range of FRP grating products which incorporates three main product systems. Of these three distinct product ranges, there are key differences which you as a user or specifier need to be aware of. The below information outlines for you the key differences and the ideal scenarios in which each of the different types of grating are to be utilised.

## GratEX® Moulded FRP Grating

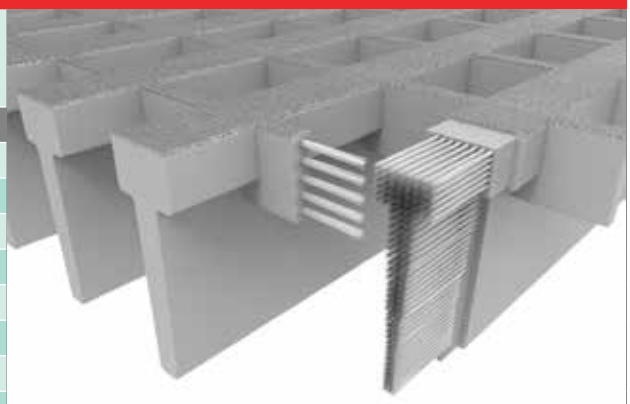
The perfect solution for areas where excessive amounts of penetrations (i.e. for piping) call for traditional uni-directional spanning products. This greatly increases the costs when using traditional materials, like steel. FRP grating maintains strength and integrity even with multiple penetration cut outs, while keeping costs low.



| Characteristic/Application | Rating |
|---|---|
| Bi-directional spanning ability | ●●●●● |
| Uni-directional spanning ability | ●●●●● |
| Chemical Resistance | ●●●●● |
| Impact Resistance | ●●●◐ |
| Weight savings vs. metallic grating | ●●●●● |
| Open Area (allowing for air flow & light penetration) | ●●●● |
| Panel size availability | ●●●● |
| Pipe penetations | ●●●●◐ |

## MoultrEX® Moultruded FRP Grating

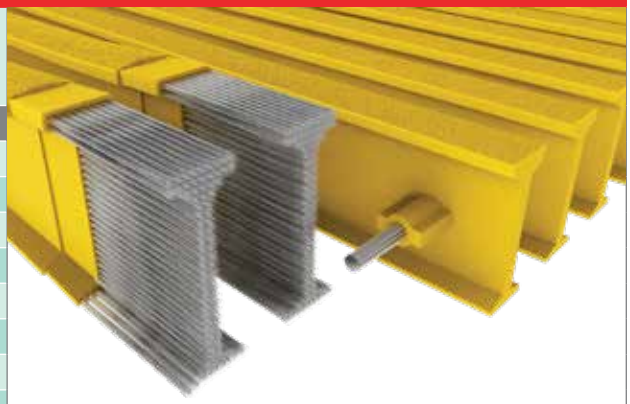
An excellent product choice for those applications where a medium between great product performance over time and great aesthetics are called for, i.e. jetties, marinas, boardwalks and more!



| Characteristic/Application | Rating |
|---|---|
| Bi-directional spanning ability | ●●●● |
| Uni-directional spanning ability | ●●●● |
| Chemical Resistance | ●●●●● |
| Impact Resistance | ●●●◐ |
| Weight savings vs. metallic grating | ●●●●● |
| Open Area (allowing for air flow & light penetration) | ●●● |
| Panel size availability | ●● |
| Pipe penetrations | ●●●●◐ |

## GridEX® Pultruded FRP Grating

The ultimate choice for areas where extremely high loadings, or larger spans present a challenge. Such applications include wide walkways, or where equipment needs to be installed on top of grating.



| Characteristic/Application | Rating |
|---|---|
| Bi-directional spanning ability | ●● |
| Uni-directional spanning ability | ●●●●● |
| Chemical Resistance | ●●●●● |
| Impact Resistance | ●●●●◐ |
| Weight savings vs. metallic grating | ●●●●● |
| Open Area (allowing for air flow & light penetration) | ●●● |
| Panel size availability | ●●● |
| Pipe penetrations | ●●◐ |

| Legend | Description | Legend | Description | Legend | Description |
|---|---|---|---|---|---|
| | Product is compliant to the Australian Disability Access Code AS 1428. | | Product conforms to Australian Standard AS 1657 – 2018. | 28.5 kg/m² | Product weight per square metre. |
| | Product is pet friendly. Product is heel safe. | 15mm | Product conforms to Australian Standard AS 1657 – 2018, Clause 4.5. | P5 | Product conforms to Australian Standard AS 4586 2013. P5 Slip Resistance |

# What is GratEX® Moulded Fibreglass Grating

**Treadwell's GratEX® moulded FRP grating is a high strength, single piece construction mesh panel product. Treadwell offers both standard panel sizes as well as the option of custom panels made to order from your drawings, or alternatively, drawings provided by Treadwell's drafting department.**

**Cost effective GratEX® panels allow for effective on-site fabrication/trimming whilst ensuring that wastage is minimised. Load bearing bars in both directions allow for use without continuous side support and so contribute to cost effectiveness. GratEX® offers all the benefits available with grating made from other materials plus a host of superior benefits unequalled by steel or other metal alternatives.**

## GratEX® Features and Benefits vs. Traditional Alternatives

| | GratEX® | Stainless Steel | Galvanised Steel | Aluminium | Polyurethane |
|---|---|---|---|---|---|
| Chemical Resistance | ●●●●● | ●●●● | ● | ●●● | ●●●● |
| Strength | ●●●●● | ●●●●● | ●●●●● | ●●●●● | ●●● |
| Lightweight | ●●●●● | ● | ● | ●●●●● | ●●● |
| Electrical Resistance | ●●●●● | ● | ● | ● | ●●●●● |

## GratEX® Surface Options

**Anti-Slip Surface (Standard).** This surface is most commonly used in industrial applications. It is very hard wearing and boasts an extremely effective coefficient of friction (NATA laboratory test report available). Unlike serrated steel, the anti-slip surface does not impact load carrying capacity.

**Concave Surface.** This is preferred for environments where by-products are commonly caught by serrations, and is hence very often utilised by the food industry. This surface option can also be used for guarding options to allow safe handling/ contact.

**Plain Surface.** This is a stock option that is widely utilised for guarding and architectural features in a variety of applications. Whilst the aesthetics of the product are improved, the anti-slip properties are not as profound as the other options available.

# GratEX® Ordering Codes

Product code is defined into (GTX)-(38)(3838SS)-(I)(TG)(G3)-(01). The different possible combinations are expanded in the tables below.

| GTX-383838SS-ITGG3-01 | | |
|---|---|---|
| **Code** | **Description** | |
| GTX | **Fibreglass Moulded Grating - GratEX®** | |
| 38 | Mesh Thickness | |
| | 15 | 15mm |
| | 20 | 20mm |
| | 22 | 22mm |
| | 25 | 25mm |
| | 30 | 30mm |
| | 38 | 38mm |
| | 50 | 50mm |
| | 60 | 60mm |
| 3838SS | Standard Square Mesh | |
| | 3838SS = 38.1mm x 38.1mm | |
| | 5050SS = 50.8mm x 50.8mm | |
| | Heavy Duty Square Mesh | |
| | 3838HS = 38.1mm x 38.1mm | |
| | Square Mini Mesh | |
| | 1919M1 = 19.1mm x 19.1mm | |
| | 2020M1 = 20mm x 20mm | |
| | 2525M1 = 25.4mm x 25.4mm | |
| | Square Micro Mesh | |
| | 1313M2 = 13.3mm x 13.3mm | |
| | Standard Rectangular Mesh | |
| | 1025SR = 100mm x 25mm | |
| | Heavy Duty Rectangular Mesh | |
| | 1025HR = 100mm x 25mm | |
| | 5025HR = 50mm x 25mm | |
| | Solid Surface (3mm) Mesh | |
| | 3838F3 = 38.1mm x 38.1mm | |
| | 5050F5 = 50.8mm x 50.8mm | |
| | 7979F3 = 79mm x 79mm | |
| | Solid Surface (5mm) Mesh | |
| | 3838F5 = 38.1mm x 38.1mm | |
| | 5050F5 = 50.8mm x 50.8mm | |
| | 7979F3 = 79mm x 79mm | |
| | Heavy Duty Solid Surface (3mm) Mesh | |
| | 3838H3 = 38.1mm x 38.1mm | |
| | Heavy Duty Solid Surface (5mm) Mesh | |
| | 3838H5 = 38.1mm x 38.1mm | |

# GratEX® Ordering Codes

| | | |
|---|---|---|
| I | Resin Type | |
| | I = I-Series® | |
| | V = V-Series® | |
| TG | Colour | |
| | TY = Treadwell Yellow | TG = Treadwell Green |
| | DG = Dark Grey | CH = Charcoal |
| | LG = Light Grey | CC = Custom Colour |
| G3 | Surface Option | |
| | G1 = Pedestrian Grade Grit | G3 = Industrial Grade Grit |
| | G2 = Commercial Grade Grit | G4 = Marine Grade Grit |
| 01 | Standard Square Mesh / Solid Surfce (3mm or 5mm) Mesh | |
| | 01 = 1222mm x 3662mm | |
| | 02 = 920mm x 3055mm | |
| | 03 = 610mm x 3665mm | |
| | C = Custom Size* | |
| | Heavy Duty Square Mesh / Heavy Duty Solid Surface (3 or 5mm) Mesh | |
| | 01 = 1222mm x 3662mm | |
| | C = Custom Size* | |
| | Square Mini Mesh | |
| | 01 = 1222mm x 3662mm ** (For 1919M1 / 2525M1) | |
| | 05 = 1247mm x 4047mm | |
| | 07 = 1247mm x 2407mm | |
| | 08 = 1247mm x 2627mm | |
| | 09 = 1247mm x 3687mm | |
| | 11 = 1527mm x 3007mm | |
| | C = Custom Size | |
| | Square Micro Mesh | |
| | 09 = 1247mm x 3687mm | |
| | C = Custom Size* | |
| | Standard Rectangular Mesh / Heavy Duty Rectangular Mesh | |
| | 01 = 1222mm x 3662mm | |
| | C = Custom Size* | |
| | Note: This section of coding is separated by a dash (-), it isn't required for custom jobs as GratEX® is available in a variety of size panels to suit applications. | |

# MoultrEX® Ordering Codes

Product code is defined into (MTX)-(38)(1025)(SR)-(I)(TG)(G3)-(01). The different possible combinations are expanded in the tables below.

| MTX-381025SR-ITGG3-01 | | |
|---|---|---|
| **Code** | **Description** | |
| MTX | **Fibreglass Moultruded Grating - MoultrEX®** | |
| 38 | Mesh Thickness | |
| | 38 | 38mm |
| 1025 | Mesh Aperture | |
| | 1025 = 100mm x 25mm | |
| SR | Mesh Detail | |
| | SR = Standard Rectangular Mesh | |
| I | Resin Type | |
| | I = I-Series® | |
| | V = V-Series® | |
| TG | Colour | |
| | TY = Treadwell Yellow | |
| | DG = Dark Grey | |
| | LG = Light Grey | |
| | TG = Treadwell Green | |
| | CH = Charcoal | |
| | CC = Custom Colour | |
| G3 | Surface Option | |
| | G1 = Pedestrian Grade Grit | |
| | G2 = Commercial Grade Grit | |
| | G3 = Industrial Grade Grit | |
| | G4 = Marine Grade Grit | |
| 01 | Panel Size | |
| | 01 = 1222mm x 3662mm | |
| | C = Custom Size* | |
| | Note: This section of coding is separated by a dash (-), it isn't required for custom jobs as MoultrEX® is available in a variety of size panels to suit applications . | |

# GridEX® Ordering Codes

Product code is defined into (GDX)-(38)(1523IB)-(I)(TG)(G3)-(01). The different possible combinations are expanded in the tables below.

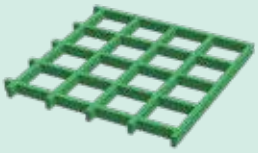
| GDX-381523IB-ITGG3-01 | | | | |
|---|---|---|---|---|
| **Code** | **Description** | | | |
| GDX | **Fibreglass Pultruded Grating - GridEX®** | | | |
| 38 | Mesh Thickness | | | |
| | 25 | 25mm | 50 | 50mm |
| | 38 | 38mm | 76 | 76mm |
| 1523IB | I Type Load Bar Detail | | | |
| | 1510IB = 15mm bar width and 10mm space | | | |
| | 1515IB = 15mm bar width and 15mm space | | | |
| | 1523IB = 15mm bar width and 22.9mm space | | | |
| | 0805IB = 7.9mm bar width and 5.3mm space | | | |
| | T Type Load Bar Detail | | | |
| | 2513TB = 25.4mm bar width & 12.7mm space | | | |
| | 2525TB = 25.4mm bar width & 25.4mm space | | | |
| | Bar Type Load Bar Detail | | | |
| | 1510BB = 15.2mm bar width & 10.2mm space | | | |
| | 1515BB = 15.2mm bar width & 15.2mm space | | | |
| | 1523BB = 15.2mm bar width & 22.9mm space | | | |
| I | Resin Type | | | |
| | I = I-Series® | | | |
| | V = V-Series® | | | |
| | P = P-Series® | | | |
| TG | Colour | | | |
| | TY = Treadwell Yellow | | | |
| | DG = Dark Grey | | | |
| | LG = Light Grey | | | |
| | TG = Treadwell Green | | | |
| | CH = Charcoal | | | |
| | CC = Custom Colour | | | |
| G3 | Surface Option | | | |
| | G1 = Pedestrian Grade (Grit) Anti-Slip | | | |
| | G2 = Commercial Grade (Grit) Anti-Slip | | | |
| | G3 = Industrial Grade (Grit) Anti-Slip | | | |
| | G4 = Marine Grade (Grit) Anti-Slip | | | |
| 01 | Panel Size | | | |
| | 01 = 1200mm x 5800mm | | | |
| | C = Custom Size* | | | |
| | Note: This section of coding is separated by a dash (-), it isn't required for custom jobs as GridEX® is available in a variety of size panels to suit applications. | | | |

# GratEX® Square Mesh

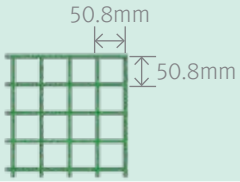
## GTX-135050SS

*SPECIAL ORDER

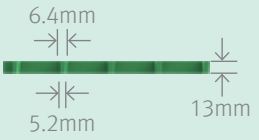
Isometric View

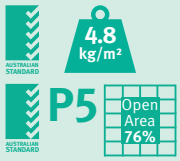


Plan View




Elevation View

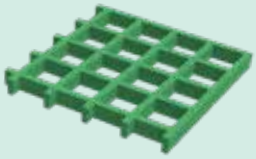


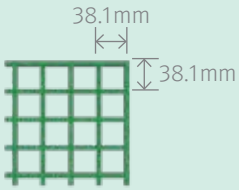

## GTX-153838SS

COMMONLY-STOCKED

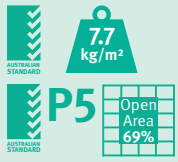
Isometric View



Plan View




Elevation View

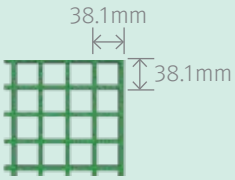




## GTX-253838SS

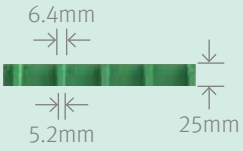
COMMONLY-STOCKED

Isometric View

Plan View




Elevation View





*Special order items are not commonly stocked and generally only available on request. Please contact your Treadwell sales representative for commonly stocked colours and resin types.

## TreadSpec™

**Use our Grating Selection & Deflection Calculation Tool on our website to select the best grating type for your project.**

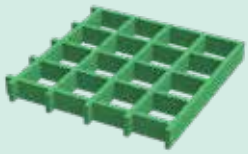
**treadwellgroup.com.au/treadspec**

# GratEX® Square Mesh

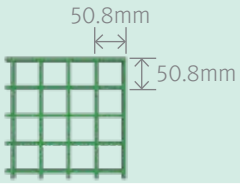
## GTX-255050SS

*SPECIAL ORDER

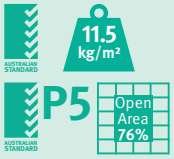
Isometric View



Plan View




Elevation View

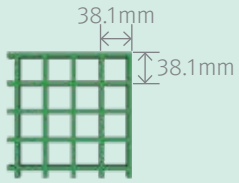




## GTX-303838SS

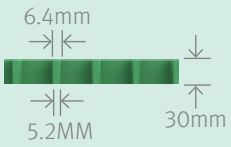
*SPECIAL ORDER

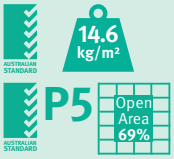
Isometric View

Plan View




Elevation View



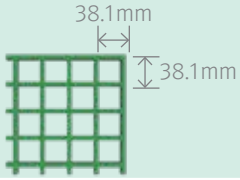




## GTX-383838SS

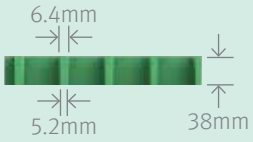
COMMONLY-STOCKED

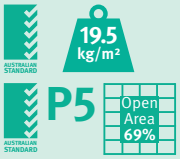
Isometric View

Plan View




Elevation View



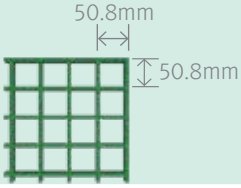




## GTX-505050SS

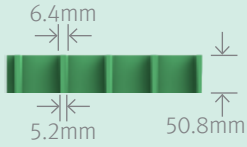
COMMONLY-STOCKED

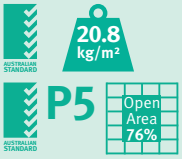
Isometric View

Plan View




Elevation View

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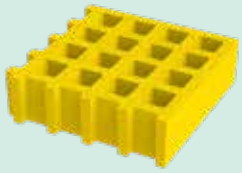
**Please consult our EX-Series® Grating Product Guide for more information**

# GratEX® Heavy Duty Square Mesh

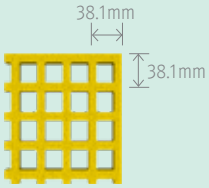
## GTX-353838HS

*SPECIAL ORDER

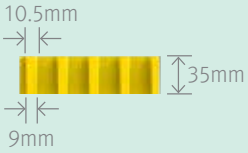
Isometric View

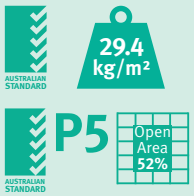


Plan View




Elevation View

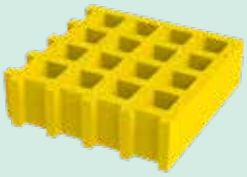


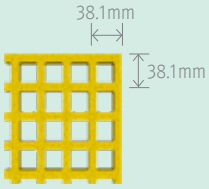

## GTX-503838HS

*SPECIAL ORDER

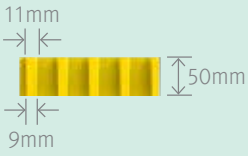
Isometric View

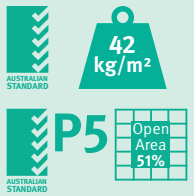


Plan View




Elevation View

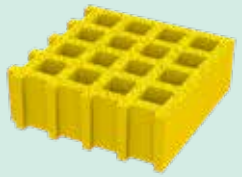


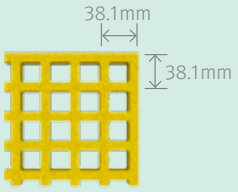

## GTX-603838HS

*SPECIAL ORDER

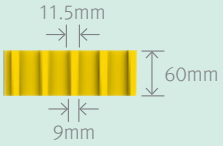
Isometric View

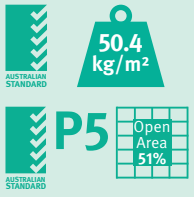


Plan View




Elevation View



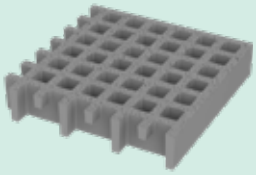

*Special order items are not commonly stocked and generally only available on request. Please contact your Treadwell sales representative for commonly stocked colours and resin types.

| Typical Panel Sizes |
|---|
| Standard Square Mesh / Solid Surface (3mm or 5mm) Mesh |
| 01 = 1222mm x 3662mm |
| 03 = 610mm x 3665mm |
| C= Custom Size |
| Heavy Duty Square Mesh / Heavy Duty Solid Surface (3 or 5mm) Mesh |
| 01 = 1222mm x 3662mm |
| C= Custom Size |

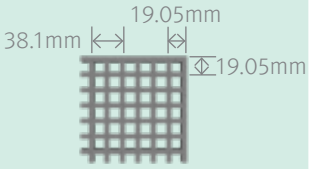
# GratEX® Mini Mesh

## GTX-251919M1 — *SPECIAL ORDER

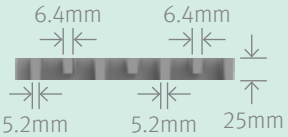
Isometric View

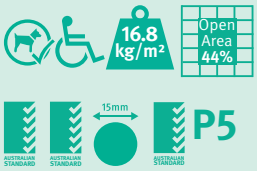


Plan View



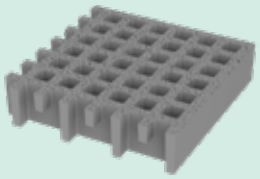

Elevation View



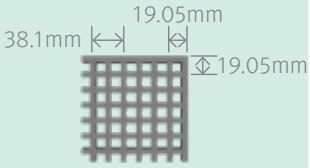




## GTX-301919M1 — COMMONLY-STOCKED

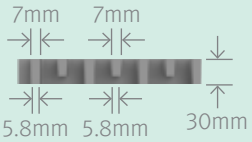
Isometric View

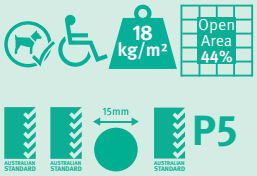


Plan View



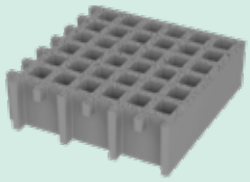

Elevation View



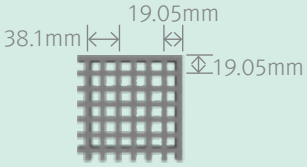




## GTX-381919M1 — COMMONLY-STOCKED

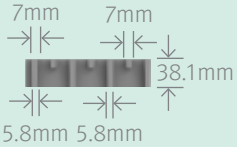
Isometric View

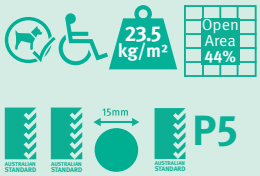


Plan View



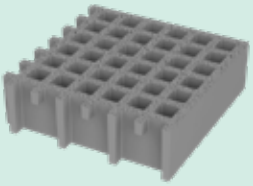

Elevation View



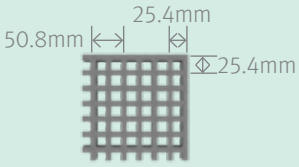




## GTX-502525M1 — COMMONLY-STOCKED

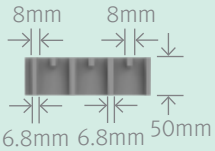
Isometric View

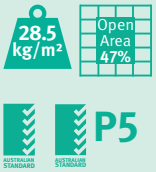


Plan View



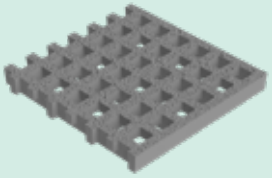

Elevation View



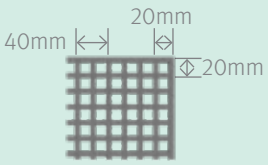




## GTX-142020M1 — *SPECIAL ORDER

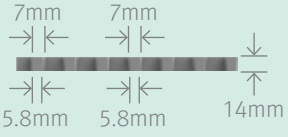
Isometric View

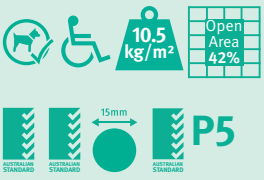


Plan View




Elevation View



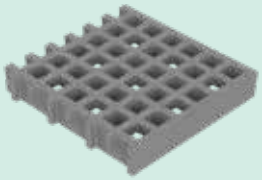

*Special order items are not commonly stocked and generally only available on request. Please contact your Treadwell sales representative for commonly stocked colours and resin types.

# GratEX® Mini Mesh

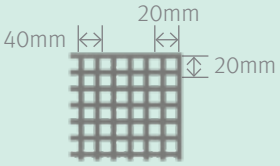
## GTX-222020M1

*SPECIAL ORDER

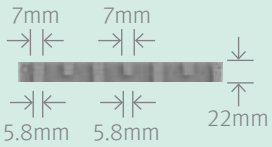
Isometric View

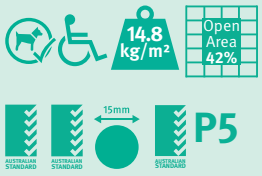


Plan View




Elevation View

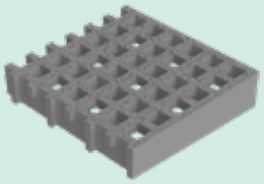


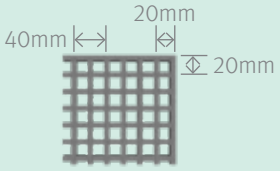

## GTX-252020M1

*SPECIAL ORDER

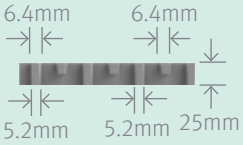
Isometric View

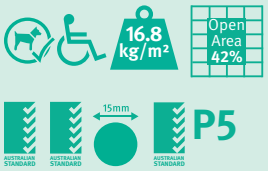


Plan View




Elevation View

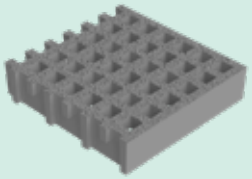


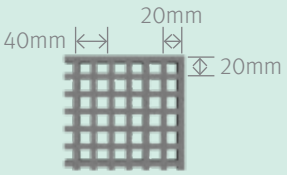

## GTX-302020M1

*SPECIAL ORDER

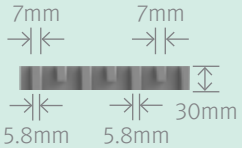
Isometric View



Plan View




Elevation View

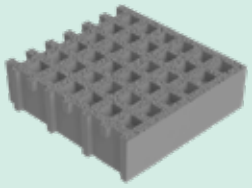




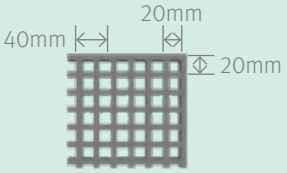
## GTX-382020M1

*SPECIAL ORDER

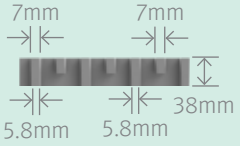
Isometric View

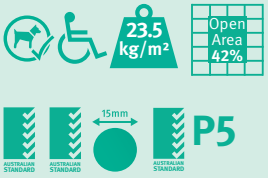


Plan View




Elevation View




*Special order items are not commonly stocked and generally only available on request. Please contact your Treadwell sales representative for commonly stocked colours and resin types.

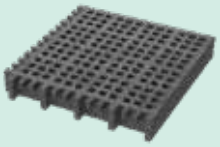
| Typical Panel Sizes |
|---|
| Square Mini Mesh |
| Standard stock size is 01 = 1222mm x 3662mm ** (For 1919M1 / 2525M1) |
| 05 = 1247mm x 4047mm |
| 07 = 1247mm x 2407mm |
| 08 = 1247mm x 2627mm |
| 09 = 1247mm x 3687mm |
| 11 = 1527mm x 3007mm |
| C = Custom Size |

# GratEX® Micro Mesh

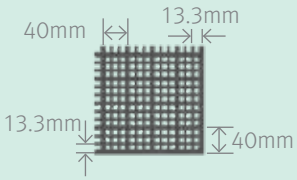
## GTX-221313M2

*SPECIAL ORDER

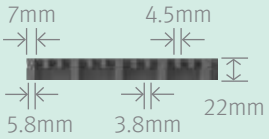
Isometric View

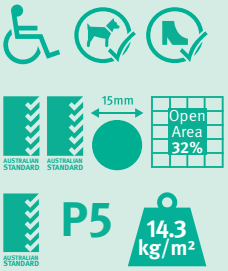


Plan View




Elevation View

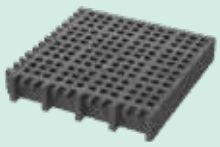


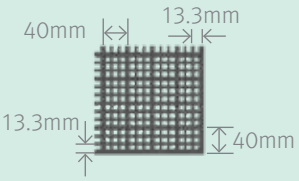

## GTX-301313M2

COMMONLY-STOCKED

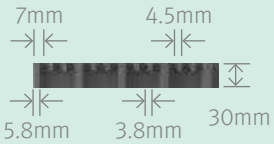
Isometric View

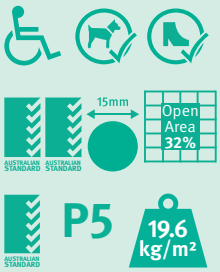


Plan View




Elevation View

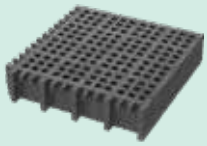


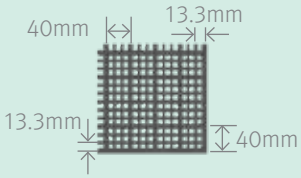

## GTX-381313M2

COMMONLY-STOCKED

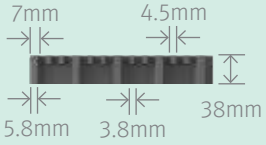
Isometric View

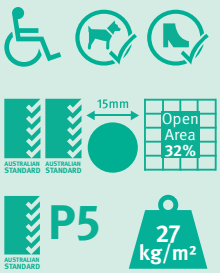


Plan View




Elevation View



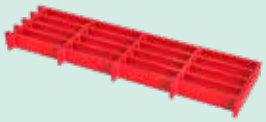

*Special order items are not commonly stocked and generally only available on request. Please contact your Treadwell sales representative for commonly stocked colours and resin types.

# GratEX® Rectangular Mesh

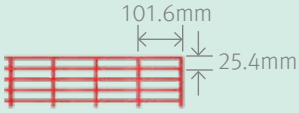
## GTX-251025SR

*SPECIAL ORDER

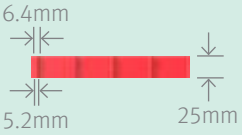
Isometric View



Plan View




Elevation View

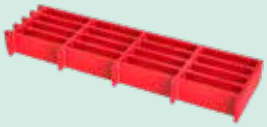




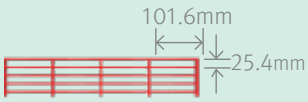
## GTX-381025SR

*SPECIAL ORDER

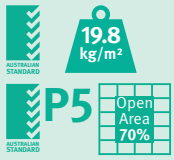
Isometric View



Plan View




Elevation View


*Special order items are not commonly stocked and generally only available on request. Please contact your Treadwell sales representative for commonly stocked colours and resin types.

| Typical Panel Sizes |
|---|
| Square Micro Mesh |
| Standard stock size is 09 = 1247 x 3687 mm |
| C = Custom Size |
| Standard Rectangular Mesh / Heavy Duty Rectangular Mesh |
| 01 = 1222mm x 3662mm |
| C = Custom Size |

## Benefits of FRP

### No Protective Coating Required

Treadwell's unique surface finishing system ensures UV stability in exposed applications, directly eliminating the need for costly surface treatment.

### Corrosion, Rust & Rot Proof

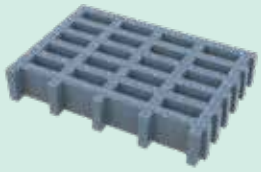
Treadwell's superior resin systems offer exceptional resistance to acids, salts and alkalis. At the same time, our FRP systems are rot and termite proof.

# GratEX® Heavy Duty Rectangular Mesh

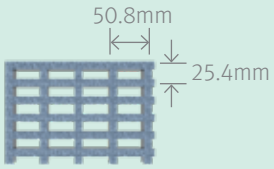
## GTX-385025HR

*SPECIAL ORDER

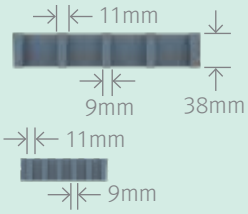
Isometric View

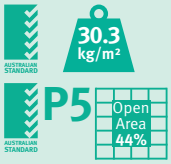


Plan View




Elevation View



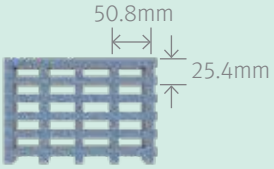




## GTX-505025HR

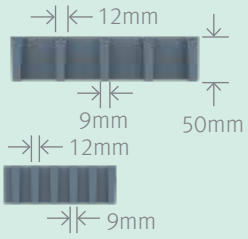
*SPECIAL ORDER

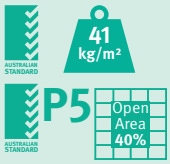
Isometric View

Plan View




Elevation View

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**CPX-EX-SK-500**

EX-Series® Sealer Resin Kit, include 500ml resin with 15ml catalyst

Ideal for sealing exposed fibres after any field cutting. This kit includes resin (standard 500ml), catalyst (standard 15ml) and is available in vinylester.

# GratEX® Solid Surface Mesh

## GratEX® Solid Surface Options

**Anti-Slip Surface** (Standard). This surface is most commonly used in industrial applications. It is very hard-wearing and has an extremely effective coefficient of friction (NATA laboratory test report available). Unlike serrated steel grating, the anti-slip surface does not impact on load carrying capacity.

**Chequer Plate Surface.** Offers a less aggressive anti-slip flooring solution which does not trap as much dirt or grime as grit types and can be cleaned much easier. These options also offer superior aesthetics compared to other surface finishes.

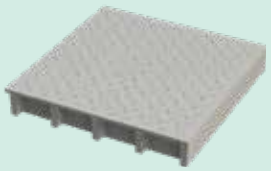
**Diamond Plate.** Diamond Plate surface is a popular cover option that offers less traction. It is ideal in environments where grit and grime can be potentially trapped in conventional grating. The diamond pattern is aesthetically pleasing and easy to clean.

**Plain Surface.** This surface is a non-stock option and is most commonly utilised in applications where a robust and anti-corrosive substrate is required for a primary floor covering. Used commonly in commercial and industrial flooring applications, it successfully provides lightweight and cost-effective solutions.



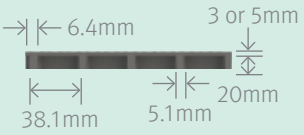

GTX-203838F3, GTX-203838F5 *SPECIAL ORDER

Isometric View



Plan View

Elevation View



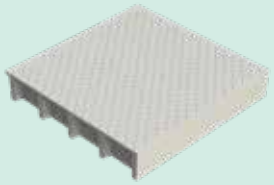
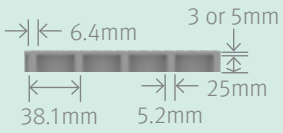


*Special order items are not commonly stocked and generally only available on request. Please contact your Treadwell sales representative for commonly stocked colours and resin types.

# GratEX® Solid Surface Mesh

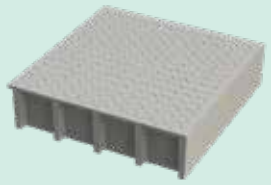
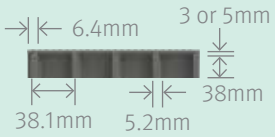
## GTX-253838F3, GTX-253838F5

COMMONLY-STOCKED

| Isometric View | Plan View | Elevation View | |
|---|---|---|---|
|  |  |   |   |

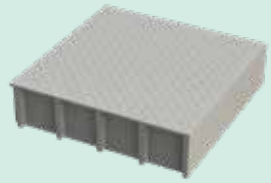
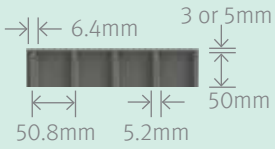
## GTX-383838F3, GTX-383838F5

COMMONLY-STOCKED

| Isometric View | Plan View | Elevation View | |
|---|---|---|---|
|  |  |   |   |

## GTX-505050F3, GTX-505050F5

*SPECIAL ORDER

| Isometric View | Plan View | Elevation View | |
|---|---|---|---|
|  |  |   |   |

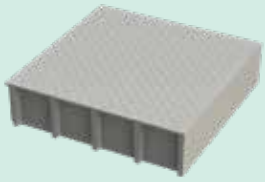
*Special order items are not commonly stocked and generally only available on request. Please contact your Treadwell sales representative for commonly stocked colours and resin types.

# GratEX® Heavy Duty Solid Surface Mesh

## GTX-353838H3

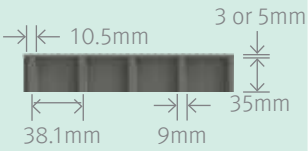
*SPECIAL ORDER

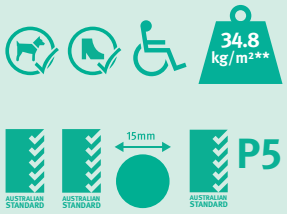
Isometric View



Plan View

Elevation View

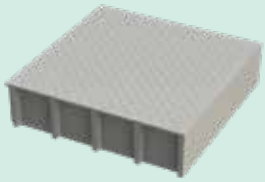



## GTX-503838H3, GTX-503838H5

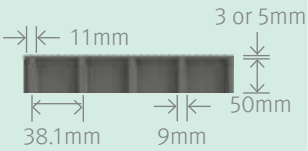
*SPECIAL ORDER

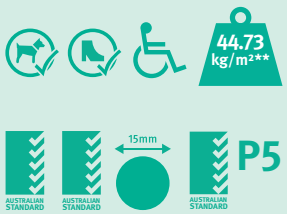
Isometric View



Plan View

Elevation View




*Special order items are not commonly stocked and generally only available on request. Please contact your Treadwell sales representative for commonly stocked colours and resin types.

## TreadSpec™

**Use our Grating Clip Selector on our website for clip assembly suggestions.**

**treadwellgroup.com.au/treadspec**

# GratEX® Stair Treads

**Treadwell's range of GratEX® Stair Treads includes both open surface and closed surface options, and a range of surface patterns, colour and leading edge nosing options.**

All GratEX® Premium and Standard Stair Tread options are moulded with the Solid Leading Edge Nosing as an integrated single stage operation. This increases the rigidity and durability of the entire leading edge, ensuring reliable performance in high traffic scenarios. All the treads with abrasive leading edge nosings are manufactured to conform to AS 1657 – 2018.

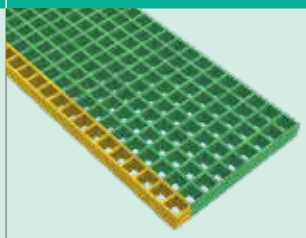
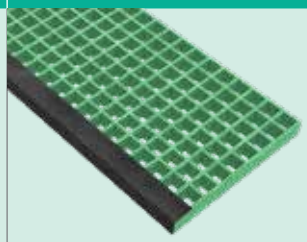
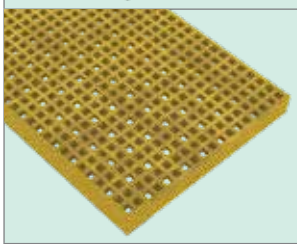
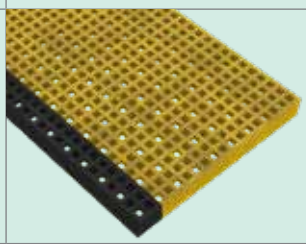
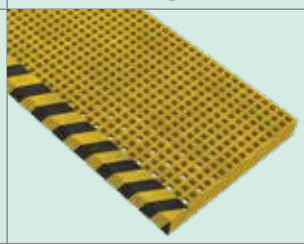
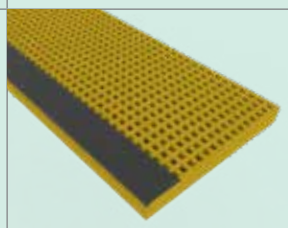
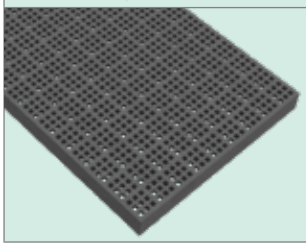
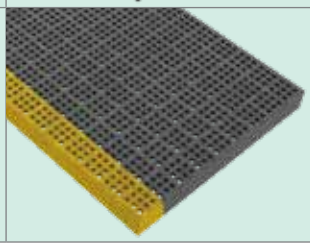
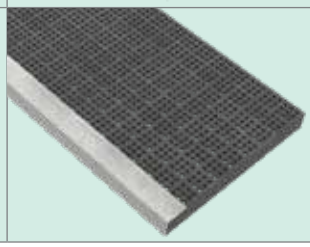
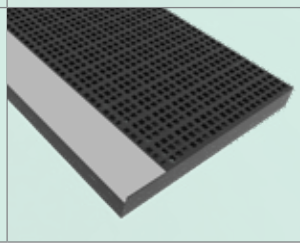
The GratEX® Stair Tread nosings are typically stocked in colours that contrast by 30% with the primary tread colour as per AS 1657 – 2018. This ensures maximum visual awareness of the stair treads forward edge for personnel utilising the stairways and consequently enhancing the OHS safety ratings.

The Accessibility (STA) stair tread has a lower front exposed face, and is compliant with AS 1428. This also meets requirements as per the Disability Discrimination Act (DDA).

Treadwell recommends that leading edge nosings are specified when ordering GratEX® Stair Treads as the safety risks associated with elevated work areas or walkways are significantly increased without them.

**NOTE:** A bearing surface of at least 40mm is recommended at either side of GratEX® Stair Treads. Compliance with AS 1657 – 2018 requires a Tread depth of › 225mm.

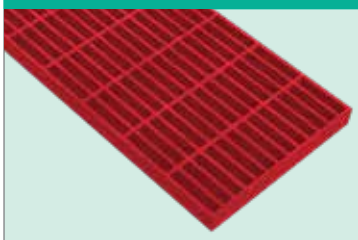
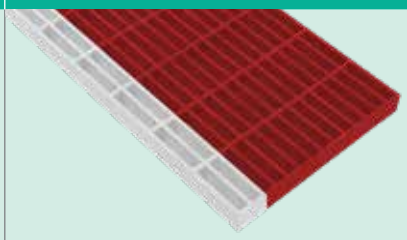
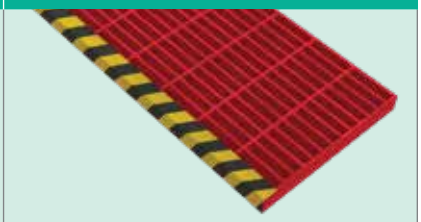
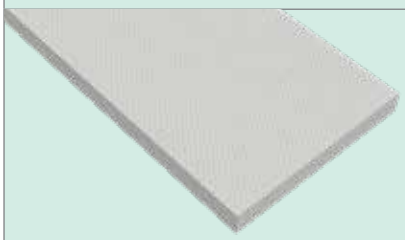
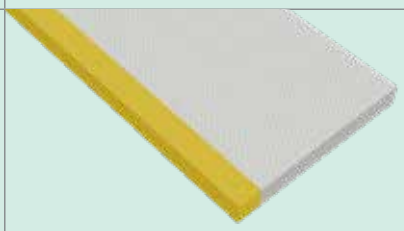
Selecting a tread with lasting non-slip properties, resilience to corrosion and proven long term cost advantages can help you enhance safety in the workplace by reducing the chance of slips, trips and falls.

| | Economy (STE) | Standard (STD) | Premium (STP) | Accessibility (STA) |
|---|---|---|---|---|
| GratEX® Square Mesh |  |  |  | IMAGE NOT AVAILABLE |
| GratEX® Mini Mesh |  |  |  |  |
| GratEX® Micro Mesh |  |  |  |  |

Treadwell recommends that stair treads should be secured directly into the structure.

GratEX® Rectangular Mesh

GratEX® Solid Surface Mesh

| Economy (STE) | Standard (STD) | Premium (STP) |
|---|---|---|
|  |  |  |
|  |  |  |

Note: The code suffix STS should be used in lieu of the suffix STP when a Premium Solid Block Leading Edge Nosing is required.

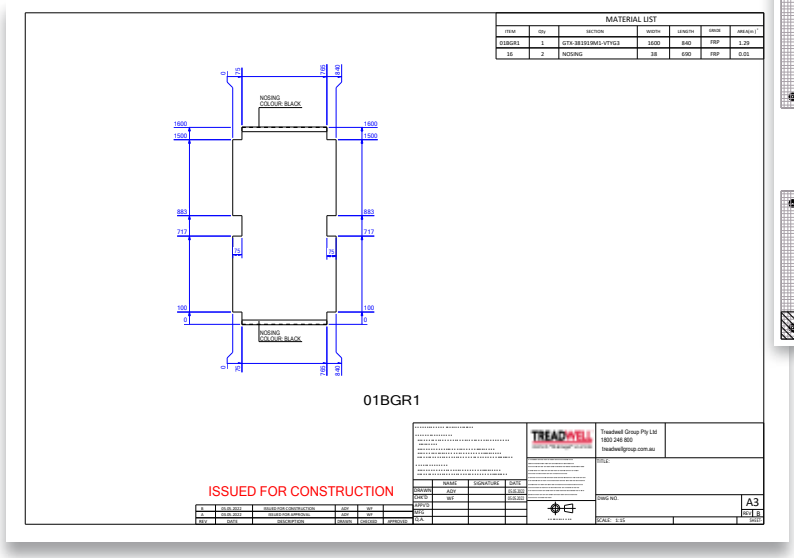
## GratEX® Landings

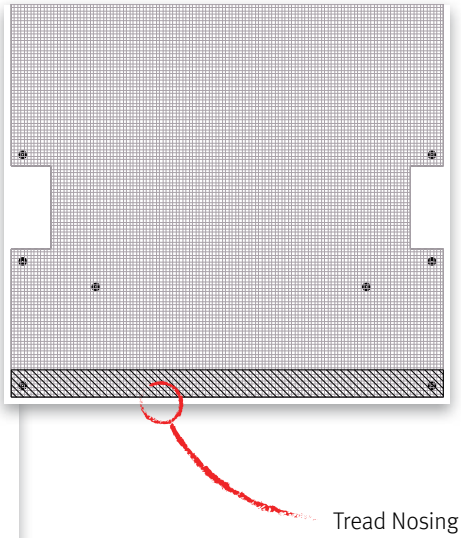
### GratEX® landings are also available as a part of Treadwell's extensive range.

GratEX® landings combine the lasting non-slip properties, the resilience to corrosion and the proven long term cost advantages of GratEX® stair treads with the durable nature of GratEX® grating.

These landings are custom made for each and every application, greatly enhance visibility and reduce the wear commonly seen on landings immensely.

Contact Treadwell's technical assistance team for further details as drawings are required to accurately show nosing locations.



Tread Nosing

# GratEX® Stair Treads

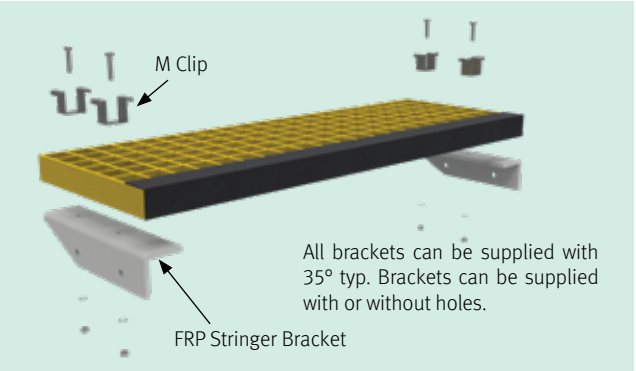
| Ordering Information | Code |
|---|---|
| 1. Nominate the type of grating required | GTX = GratEX® Moulded Grating |
| Note: This section of the coding is typically separated from the next section of the coding by a dash (-) | |
| 2. Choose the depth (mm) required | 25, 30, 38, 50 |
| 3. Select the load bar centres required | 1313 = 13mm x 13mm<br>1919 = 19mm x 19mm<br>2020 = 20mm x 20mm<br>2525 = 25mm x 25mm<br>3838 = 38mm x 38mm<br>5050 = 50mm x 50mm |
| 4. Select the mesh type required | SS = Square mesh<br>M1 = Mini Mesh<br>M2 = Micro Mesh<br>SR = Rectangular<br>F3 = Solid Surface (3mm)<br>F5 = Solid Surface (5mm) |
| Note: This section of the coding is typically separated from the next section of the coding by a dash (-) | |
| 5. Select the resin, material or type (see page 6) | O = O-Series® I = I-Series® V = V-Series® P = P-Series® |
| 6. Choose the tread colour required (*In which instance a code and name of the selected colour must be mentioned within the description) | TY = Treadwell Yellow<br>DG = Dark Grey<br>LG = Light Grey<br>TG = Treadwell Green<br>CH = Charcoal<br>CC = Custom Colour |
| 7. Select the surface style required | G1 = Pedestrian Grade (Grit) Anti-Slip<br>G2 = Commercial Grade (Grit) Anti-Slip<br>G3 = Industrial Grade (Grit) Anti-Slip<br>G4 = Marine Grade (Grit) Anti-Slip |
| 8. Nominate the stair tread type | STE = Economy<br>STP = Premium<br>STC = Custom<br>STD = Standard |
| Note: This section of the coding is typically separated from the next section of the coding by a dash (-) | |
| 9. Select the nosing colour required (*In which instance a code and name of the selected colour must be mentioned within the description) | B = Jet Black<br>Y = Safety Yellow<br>W = Pure White<br>H = Chevron (two tone)<br>C = Custom* |
| Note: This section of the coding is typically separated from the next section of the coding by a dash (-) | |
| 10. Select the Stair Tread Depth | A = 236mm B = 274mm C = 312mm D = 350mm E = Custom |
| 11. Select the Stair Tread Width (mm) | Required Width |

EXAMPLE: GTX-383838SS-IDGG3-STP-Y-B730

12. Recommended Width for Standard Stair Treads: 617mm , 655mm, 693mm, 731mm[C], 769mm, 807mm, 845mm 883mm, 921mm, 960mm, 998mm[C].

C: Commonly Stocked Tread Sizes.

# GratEX® Stair Treads




## GratEX® Stair Treads Retro-fit Option

**GratEX® Stair Treads Kits offer a complete 'change out' package to replace existing stair treads and stringer bracket assemblies that have suffered premature corrosion.**

Traditionally, stringer bracket assemblies are made from metallic materials which require corrosion inhibiting coatings to ensure satisfactory life span. It is typical for stair tread mounting brackets to be drilled in situ after this coating has been applied, thus compromising the integrity of this first line of defence against corrosion. It is also common for stringer brackets to be constructed of lighter walled material than other adjacent componentry such as stringers.

These kits have been adopted as a superior replacement for the originally specified equipment in many instances as well as being chosen as a long life and cost saving alternative to metallic systems in numerous new plants.

Tread kits are available in all resin systems and are supplied with M-Clips as standard. Treads can be supplied assembled ready for installation or ready for assembly onsite. Likewise, stringer support brackets can be supplied with pre-drilled mounting holes if specified. Treadwell does not recommend the use of stair treads with a thickness of less than 25mm.

# GratEX® Ezy Tread Stair Treads

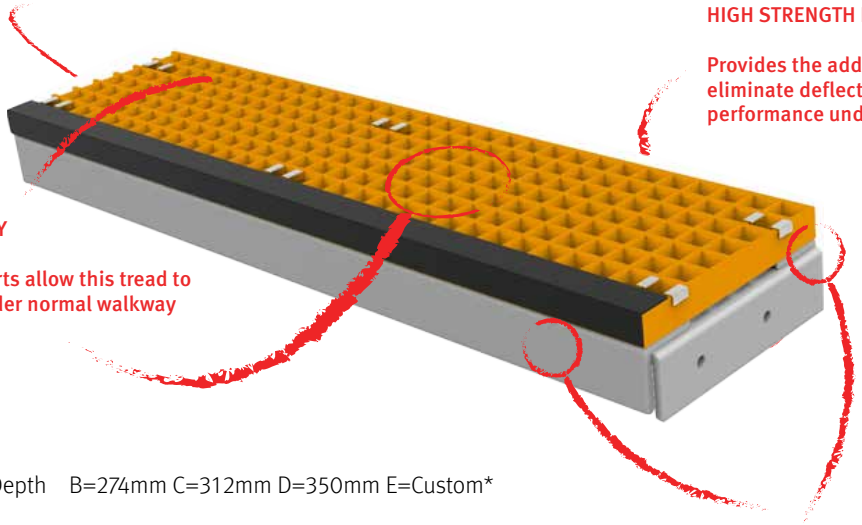
If the required stair tread span exceeds standard lengths, the expected concentreated load exceeds 4.5kN, and/or the stair treads deflection goes beyond the range accepted in Australian standards and compliance codes, Treadwell's ArchitEX™ FRP equal leg angle must be assembled as part of the structure. This will be installed along the length of the stair tread to provide additional support and address safety concerns.

**DURABLE, HARD-WEARING, ANTI SLIP SURFACE**

**Outperforms steel, concrete and other traditional materials, ensuring dependability in high traffic situations.**

**HIGH STRENGTH FRP LEDGER ANGLE**

**Provides the additional support to eliminate deflection, enhancing performance under high load instances**



**BRILLIANT SPAN-ABILITY**

**High quality FRP supports allow this tread to span up to 1800mm under normal walkway loadings**

Select the Stair Tread Depth B=274mm C=312mm D=350mm E=Custom*

Select the Stair Tread Width (mm) Required Width

Recommended Width for Standard Stair Treads: 1036mm, 1074mm, 1112mm, 1150mm, 1188mm, 1226mm, 1264mm,1302mm, 1341mm, 1379mm, 1417mm, 1455mm, 1493mm[C].

**INCREDIBLE RIGIDITY**

**The sturdy FRP Equal Leg Angle support under the front and back of the tread provides exceptional rigidity.**

C: Commonly Stocked Tread Sizes Treadwell recommends that stair treads should be secured directly into the structure.

# Fastening Clips & Installation Methods

## Installation Accessories

The GratEX® moulded FRP grating products are complimented by an extensive range of fixing types and installation systems. All GratEX® installation clip sets are tested and proven to function in the harshest of applications, offering you total peace of mind.

All of the GratEX® installation systems are supplied and stocked as 316 grade stainless steel with super duplex, 304 grade stainless and galvanised steel options available upon request. This flexibility means that we can provide a suitable solution for whatever chemicals or application you have.

The GratEX® clip range also includes a large range of underside clips which provides additional options when when designing sub-structures with the consideration of fixing methods. Refer to the StormChief® page for information on our unique range of extreme strength clip options for high wave action zones.

## GratEX® Clip - Tops

| STANDARD M | 3D | PLAN | ELEVATION | FASTENING OPTIONS |
|---|---|---|---|---|
| Hole Diameter: 8.5mm<br>Material type: 316 st/st<br>Threaded hole: N/A |  |  |  | 1, 3, 4, 6 |
| MINI MESH M | 3D | PLAN | ELEVATION | FASTENING OPTIONS |
| Hole Diameter: 6mm<br>(8mm for GTX-502525M1)<br>Material type: 316 st/st<br>Threaded hole: N/A |  |  |  | 5, 7 |
| MINI MESH M (SLOTTED) | 3D | PLAN | ELEVATION | FASTENING OPTIONS |
| Hole Diameter: 6mm<br>Material type: 316 st/st<br>Threaded hole: N/A |  |  |  | 5, 7 |
| C | 3D | PLAN | ELEVATION | FASTENING OPTIONS |
| Hole Diameter: M6<br>Material type: 316 st/st<br>Threaded hole: Yes |  |  |  | 2 |
| L | 3D | PLAN | ELEVATION | FASTENING OPTIONS |
| Hole Diameter: 6.5mm<br>Material type: 316 st/st<br>Threaded hole: N/A |  |  |  | 2 |
| D | 3D | PLAN | ELEVATION | FASTENING OPTIONS |
| Hole Diameter: 8.5mm<br>Material type: 316 st/st<br>Threaded hole: N/A |  |  |  | 1, 3, 4, 6 |
| E | 3D | PLAN | ELEVATION | FASTENING OPTIONS |
| Hole Diameter: 8.5mm<br>Material type: 316 st/st<br>Threaded hole: N/A |  |  |  | 1, 3, 4, 6 |
| W | 3D | PLAN | ELEVATION | FASTENING OPTIONS |
| Hole Diameter: 8.5mm<br>Material type: 316 st/st<br>Threaded hole: N/A |  |  |  | 1, 3, 4, 6 |
| S | 3D | PLAN | ELEVATION | FASTENING OPTIONS |
| Hole Diameter: 8.5mm<br>Material type: 316 st/st<br>Threaded hole: N/A |  |  |  | 4, 6 |
| O | 3D | PLAN | ELEVATION | FASTENING OPTIONS |
| Hole Diameter: 9mm<br>Material type: 316 st/st<br>Threaded hole: N/A |  |  |  | 8, 10 |

Not drawn to scale

# Fastening Clips & Installation Methods

## Underside Clip | Note: Underside clips are not to be used on Stair Treads.

| J - UNIVERSAL | 3D | PLAN | ELEVATION | SIDE ELEVATION | FASTENING OPTIONS |
|---|---|---|---|---|---|
| Slot Width: 9 mm<br>Material type: 316 st/st<br>Threaded hole: N/A |  |  |  |  | 1, 3, 4 |
| **J - MINI-MESH** | **3D** | **PLAN** | **ELEVATION** | **SIDE ELEVATION** | **FASTENING OPTIONS** |
| Slot Width: 5.2 mm<br>Material type: 316 st/st<br>Threaded hole: N/A |  |  |  |  | 5 |
| **H** | **3D** | **PLAN** | **ELEVATION** | | **FASTENING OPTIONS** |
| Hole Dimension: M8<br>Material type: st/st<br>Threaded hole: Yes |  |  |  | | 9, 10 |
| **G** | **3D** | **PLAN** | **ELEVATION** | | **FASTENING OPTIONS** |
| Hole Dimension: M6, M8<br>8mm Material type: st/st<br>Threaded hole: Yes |  |  |  | | 2, 9, 10 |
| **U** | **3D** | **PLAN** | **ELEVATION** | | **FASTENING OPTIONS** |
| Hole Dimension: M8<br>Material type: 316 st/st<br>Threaded hole: Yes |  |  |  | | 9, 10 |
| **V** | **3D** | **PLAN** | **ELEVATION** | | **FASTENING OPTIONS** |
| Slot Width: 9 mm<br>Material type: 316 st/st<br>Threaded hole: N/A |  |  |  | | 1, 3, 4 |
| **T** | **3D** | **PLAN** | **ELEVATION** | | **FASTENING OPTIONS** |
| Slot Width: 8.5 mm<br>Material type: 316 st/st<br>Threaded hole: N/A |  |  |  | | 1, 3, 4 |

## Fastening Options

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|  |  |  |  |  |
| **FAS-S-HH-M08040-316**<br>M8 x 40mm, Hex Head with External Hex Drive Cap Screw, 316 Grade Stainless Steel, C/W Nyloc Nut and Washer | **FAS-S-SH-M06040-316**<br>M6 x 40mm, Hex Head with External Hex Drive Cap Screw, 316 Grade Stainless Steel, C/W Nyloc Nut and Washer | **FAS-S-SH-M08040-316**<br>M8 x 40mm, Socket Head with Internal Hex Drive Cap Screw, 316 Grade Stainless Steel, C/W Nyloc Nut and Washer | **FAS-S-BH-M08060-316**<br>M8 x 40mm, Button Head with Internal Hex Drive Cap Screw, 316 Grade Stainless Steel, C/W Nyloc Nut and Washer | **FAS-S-SH-M05050-316**<br>M5 x 50mm, Socket Head with Internal Hex Drive Cap Screw, 316 Grade Stainless Steel, C/W Nyloc Nut and Washer |
| **6** | **7** | **8** | **9** | **10** |
|  |  |  |  |  |
| **FAS-D-FH-14G050-316**<br>14G x 50mm, Hex Flange Head with External Hex Drive, Type 17 Self Drilling Screw, 316 Grade Stainless Steel | **FAS-D-CT-12G050-316**<br>12G x 50mm, Countersunk Head with Torx Drive, Type 17 Self Drilling Screw, 316 Grade Stainless Steel | **FAS-D-GH-G14065-316**<br>G14 x 65mm, Bugle Head with Internal Hex Drive Screw, 316 Grade Stainless Steel | **FAS-S-HH-M08070-316**<br>M8 x 70mm, Hex Head with External Hex Drive Screw, 316 Grade Stainless Steel | **FAS-S-CH-M08070-316**<br>M8 x 70mm, Countersunk Head with Internal Hex Drive Screw, 316 Grade Stainless Steel |

| J Clip Insulator | 3D | PLAN | ELEVATION | FASTENING OPTIONS |
|---|---|---|---|---|
| Material type: Nylon<br>Universal and Mini J Clip Insulators available. |  |  |  | N A |
| **H Clip insulator** | **3D** | **PLAN** | **ELEVATION** | **FASTENING OPTIONS** |
| Hole Diameter: 10mm<br>Material type: Nylon<br>Threaded hole: N/A |  |  |  | N A |

Not drawn to scale

TREADWELL

# Applicable Clips Grating

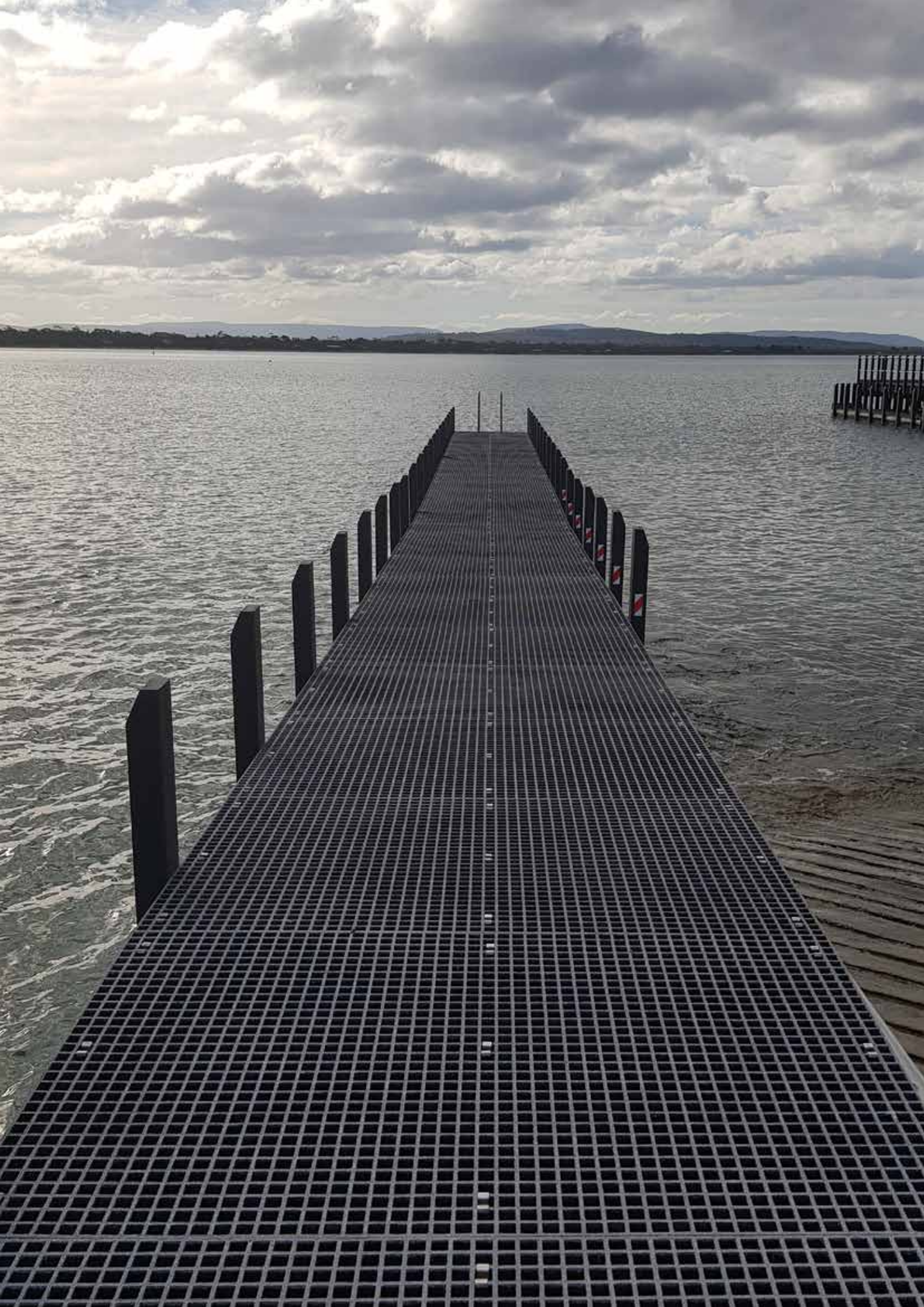
**Fastening Clip Frequency Recommendation:**

Treadwell recommends that at least 4 GratEX® clip sets be installed per panel, regardless of size, or approximately 4 per m² for areas exceeding 1 m². If you have a unique requirement, chances are we have encountered something similar before – contact Treadwell on 1800 246 800.

| | | Standard Square Mesh | Heavy Duty Square Mesh | Mini Mesh | Micro Mesh | Standard Rectangular Mesh | Heavy Duty Rectagular Mesh | Solid Surface | Heavy Duty Solid Surface |
|---|---|---|---|---|---|---|---|---|---|
| Top Clip | Standard M | √ | - | - | - | * | - | - | - |
| | Mini Mesh M | - | - | √ | - | - | - | - | - |
| | Mini Mesh M (Slotted) | - | - | √ | - | - | - | - | - |
| | C | √ | - | - | - | √ | - | - | - |
| | Mini Mesh C | - | - | √ | - | - | - | - | - |
| | L | √ | - | - | - | √ | - | - | - |
| | D | √ | - | - | - | * | - | - | - |
| | E | √ | - | - | - | * | - | - | - |
| | W | √ | √ | √ | - | √ | √ | √ | √ |
| | S | √ | - | - | - | - | - | - | - |
| | O | √ | √ | - | - | √ | √ | - | - |
| | Fanstener | - | - | - | √ | - | - | | |
| Underside Clip | J - Universal | √ | - | - | - | * | - | √ | - |
| | J - Mini Mesh | - | - | √ | - | - | - | - | - |
| | H | √ | √ | - | - | * | - | √ | √ |
| | G | - | - | - | √ | - | - | - | - |
| | U | √ | √ | - | - | * | - | √ | √ |
| | V | √ | √ | - | - | √ | √ | √ | √ |
| | Mini Mesh V | | | √ | | - | - | | |
| | T | √ | - | - | - | * | - | √ | - |
| | Lock Nut & Washer | √ | √ | √ | √ | √ | √ | | |

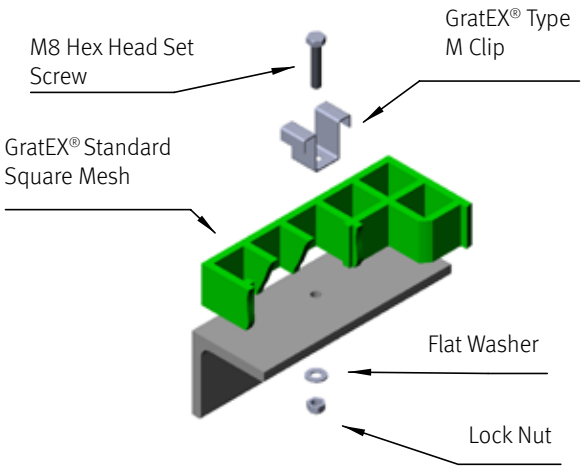
Note: Underside clips are not to be used on Stair Treads.

| | |
|---|---|
| √ | **Suitable for all sizes** |
| * | **Partially applicable** |
| - | **Not applicable** |

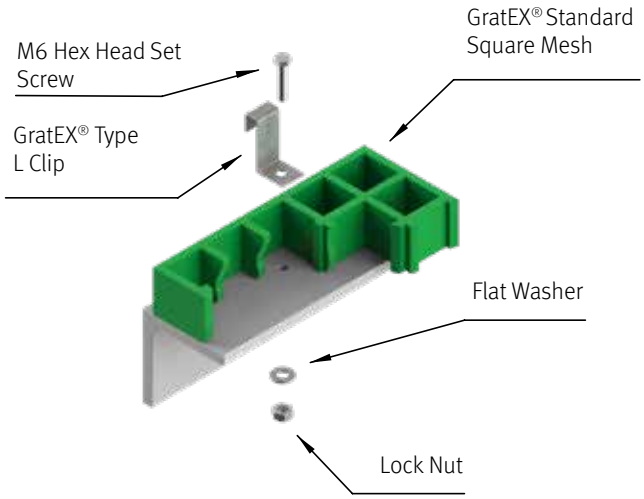


# Fixing Assembly Combinations

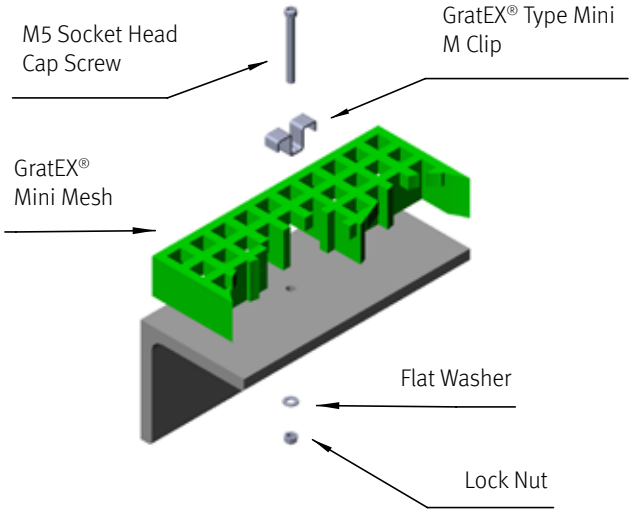
## Standard M Clip Assembly



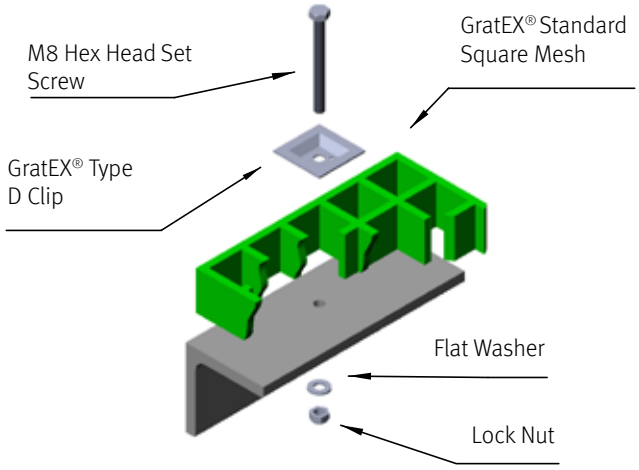

## L Clip Assembly



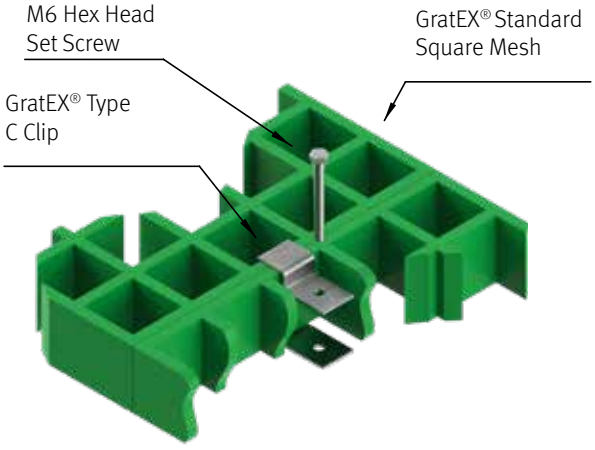

## Mini M Clip Assembly



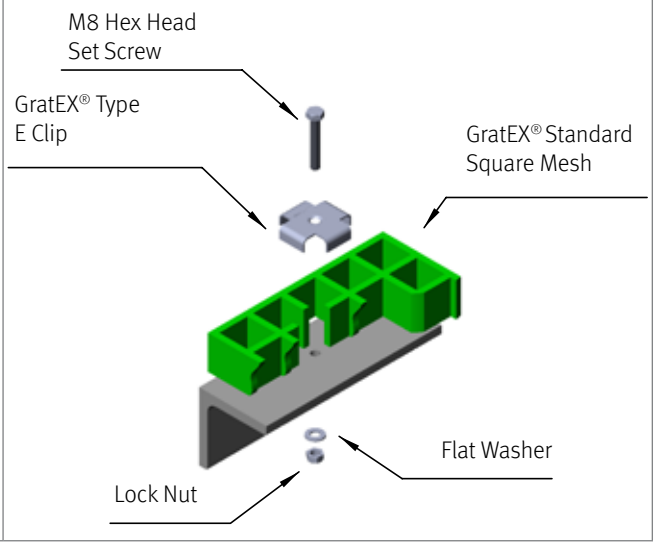

## D Clip Assembly




## Standard C Clip Assembly




## E Clip Assembly

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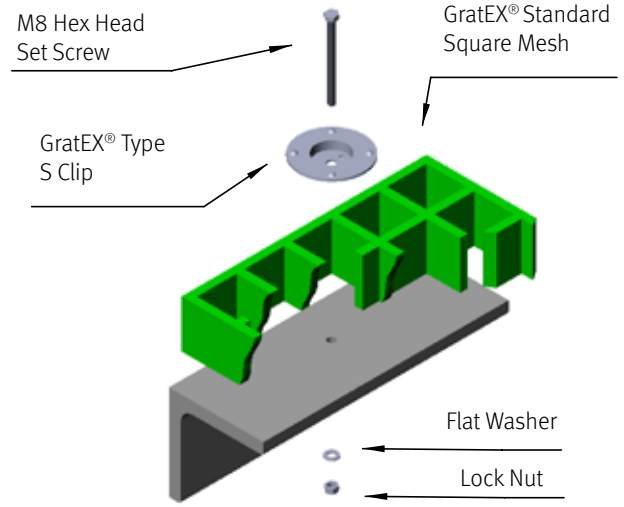
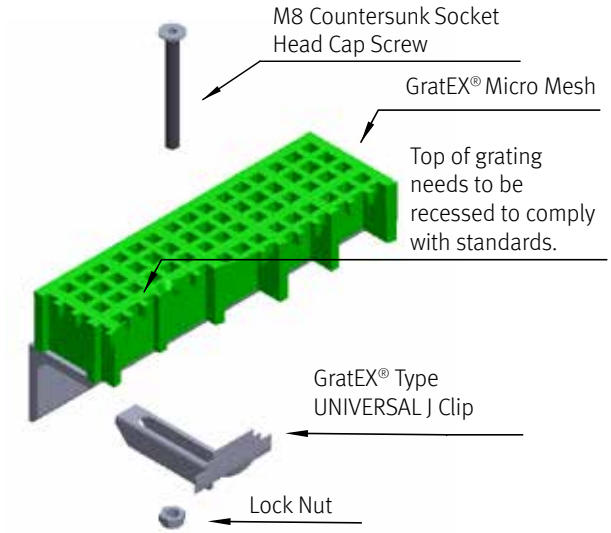
# Fixing Assembly Combinations

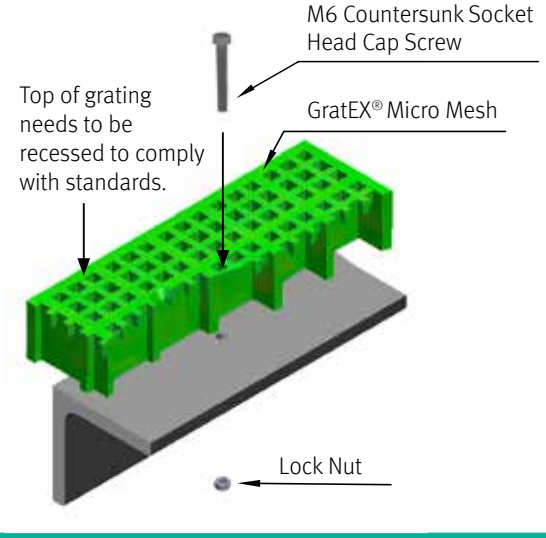
## S Clip Assembly




## Micro Mesh M8 Assembly

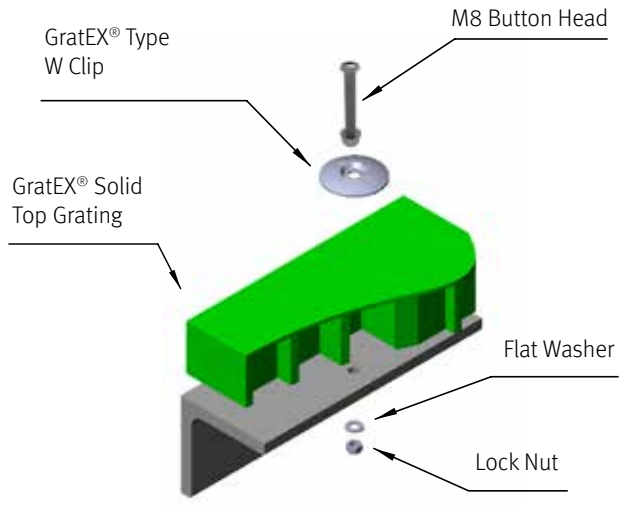



## Micro Mesh M6 Assembly

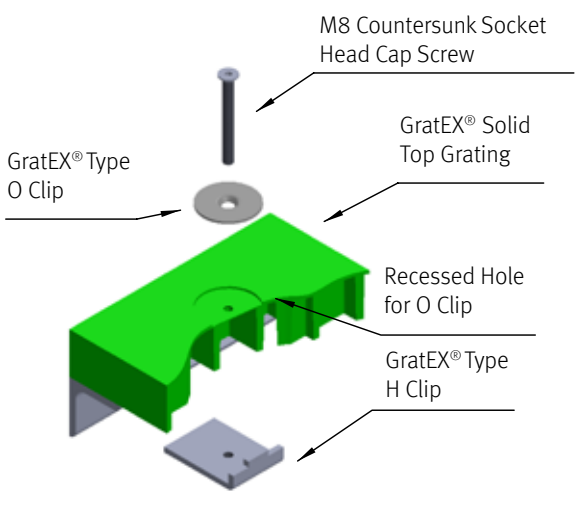



## Solid Surface Recess Tool

## W Clip Assembly



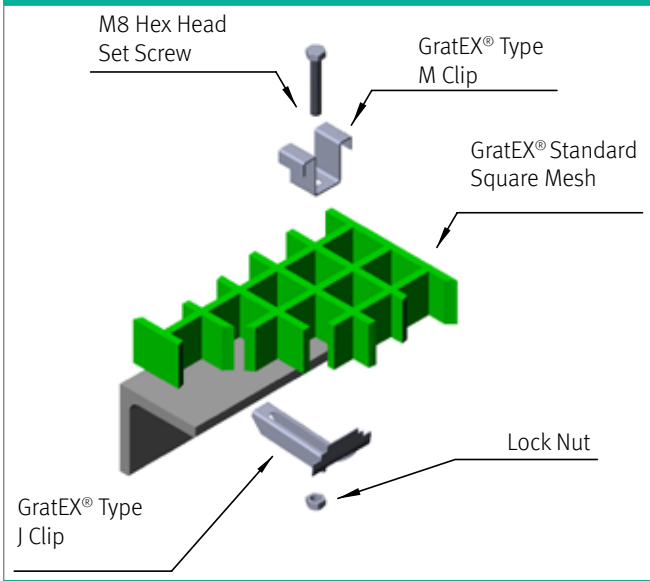

## OH Clip Assembly



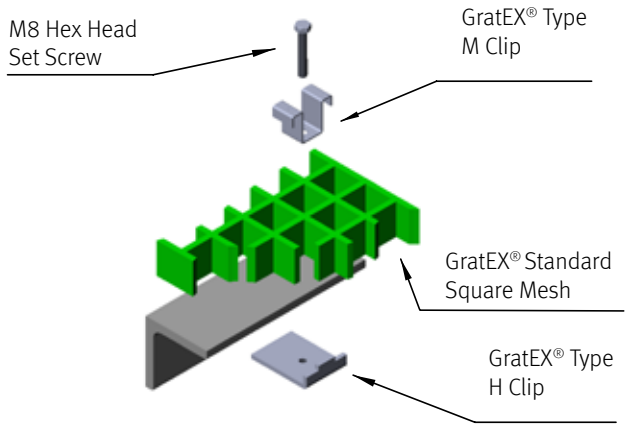

Not drawn to scale

# Fixing Assembly Combinations

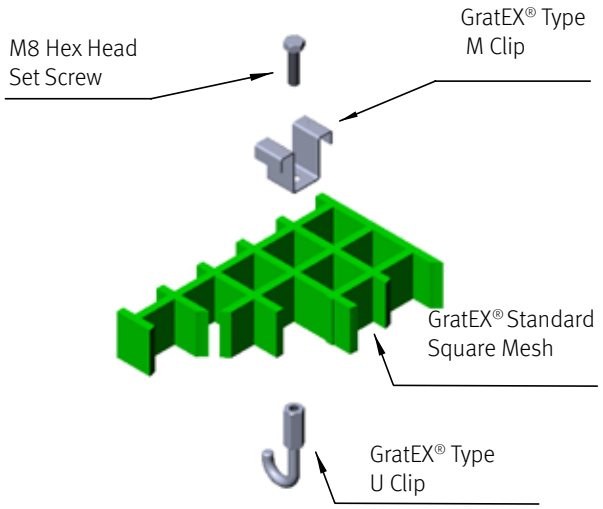
## MJ Clip Assembly



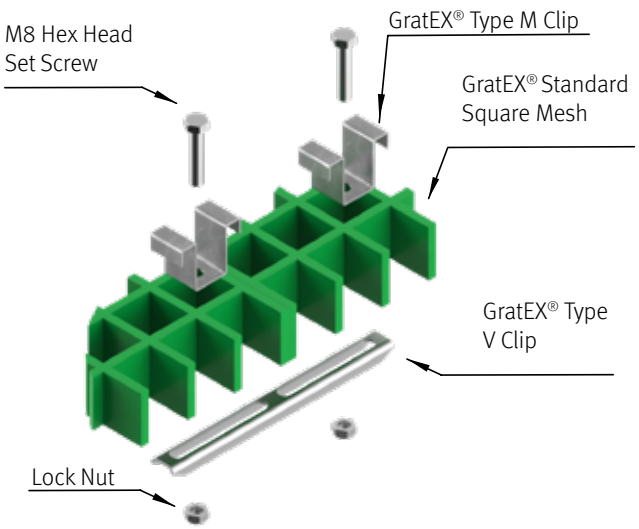

## MH Clip Assembly



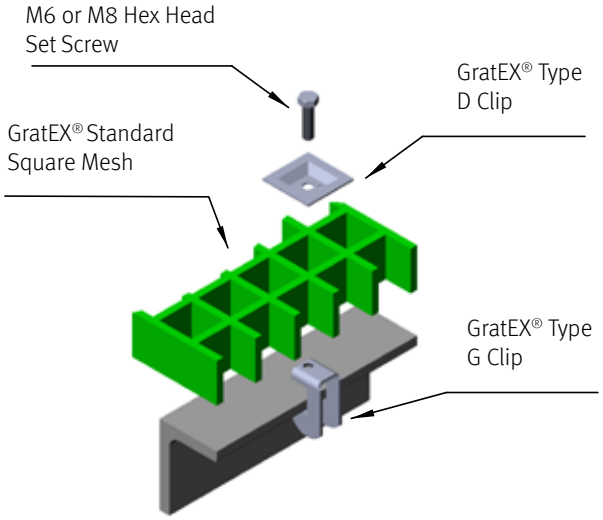

## MU Clip Assembly



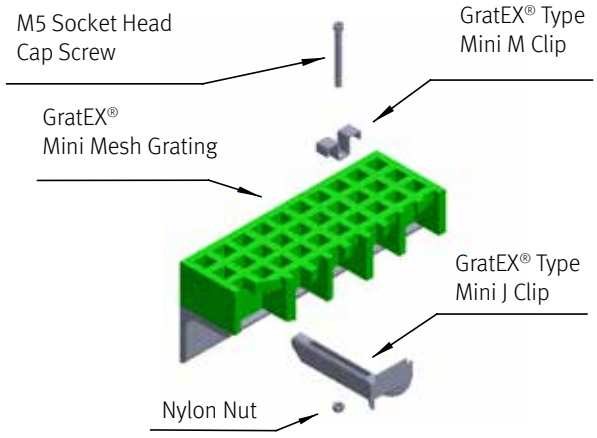

## MV Clip Assembly




## DG Clip Assembly



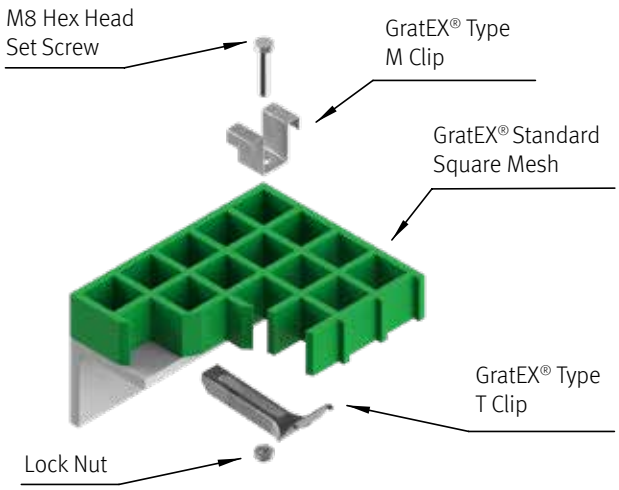

## MJ Mini Mesh Assembly



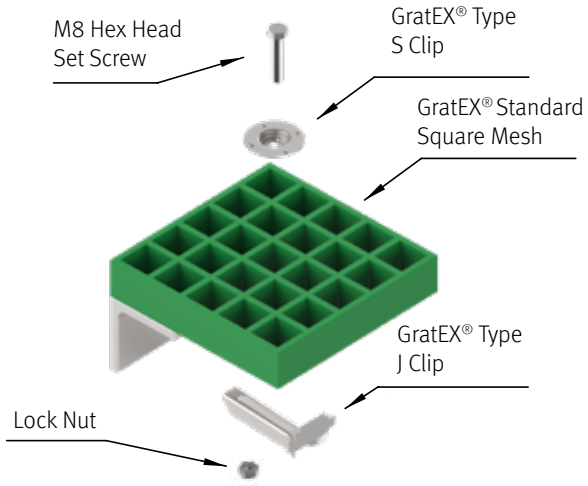

Not drawn to scale

# Fixing Assembly Combinations

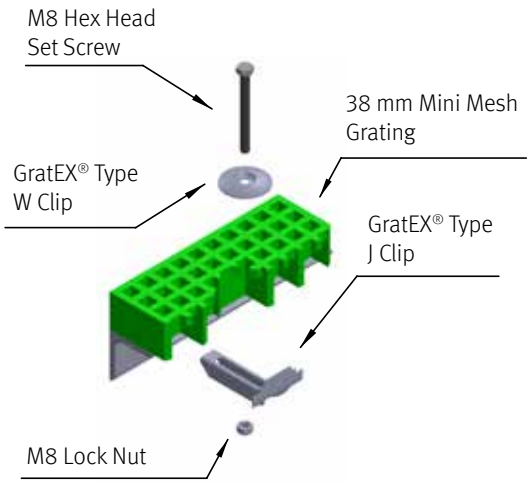
## MT Clip Assembly



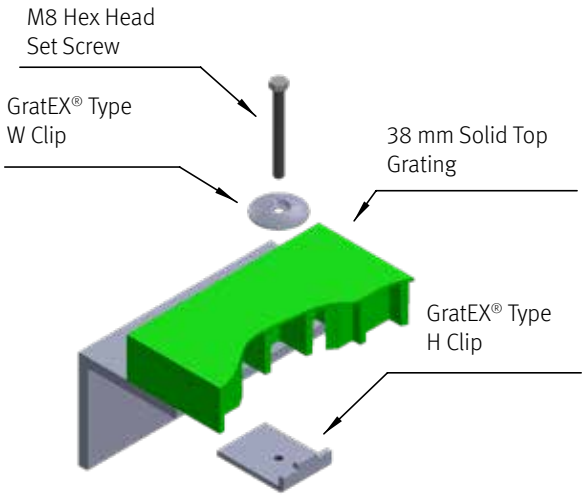

## SJ Clip Assembly



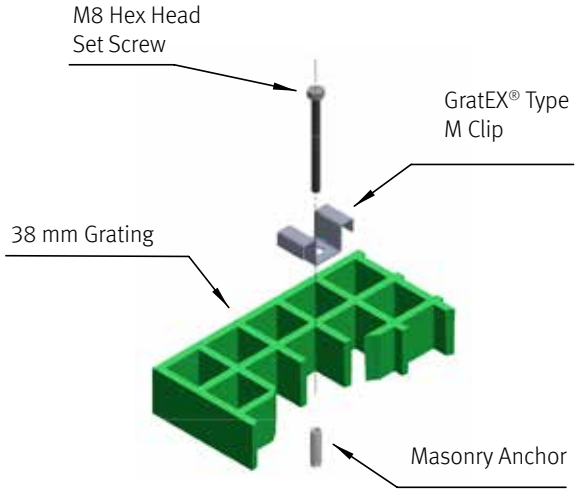

## WJ Mini Mesh Assembly



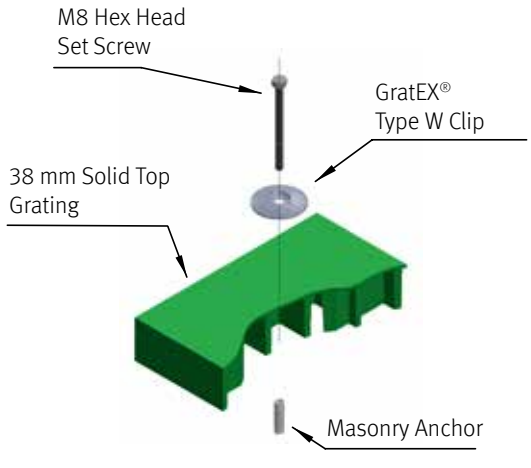

## WH Solid Top Assembly



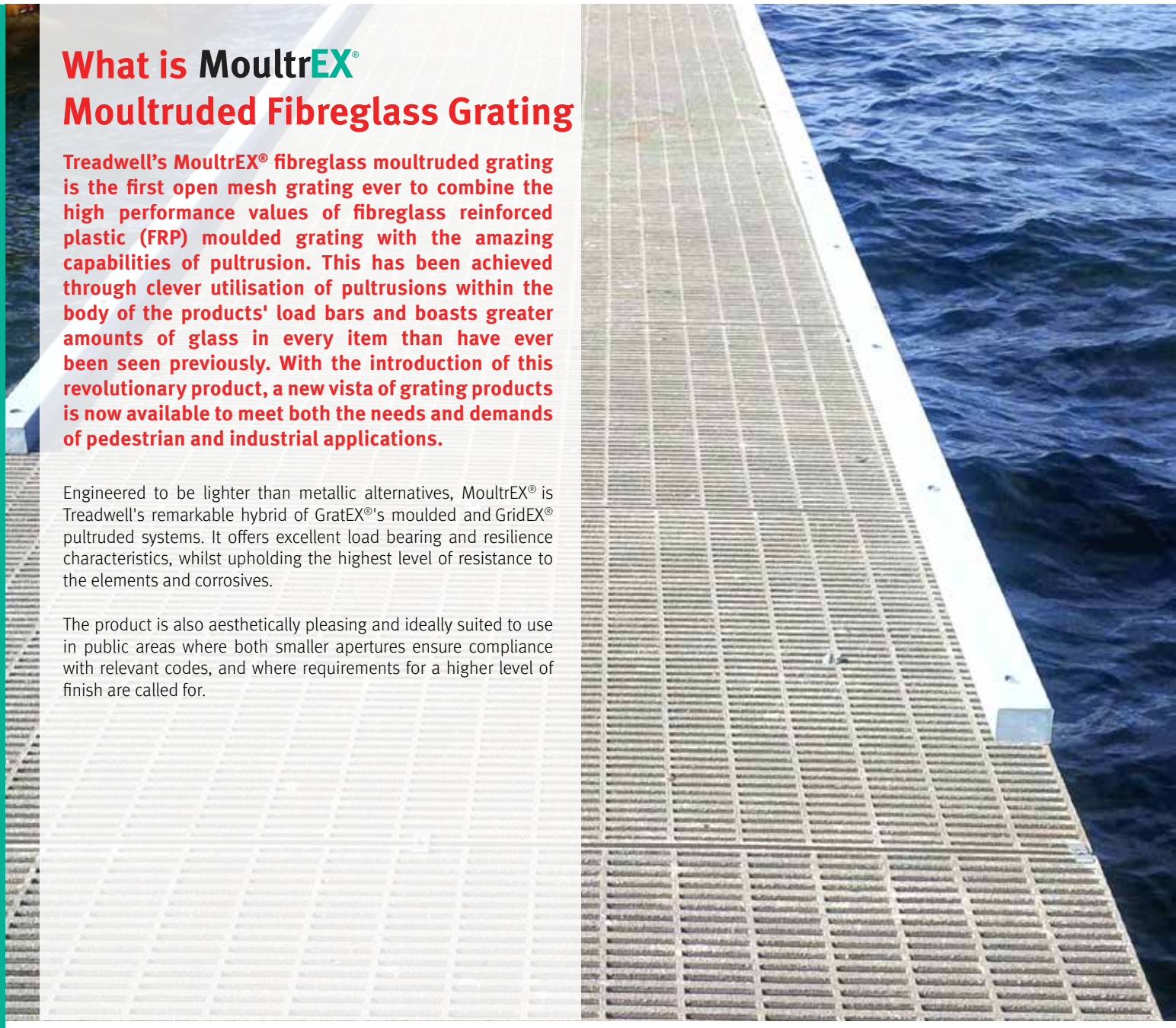

## M Clip Masonry Anchor Assembly




## W Clip Masonry Anchor Solid Top Assembly




Not drawn to scale



# What is MoultrEX® Moultruded Fibreglass Grating

**Treadwell's MoultrEX® fibreglass moultruded grating is the first open mesh grating ever to combine the high performance values of fibreglass reinforced plastic (FRP) moulded grating with the amazing capabilities of pultrusion. This has been achieved through clever utilisation of pultrusions within the body of the products' load bars and boasts greater amounts of glass in every item than have ever been seen previously. With the introduction of this revolutionary product, a new vista of grating products is now available to meet both the needs and demands of pedestrian and industrial applications.**

Engineered to be lighter than metallic alternatives, MoultrEX® is Treadwell's remarkable hybrid of GratEX®'s moulded and GridEX® pultruded systems. It offers excellent load bearing and resilience characteristics, whilst upholding the highest level of resistance to the elements and corrosives.

The product is also aesthetically pleasing and ideally suited to use in public areas where both smaller apertures ensure compliance with relevant codes, and where requirements for a higher level of finish are called for.

## MoultrEX® Surface Options

**Anti-Slip Surface** (Standard).
This surface is most commonly used in industrial applications. It is very hard-wearing and has an extremely effective coefficient of friction (NATA laboratory test report available). Unlike serrated steel grating, the anti-slip surface does not impact on load carrying capacity.

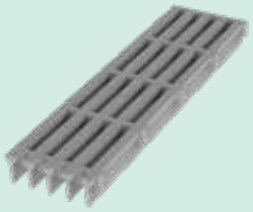
**Concave Surface**
This is the preferred surface for environments where by-products are commonly caught by serrations, and is hence very often utilised in the food industry. This surface option can also be utilised for guarding options to allow safe handling/contact.

# MoultrEX® Moultruded Fibreglass Grating

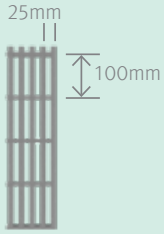
## MTX-381025SR

*SPECIAL ORDER

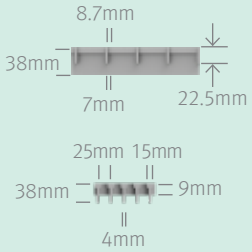
Isometric View

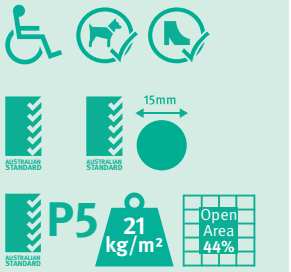


Plan View




Elevation View




Treadwell stocks a range of durable 316 stainless steel secure clip options for MoultrEX® moultruded FRP grating. Further details regarding fixing types and ordering information can be found on page 96.

### Clip - Tops

| MoultrEX® M | 3D | PLAN | ELEVATION | FASTENING OPTIONS |
|---|---|---|---|---|
| Hole Diameter: 6mm<br>Material type: 316 st/st<br>Threaded hole: N/A |  |  |  | 5 |

### Clamp Underside

| Mini J | G | Mini V |
|---|---|---|
|  |  |  |
| Slot Width: 5.2mm<br>Material type: 316 st/st<br>Threaded hole: N/A | Hole Diameter: M6<br>Material type: st/st<br>Threaded hole: Yes | Hole Diameter: 6mm<br>Material type: 316 st/st<br>Threaded hole: N/A |

*Special order items are not commonly stocked and generally only available on request. Please contact your Treadwell sales representative for commonly stocked colours and resin types.


## What is GridEX® Pultruded Fibreglass Grating

**Treadwell's GridEX® pultruded FRP grating systems are designed for specific applications where a standard fibreglass grating system cannot be effectively be utilised. GridEX® offers you options such as selection of open space, bar shape, cross-rod placement, custom fabrication, and custom resin or colour.**

A wide variety of bar shapes along with various bearing bar and cross-rod spacings are available depending on the design requirements. Refer to the safe load and deflection charts for our standard selection, and please do not hesitate to contact us for details relating to our custom options.

Most common GridEX® options are available in 25 mm, 38 mm and 50 mm depths. However, Treadwell brings to the market extremely heavy duty versions of GridEX® that offer more durable, stronger and much larger span capacities as the situation calls for.

## GridEX® Cross Rod Systems

Treadwell is the only company to offer numerous cross rod systems, allowing you the flexibility to achieve what is required for your application.

Standard (Two Part)

Heavy Duty (Three Part)

## GridEX® Surface Options

**Ribbed Surface**
This is the preferred surface for environments where by-products are commonly caught by serrations, and is hence very often utilised in the food industry. This surface option can also be utilised for wet areas and wash down applications.

**Anti-Slip Surface** (Standard)
A very hard-wearing surface with an extremely effective coefficient of friction (NATA laboratory test report available) – commonly used in industrial applications. Unlike serrated steel grating, the anti-slip surface does not impact load carrying capacity.

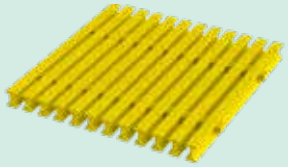
**Covered Surface**
This non-stock option is very often utilised for applications where high strength covered floors are required. The system is supplied with Checkerplate or Anti-Slip surface bonded to every load bar to ensure performance is maintained in harsh environments.

# GridEX® I Type Grating

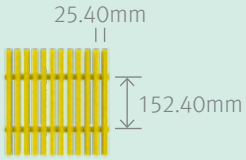
## GDX-251510IB

*SPECIAL ORDER

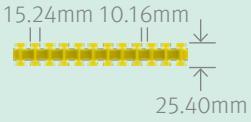
Isometric View

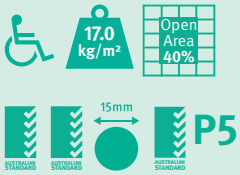


Plan View




Elevation View

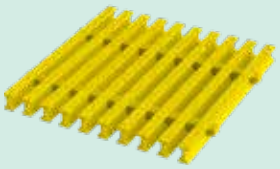


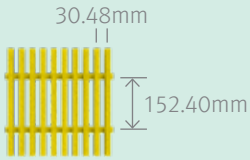

## GDX-251515IB

*SPECIAL ORDER

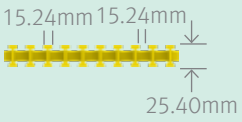
Isometric View



Plan View




Elevation View

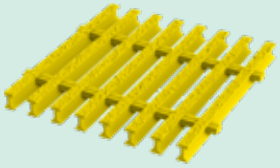




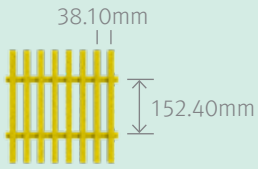
## GDX-251523IB

*SPECIAL ORDER

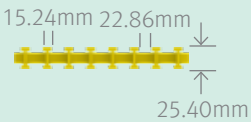
Isometric View

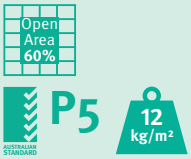


Plan View




Elevation View




*Special order items are not commonly stocked and generally only available on request. Please contact your Treadwell sales representative for commonly stocked colours and resin types.

**CPX-EX-SK-500**

EX-Series® Sealer Resin Kit, include 500ml resin with 15ml catalyst

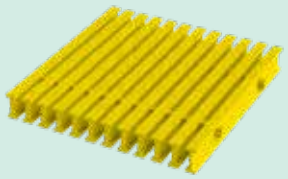
Ideal for sealing exposed fibres after any field cutting. This kit includes resin (standard 500ml), catalyst (standard 15ml) and is available in vinylester.

# GridEX® I Type Grating

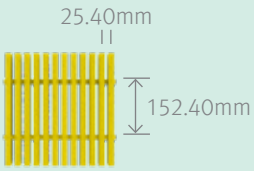
## GDX-381510IB

*SPECIAL ORDER

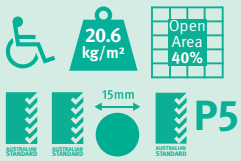
Isometric View



Plan View



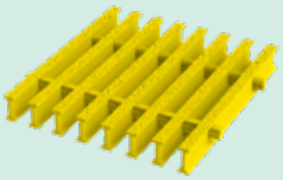

Elevation View

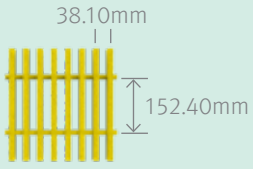

## GDX-381523IB

*SPECIAL ORDER

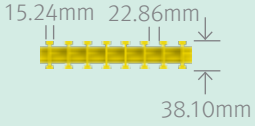
Isometric View

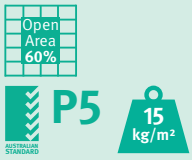


Plan View




Elevation View

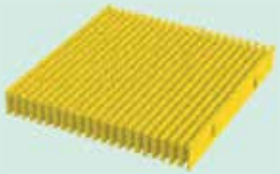


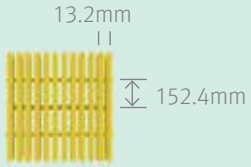

## GDX-500805IB

*SPECIAL ORDER

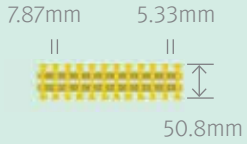
Isometric View

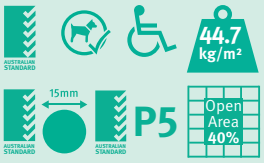


Plan View




Elevation View



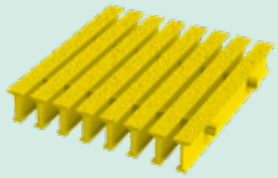

*Special order items are not commonly stocked and generally only available on request. Please contact your Treadwell sales representative for commonly stocked colours and resin types.

# GridEX® T Type Grating

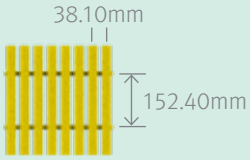
## GDX-502513TB

*SPECIAL ORDER

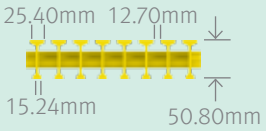
Isometric View



Plan View




Elevation View

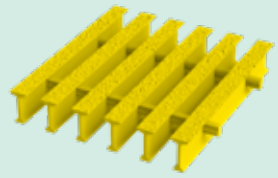




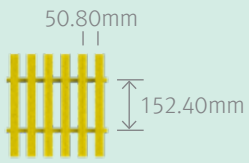
## GDX-502525TB

*SPECIAL ORDER

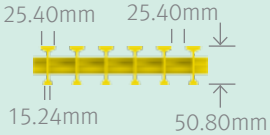
Isometric View

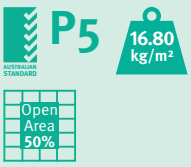


Plan View




Elevation View



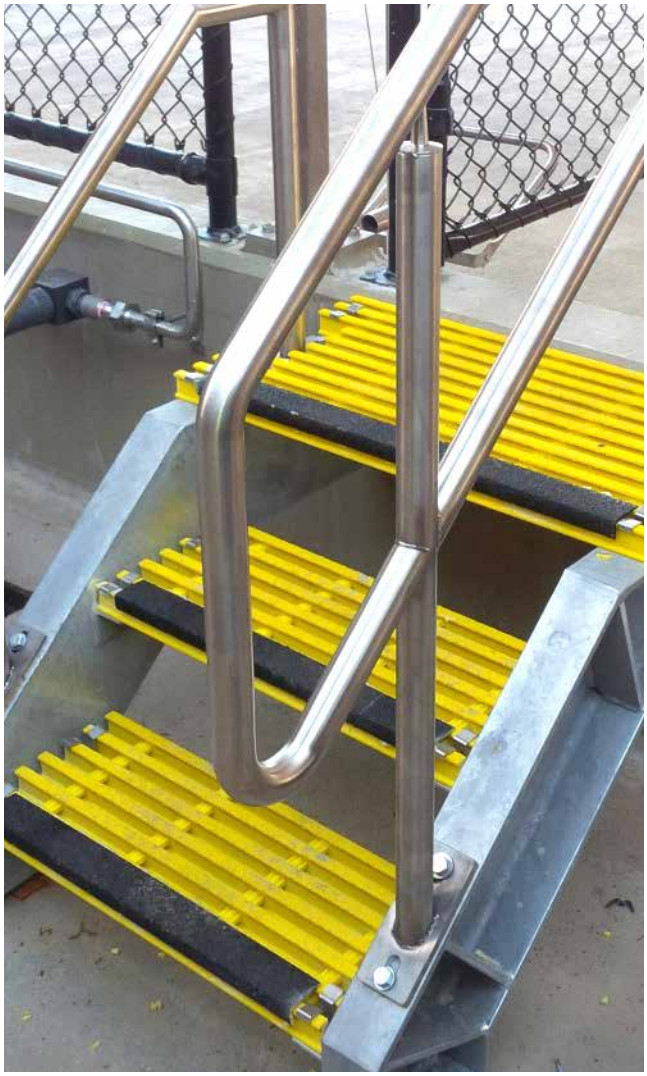




## TreadSpec™

**Use our Grating Selection & Deflection Calculation Tool on our website to select the best grating type for your project.**

**treadwellgroup.com.au/treadspec**

# GridEX® Stair Treads



**Treadwell's range of GridEX® Stair Treads includes both open surface and closed surface options, with a range of surface patterns, colour and leading edge nosing options.**

GridEX® Stair Treads are normally implemented in applications where there are greater load bearing and strength capacities required that other grating variations cannot offer. The GridEX® Treads are available in all bar types and dimensional variations.

All GridEX® Premium and Standard Stair Tread options are moulded with the Solid Leading Edge Nosing as an integrated single stage operation. This increases the rigidity and durability of the entire leading edge, ensuring reliable performance in high traffic scenarios. All the treads with abrasive leading edge nosings are manufactured to conform with AS 1657 – 2018.

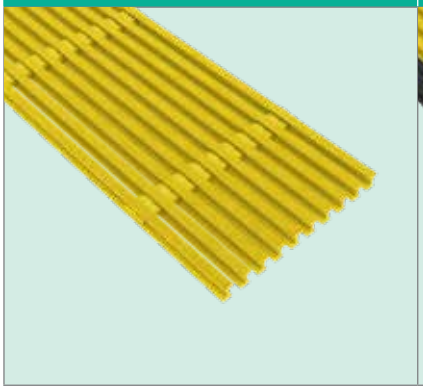
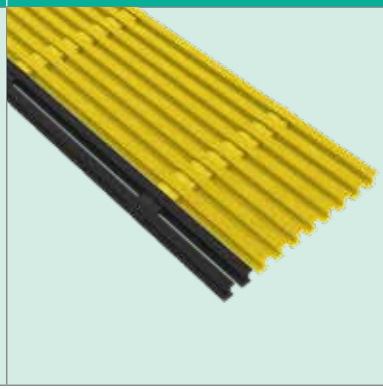
The GridEX® Stair Tread nosings (premium treads only) are typically stocked in colours that contrast by 30% with the primary tread colour. This ensures maximum visual awareness of the stair treads forward edge for operators utilising the stairways and consequently enhancing the OHS safety ratings.

Treadwell recommends that leading edge nosings are specified when ordering GridEX® Stair Treads as the safety risks associated with elevated work areas or walkways is significantly increased without them.

**NOTE**: A bearing surface of at least 40mm is recommended at either side of GridEX® Stair Treads. Compliance with AS 1657 – 2018 requires a tread depth of less than 225mm.

Selecting a tread with lasting non-slip properties, resilience to corrosion and proven long term cost advantages can help you enhance safety in the workplace by reducing the chance of slips, trips and falls.

GridEX® Mesh

| Economy (STE) | Standard (STD) | Premium (STP) |
|---|---|---|
|  |  |  |

# GridEX® Installation Methods & Accessories

Treadwell stocks a range of durable 316 stainless steel secure clip options for GridEX® pultruded FRP grating.

For apertures between each load bar which are less than 15mm, the GridEX® M clip with the 6mm hole diameter is recommended.For 15mm and above, the GridEX® M clip with the 8mm hole diameter is recommended.

## Clip - Tops

| ITEM | PROFILES | HOLE DIAMETER | MATERIAL TYPE | THREADED HOLE | FASTENING OPTIONS |
|---|---|---|---|---|---|
| GridEX® M clip for 50% open grating |  | 9mm | 316 st/st | N/A | 1 |
| GridEX® M clip for 60% open grating |  | 9mm | 316 st/st | N/A | 1 |
| GridEX® N clip |  | 9mm | 316 st/st | N/A | 1 |

## Clamp Underside

| J-Universal | G | U | V |
|---|---|---|---|
|  |  |  |  |
| Hole Diameter: N/A<br>Material type: 316 st/st<br>Threaded hole: N/A | Hole Diameter: M8<br>Material type: st/st<br>Threaded hole: Yes | Hole Diameter: M8<br>Material type: 316 st/st<br>Threaded hole: Yes | Hole Diameter: 9mm<br>Material type: 316 st/st<br>Threaded hole: N/A |

## Benefits of FRP

### Long Term Cost Benefits

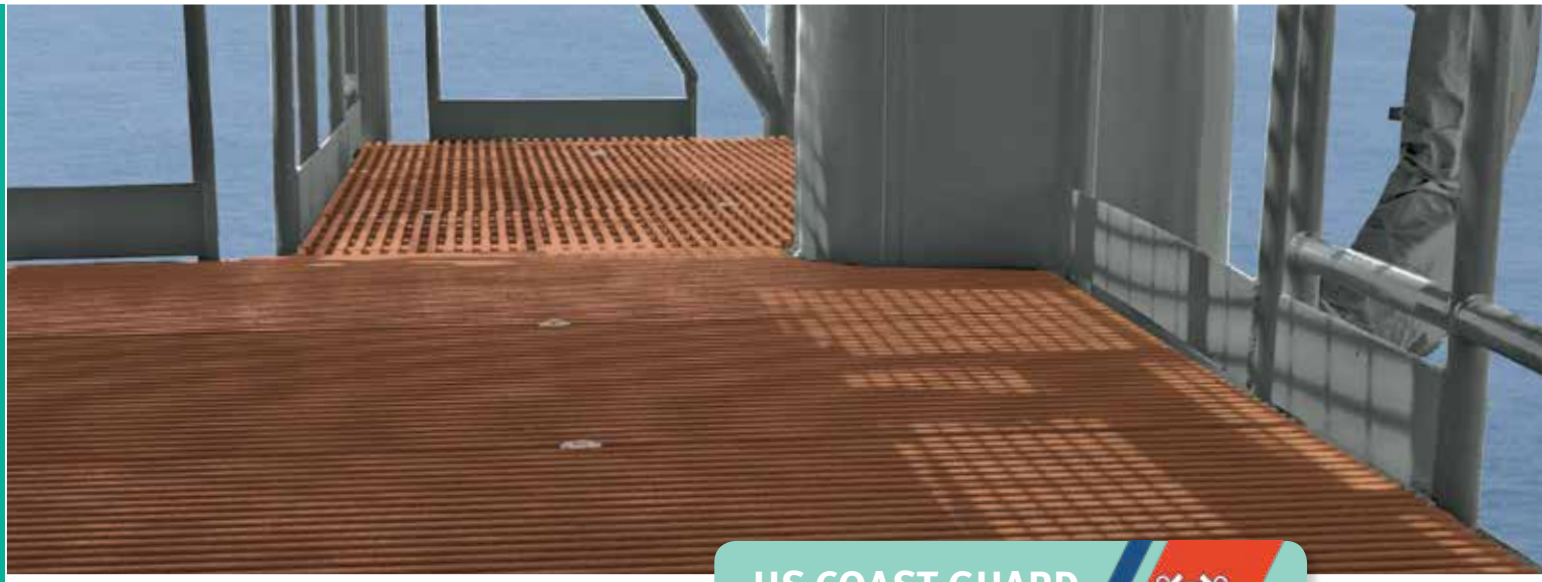
Long service life, minimal maintenance costs and low installation costs all combine to provide a very competitive solution over time.

### Non-Conductive & RF Transmission Transparent

FRP is transparent to radio frequency transmission and is non-conductive in nature. This makes the material ideal for applications that need to avoid electrical currents and radio frequency.

TREADWELL

# GridEX® Phenolic Grating



**US COAST GUARD APPROVED**

## Treadwell's P-Series® Phenolic fibreglass or FRP grating is the ultimate choice for applications where fire risk is prevalent and when smoke cannot be allowed to develop.

Treadwell, through the employment of the most advanced production equipment and the use of the highest quality raw materials, has developed this unique range of leading offshore composite grating products. EX-Series® Phenolic Grating, which boasts US Coast Guard approval, is acceptable for use in areas and applications as outlined in the US Coast Guard Safety Manual Vol III.

### Composite Grating with the Strength of Steel

EX-Series® Phenolic Grating can span up to 70% more than that of equivalent size standard steel grating. Furthermore, P-Series® will not yield and will return to its original shape if design loads are exceeded.

### Ease of Installation

EX-Series® Phenolic Grating is only 65% of the weight of steel bar grating and often, can be manually installed with ease.

### Safety Enhancing Anti-Slip Surface

This system unique to EX-Series® Grating Systems means that load bars are broader than those of metal grating and are far less fatiguing than conventional steel bar grating and not dangerously sharp like serrated surface grating.

### Extreme Fire and Impact Resistance

EX-Series® Phenolic Grating systems, which is laminated by an outer layer of resin rich Phenolic providing ultimate fire resistance, ensures extreme strength is maintained.

### Typical Applications

- Jetties, wharfs & marine structures
- Offshore production platforms
- Offshore drilling platforms
- Grating
- Refineries
- Industrial/processing plants
- Shipboard applications
- Public Transport i.e. tunnels

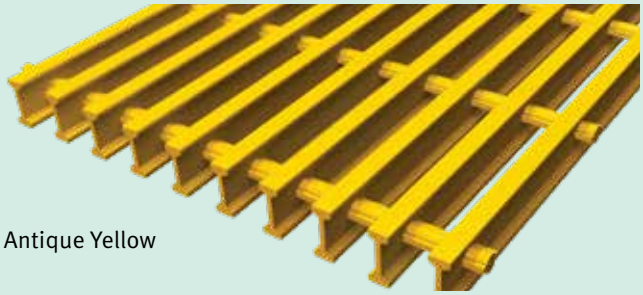
### Standard Panel Sizes

| | |
|---|---|
| GratEX® | 1225 mm x 3665 mm |
| | 920 mm x 3055 mm |
| GridEX® | 1220 mm x 6096mm |

Other custom panels sizes are achievable and readily available.

### Standard Colours

Antique Brown



Antique Yellow

# P-Series® Phenolic Grating Specification

## General

### 1.0 Scope

1.1 The grating shall conform to the material and fabrication requirements as per this specification.

### 2.0 Standards/Related documents

2.1 The grating system shall conform to the applicable sections of:

2.1.1 US coast guard approvals, level 2 and 3

### 3.0 Design Criteria

3.1 The design criteria of the fibreglass products (FRP) shall be in accordance with governing building codes and generally accepted standards in the FRP industry.

3.2 Design live loads shall be of ... kPa uniformly distributed load (or as per building code if more stringent) with a maximum deflection of ... mm at the centre of a single span according to product specifications.

### 4.0 Submittals

4.1 Shop drawings of all fabricated grating panels shall be submitted by Treadwell (unless provided by the client) displaying clearly material sizes, types, styles, product codes and including types and sizes of fasteners as well as a layout if required.

4.2 Technical data and sample pieces can also be submitted if required.

### 5.0 Quality Assurance

Quality surrounds every aspect of Treadwell's commitment to our superior products and efficiency. Treadwell's quality assurance strictly adheres to the high quality control standards placed to conform to relevant specifications, codes, Australian Standards and contractual requirements in a timely manner.

### 6.0 Product Delivery and Storage

6.1 All grating and components or ancillary items shall be fabricated as per the design and piece marked to design drawings.

6.2 All manufactured materials shall be delivered in unbroken packages.

## Product System

### 7.0 Manufacturing Process

7.1 All fibreglass (FRP) items listed under this section shall be constructed from fibreglass reinforcement and resin of the quality necessary to meet the design requirements and dimensions as specified.

7.2 Fibreglass reinforcement shall be continuous roving and shall be in sufficient quantities as required for the application.

7.3 Resins shall be ... (refer to page 5) with chemical formulations as necessary to provide the corrosion resistance, strength and any other physical properties as required.

7.4 All finished surfaces to be smooth, resin-rich, free of voids and without dry spots, cracks or unreinforced areas and all fibreglass reinforcement shall be well covered with resin to protect against exposure due to weather or wear.

7.5 All fibreglass (FRP) items shall be EITHER non-fire retardant OR have a tested flame spread rating of 25 or less when tested in accordance with the ASTM E84 Tunnel Test.

7.6 Contact Treadwell regarding specification data relative to products conforming to ASTM D635.

7.7 All metal accessories shall be manufactured from (304 or 316) Stainless Steel, 2205 Duplex Stainless Steel, 2507 Super Duplex Stainless Steel, hot dipped galvanised steel or aluminium.

7.8 Load bars shall be joined with notched cross bars via interlocking methods and the use of chemical bonding.

7.9 The fibreglass reinforcement content shall be maintained at 65% (by weight) so as to achieve maximum loading capacity.

7.10 All fibreglass material shall have an ultraviolet light inhibiting chemical additive to resist UV degradation.

7.11 Grating shall be manufactured with a concave profile on top of each bar OR an anti-slip Aluminium Oxide surface to provide optimum slip resistance.

### 8.0 Acceptable Manufacturer

The fibreglass underfoot moulded grating system shall be manufactured by Treadwell Group Pty Ltd of Australia.

**N** Non-Stocked Item **C** Commonly Stocked Item

# Colour Palette

**All Treadwell FRP grating products are available to order with any colour that you may specify.**

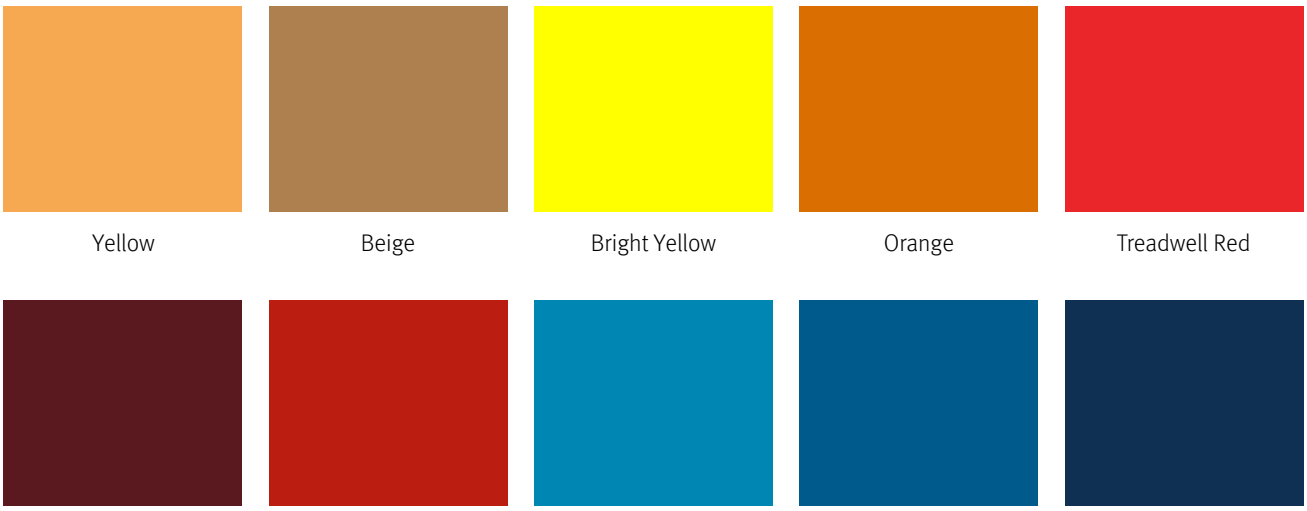
While we carry one of the broadest offerings of commonly used colours, our FRP grating range offers unlimited flexibility when trying to match to an existing colour scheme. All of the grating types that make up the Treadwell range can be requested in a custom or RAL matched colour.

A selection of colours is offered below. It is important to note that our range is NOT limited to these colours and not all products may be immediately available in the colours listed below. Colour options are also influenced by resin selection.

## Stock Colours

Treadwell Yellow | Treadwell Green | Light Grey | Dark Grey | Charcoal

## Non-stock Colours



Yellow | Beige | Bright Yellow | Orange | Treadwell Red



Brown Red | Bright Red | Light Blue | Treadwell Blue | Dark Blue

Green Blue | Dark Green | Industrial Green | Yellow Green | Light Brown

Dark Brown | Steel Grey | Silver Grey | Pure White | Treadwell White

## Descriptive Markings

Overhead safety warnings and signage can actually create a slip, trip and fall situation when the person fails to look down while walking. Worse yet, in the event of a fire or emergency, smoke and darkness often conceal overhead signage and directional guidance.

The image or message can be embedded into the cover, not just printed on the surface, so it will last for the life of the product and not wear off.

Treadwell can also incorporate your company logo and other custom graphics into the surface without affecting slip performance.

## Glow in the Dark Colours

Treadwell is also proud to offer innovative glow-in-the-dark products which use an embedded inorganic photo luminescent pigment that creates a green/yellow glow when active. The pigment is non-toxic, non-radioactive, and can be recharged repeatedly during the life of the product.

These products are an effective safety solution for both outdoor and indoor applications, with greater visibility for many hours after the light source has been removed.

The photo luminescent pigment is fully recharged after 5 minutes of exposure to sunlight, 8 minutes at dusk, or 10 minutes in fluo rescent light; depending on the strength and nature of the light source. The higher the UV output, the brighter the illumination.

## Two-Tone Colour Configurations

Colours can also be combined to create a two-tone configuration. Contrasting colours can be applied on (but not limited to):

- On the nosing and vertical lip of a step cover, increasing notice to the leading edge of a stair.
- On the perimeter of a walkway cover where a change in surface texture and colour signifies a safe walk zone.
- On RungSAFE® Covers.

In addition, it is an economical alternative to full photo luminescent covers combined with a solid colour. Not only do you have a two-tone configuration in the light, but also the benefit of glow in the dark when the light source is removed.



# Anti-Slip Grit Grades

## Cover Grit Options

Every grating surface has Treadwell's unique layer of resin surface with embedded grit that characterises its high traction and safety traits. Depending on application, our range of grit covers can offer the highest anti-slip properties available on the market to smaller grits where specified.

## Hardness of Grit

Treadwell incorporates a unique grit product into all of our anti-slip products. Measuring at 9.4 on Moh's Hardness Scale, most tapes and paints which contain quartz or silica (in other words, sand) pale in comparison. These score a soft aggregate of 6-7 that will quickly wear away under foot traffic, leaving your surface more open to hazards.

| Mohs Hardness Scale | |
|---|---|
| Diamond | 10.0 |
| Fused Alumina | 9.4 |
| Quartz Sand<br>Most Anti-Slip Products Including Tapes | 6-7 |


## Four Standard Grades

Pedestrian Grade

Commercial Grade

Industrial Grade

Marine Grade

# What is HygiGR8®

**The Treadwell HygiGR8® range was initially developed to service the food and beverage processing industry with the emphasis on streamlining cleaning processes and addressing hygiene issues in food processing operations.**

**With product evolution, HygiGR8® is now available as a comprehensive solution when particles being entrapped between support members and grating is a concern.**

HygriGR8® incorporates a unique blend of solid top and open grating technology. This is achieved through the calculated layout of HygiGR8® panels to ensure the solid top section of customisable width around the edge of each panel is located so that the beams that make up the substructure are covered by the solid band.

The grating system can be manufactured from any grade of resin for any industry including premium food grade polyester resin.

For HygiGR8® intended for food and beverage processing facilities, Treadwell certifies that food grade resin HygiGR8® meet USDA acceptance requirements when properly installed and maintained as an ergonomic or anti-slip floor surface or cover. Each panel is post cured and detergent washed.

This unique system can be adapted to any floor plan, for uses such as landings, slippery ramps, catwalks, decks etc. HygiGR8® also incorporates treads that can be manufactured to any standard for continuity of HygiGR8® over walkways and stairways.

## HygiGR8® Features and Benefits vs. Traditional Alternatives

| | HygiGR8® | Stainless Steel | Galvanised Steel | Aluminium | Polyurethane |
|---|---|---|---|---|---|
| **Chemical Resistance** | ●●●●● | ●●●● | ● | ●●● | ●●●● |
| **Strength** | ●●●●● | ●●●●● | ●●●●● | ●●●●● | ●●● |
| **Lightweight** | ●●●●● | ● | ● | ●●●●● | ●●● |
| **Electrical Resistance** | ●●●●● | ● | ● | ● | ●●●●● |
| **Cleaning** | ●●●●● | ●●● | ●●● | ●●● | ● |
| **Hygiene** | ●●●●● | ●●●● | ● | ●● | ●●●● |

## HygiGR8® Surface Options

**Anti-Slip Surface.** HygiGR8® is recommended with a gritted anti-slip surface to ensure maximum grip in situations where there are typically moisture and slippery residues. It has an extremely effective coefficient of friction and is very hard-wearing (NATA laboratory test report available).

**Concave Surface.** HygiGR8® can also be ordered with the concave surface option. This ensures efficient and easier to clean environments where by-products are commonly caught between serrations. However, the anti-slip properties are not as profound as the gritted surface.

# Residue Build Up Prevention

## HygiGR8® Clip

The HygiGR8® clip was specifically designed to resolve the issue of residue caught in between the grating and support members, especially in food and mining environments. Together with DeckSAFE®, the HygiGR8® clip formulates a system that safeguards any build up in-between the apertures of the grating panels.

## DeckSAFE®

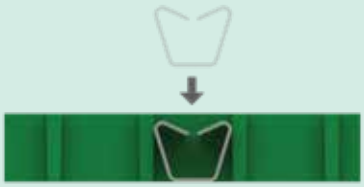
DeckSAFE® has emerged as one of the market's genuine solutions for landings, slippery ramps, catwalks, decks, etc. It is mainly designed to eliminate the threats of trips, slips as well as falls in the workplace where there is direct contact with water, oil and other forms of liquids to reduce risks.

DeckSAFE® can be applied in customisable strips of up to 3m in length to be utilised in conjunction with the HygriGR8® clip.
Refer to page 105 for more information.

### Installation Guide

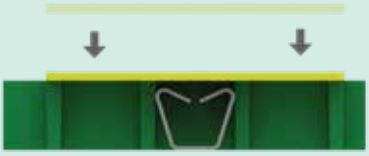
**Insert HygiGR8® Clip**

1



**Place DeckSAFE® over clip**

2

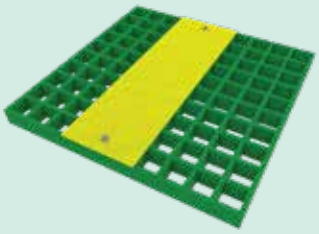


**Secure with screw**

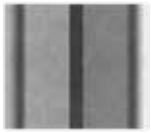
3

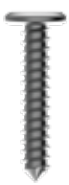
**Completed!**

4



### Fastening Clips

| HygiGR8® Clip | 3D | PLAN | ELEVATION |
|---|---|---|---|
| Hole Diameter: N/A<br>Material Type: 316 st/st<br>Threaded Hole: N/A |  |  |  |

| Screw | 3D | PLAN | ELEVATION |
|---|---|---|---|
| Threaded Size: 10mm<br>Material Type: st/st<br>Length: 22mm |  |  |  |

Not drawn to scale

# What is EX-Series® Conductive Grating?

**FRP gratings are typically non-conductive and this can sometimes present a safety issue when in a sparking sensitive environment due to the build-up of static electricity.**

The black carbon surface in Treadwell's conductive grating is specially formulated to discharge static build-up on FRP grating surfaces in areas where static build-up presents a significant risk. When properly grounded, the conductive surface provides solutions that can be typically applied in areas where there is highly sensitive electrical equipment, munitions, chemical or petro chemicals present.

Treadwell's conductive grating drains off the build-up of unwanted, dangerous static electricity when grounded. This specialised grating produces an electrical resistance of less than 26-kilo-ohms per foot, while retaining other desirable characteristics of conventional FRP moulded grating.

The Treadwell moulded carbon top can be applied to any of the grating products specified in our range and can be combined with any of our resin formulations.

## Based on NFPA77

### Recommended 4 grounding attachments

- Average Surface Resistivity - 2.5 X 103 ohms to 1 x 106 ohms per lineal foot
- Average Resistance to Ground - <108 ohms

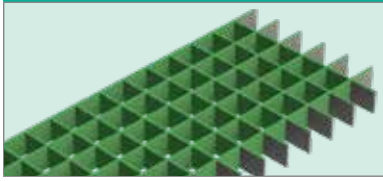

# Terminology

**Cross Bar**
A section fixed at right angles to the Load Bar designed to provide lateral strength — GridEX® pultruded grating is constructed using such members.

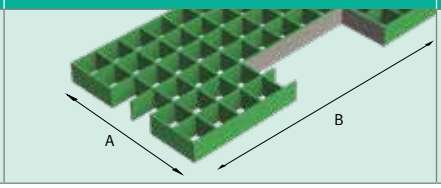
**Cut Out**
Grating area removed from panels to permit passage of columns, handrail, pipes and structural items.

**Edge Bar Banding**
The process of chemically bonding Load Bars (non-load bearing) to the cross bars after trimming to size to provide a uniform appearance on all sides of a grating panel. Available on GratEX® products.

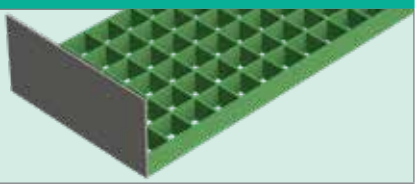
**Exact Size**
Refers to the requirement to manufacture the panels to an exact dimension and not to be adjusted to the nearest width across the standard pattern of the load bars.



**Gross Area**
Total area including areas cut to waste (A x B).

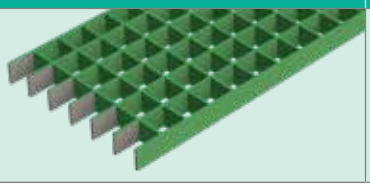



**Kick Plate**
A large flat section chemically bonded to side or end of panel and around cut-outs where specified. Nominal height is 100 mm above working surface.

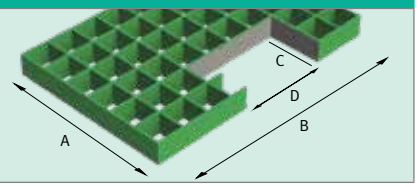


**Penetrations**
Cut out but within the grating panel as opposed to being on the edge.

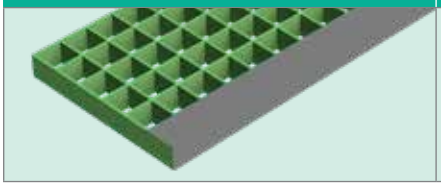
**Prongs**
In the case of GratEX®, this describes a panel cut that does not run adjacent to a load bar.



**Net Area**
The area of panel remaining after deducting areas cut to waste [AxB]-[CxD].

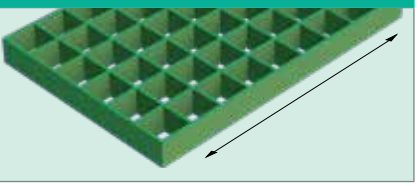



**Nosing**
The section on the leading edge of a stair tread or (top stair) loading panel to assist slip resistance and to give a clear visual indication of the edge of stair treads and loadings.

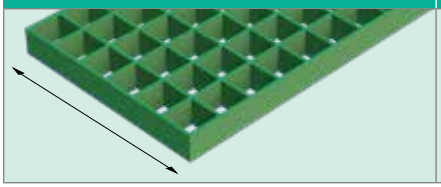


**Load Bar**
A load carrying section from which grating is constructed spanning between two supports. GratEX® moulded grating consists of Load Bars in both directions, hence the product's exceptional bi-directional strength.

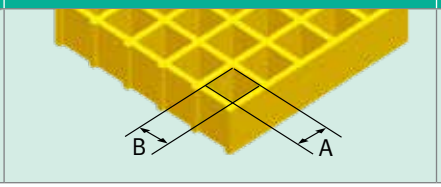
**Length of Span**
Overall dimension of a panel measured parallel with load bar typically indicated by this symbol "⟷". In the case of GratEX® (due to load bars being bi-directional), this is either the span or the longest dimension.



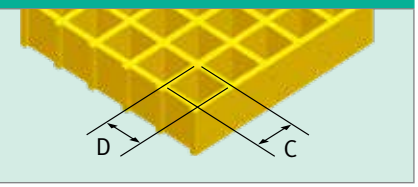
**Width**
The overall dimension of a panel – in the case of GratEX®, this is the opposite dimension to the span, or the smaller dimension and in the case of GridEX®, this is the dimension measured at right angles to the load bars, even if greater than the length.



**Aperture**
Where applicable (GratEX® and MoultrEX®), it refers to the length of opening surrounded by load bars. (A x B)




**Load bar centres**
This refers to the distance between centre lines of two adjacent load bars. (C x D)



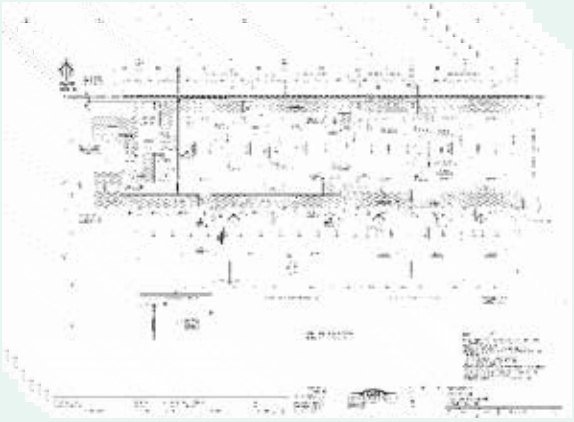
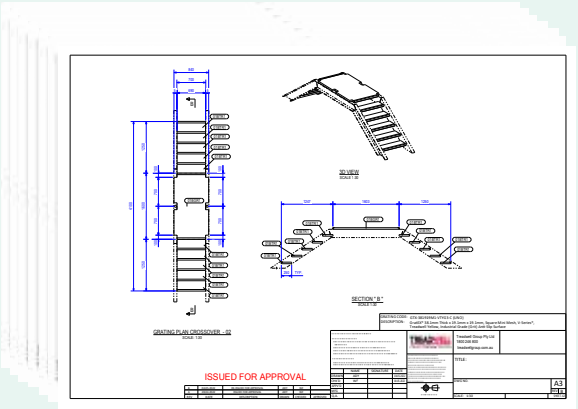
# Drafting Information & Manufacturing Tolerances

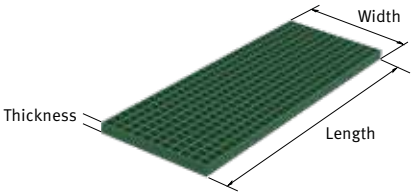
## Save on detailed drafting

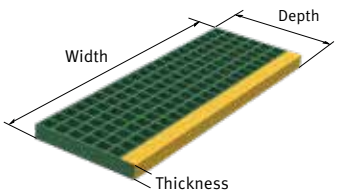
**When providing Treadwell with grating drawings, please ensure that only the outline of the actual grating is supplied along with all penetrations and cut-outs are displayed.**

Treadwell will recommend the most economical breakdown of panels to suit your floor layout — this is because our forte in FRP products means that we stock more standard size panels. Save yourself the cost and let us take the pain out of it for you.

Treadwell utilises up to date CAD technology to create panel details and erection marking plans. Further, we can then have these drawings sent via email, fax, post or courier to any location for speedy approval or mark-up — a service many of our clients agree saves a lot of time and hassle!

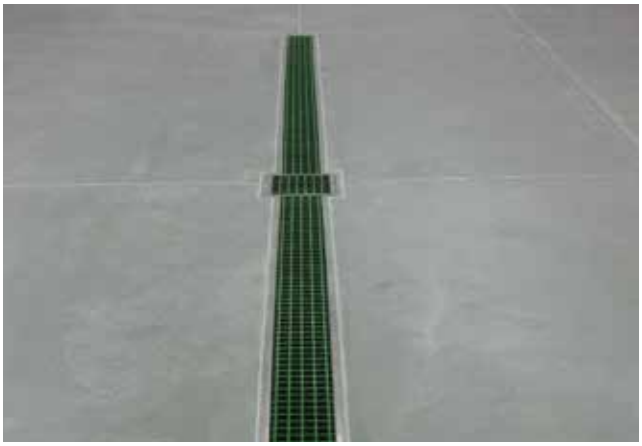
| All we need from you | What we will provide you with |
|---|---|
|  |   |

| Panels | Size (mm) | Length (mm) | Width (mm) | Thickness (mm) |
|---|---|---|---|---|
|   | 920 X 3055 | ± 3 | ± 3 | ± 1.5 |
| | 1225 X 3665 or larger | ± L / 1000 | ± 3 | ± 1.5 |

| Stairtreads | Size (mm) | Width (mm) | Depth (mm) | Thickness (mm) |
|---|---|---|---|---|
|   | All sizes | ± 3 | ± 3 | ± 1.5 |

TREADWELL

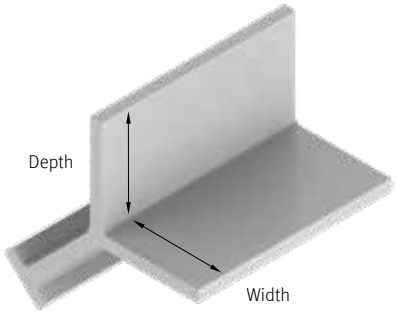
# Embedment Angle



The Treadwell ArchitEX™ FRP Embedment Angle provides a very sturdy base for bearing bars and has a built-in continuous angle that locks into concrete, eliminating the need for individual anchors. The FRP embedment angle is engineered using a surfacing veil and fire retardant vinylester resin system.

This unique combination produces superior strength, stiffness, wear protection and long-term corrosion resistance required for longevity in industrial applications. The FRP embedment angle is suitable for use with both GratEX®, MoultrEX® and GridEX® products and is typically available in grey 3 m or 6 m lengths.

| Code | Depth | Width | Weight |
|---|---|---|---|
| ARX-EA25 | 25.4 mm | 38.1 mm | 1.34 kg/m |
| ARX-EA38 | 38.1 mm | 38.1 mm | 1.52 kg/m |
| ARX-EA51 | 50.8 mm | 38.1 mm | 1.64 kg/m |



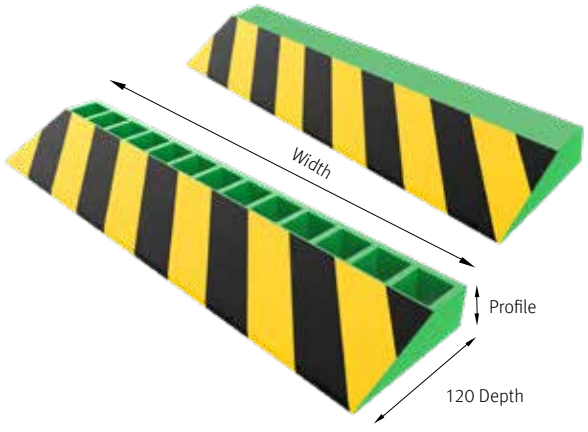

# Safety Ramp

Treadwell's lightweight safety ramps can be adapted to any application. Flexible and sturdy enough to take even the heaviest of weights, they are resistant to fire, chemicals and corrosion. Being anti-slip in nature, FRP safety ramps are an extremely safe surface for your ramps in all types of weather.

Effiicient and cost effective alternative to stainless or galvanised steel angles, these safety ramps can be readily installed onto domestic walkways, providing effective both pedestrian and wheel access.

**Square Mesh (SS) or Solid Top (F3)**

| Profile | Code | Depth | Width |
|---|---|---|---|
| 25 mm | GTX-253838XX-ITYG3*-RMP | 120 mm | 3660 mm |
| 30 mm | GTX-303838XX-ITYG3*-RMP | 120 mm | 3660 mm |
| 38 mm | GTX-383838XX-ITYG3*-RMP | 120 mm | 3660 mm |
| 50 mm | GTX-505050XX-ITYG3*-RMP | 209 mm | 3660 mm |




*Please note that the resin composition and colouration are customisable according to specifications. Please speak to us about the many options available to suit your needs.

# StormChief

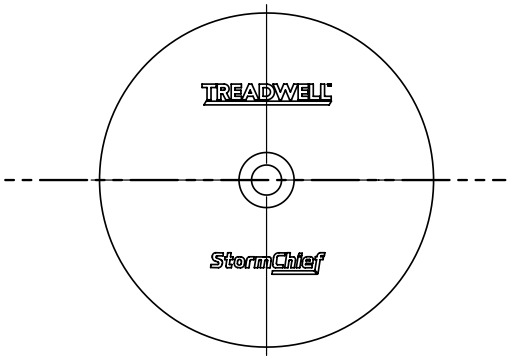
Treadwell developed the StormChief® grating fastening system to provide a solution for fastening down grating products in environments that experience high wave action and subsequently require a fastening system that is designed to withstand wave zone loadings.

Wave action exerts extreme forces on grating, sometimes causing panels to be wrenched off substructures. This damage affects large industrial offshore structures such as oil and gas drilling platforms, dockside walkways or decks, and marine based recreational public infrastructure.

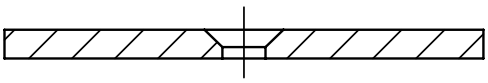
StormChief® Wave Zone Grating Fasteners save organisations large expenses in downtime due to access complications and restrictions and reinstallation costs. Additionally, the systems provide time saving installation methods such as the StormChief® Hybrid System which eliminates the necessity for access to the underside of the substructure.

## StormChief DISC®

Plan View

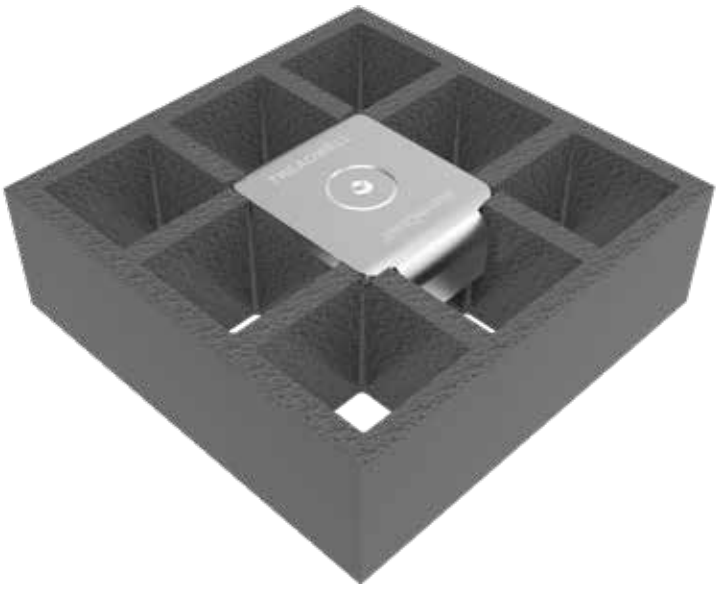



Elevation View



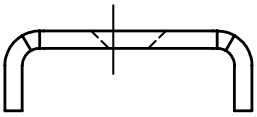
The StormChief DISC® is an extremely robust and secure grating fastening system intended for use in areas that experience high wave zone loadings. The DISC is designed to be used when the width of a walkway or deck area exceeds 1200mm or requires securing in situations where the application of the CLAW system is impractical. The DISC is recessed to ensure safe and secure pathway for all types of traffic accessing the area. This system is compatible with the H-Clip fastener and the StormChief® Hybrid System.

## StormChief GRIP



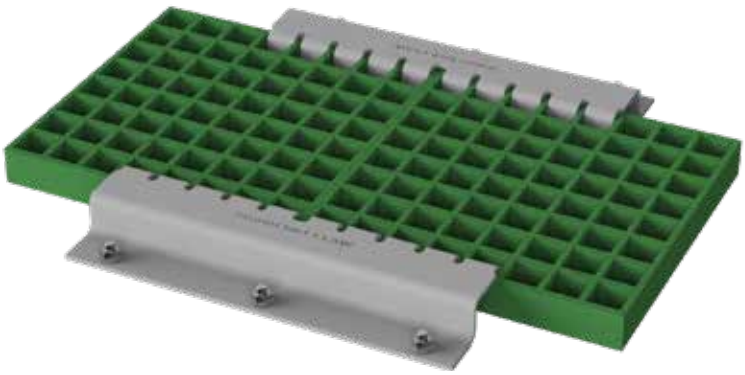
Plan View


Elevation View

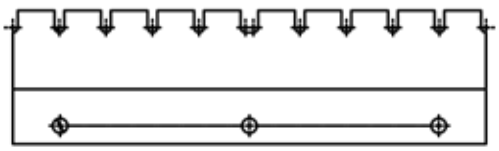


The StormChief® GRIP is ideal for stair treads or grating where the fasteners need to be near the edges, to accommodate load bar considerations. Incredibly secure, this tough fixing clip is made from 316 stainless steel and designed to withstand high wave zone loadings. Sitting flat against the grating, it eliminates risks of trips and snags.

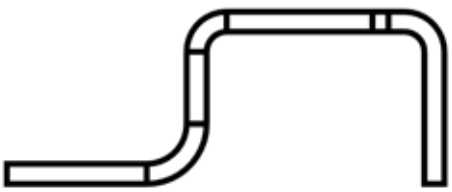
## StormChief CLAW®



Plan View

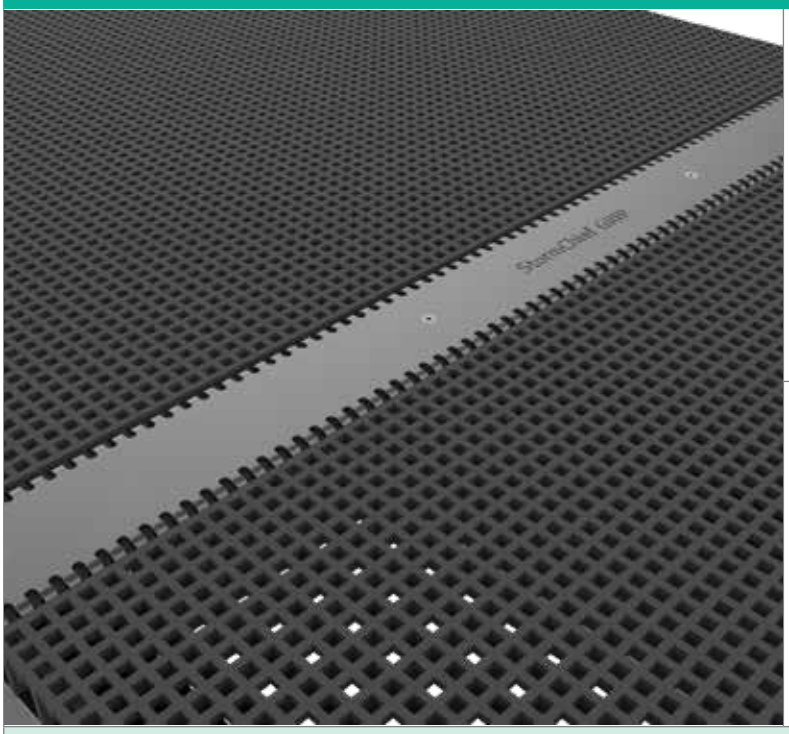


Elevation View



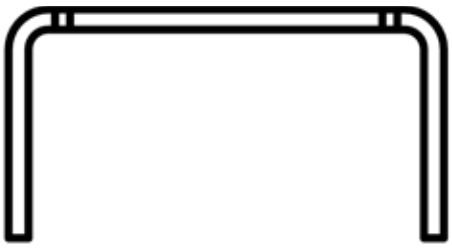
The StormChief CLAW® is a heavy duty 316 Stainless Steel grating fixing bracket that is designed to meet and exceed specifications for wave zone loadings. With integrated fingers that protrude into the grating aperture, the StormChief CLAW® provides secure fastening in even the harshest of coastal conditions. Used exclusively in conjunction with the StormChief® Hybrid System, it ensures simple, strong and rapid installation.

## StormChief CLAMP®



Plan View

Elevation View



The StormChief CLAMP® is a rugged stainless steel clamping bracket that is designed to meet and exceed the requirements of extreme wave zone loadings. The StormChief CLAMP® is a unique clamping system designed by Treadwell to seamlessly join two sheets of grating along one edge. This clip is easily recessed into the grating to ensure minimal trip hazard, making it ideal for public access areas that are subject to harsh coastal conditions.

## GTX-SC-TOOL

## StormChief® Recess Tool

1. Exclusively for use with the StormChief® DISC grating fastening system.
2. This allows for recessing to be carried out on site.
3. All other StormChief® fastening systems require recessing to be undertaken in Treadwell's factory before on-site installation.

## WARRANTY

Treadwell offers a bespoke warranty for the StormChief® grating fastening system, provided the following conditions are satisfied:

1. Treadwell prepares the product system and associated attachment hardware drawings and details, and supplies the product system and associated hardware for the product system; and

2. Treadwell is permitted to inspect the installation of the particular product system, or be permitted access to the work for final inspection and approval, and recommend the necessary corrections, if required;

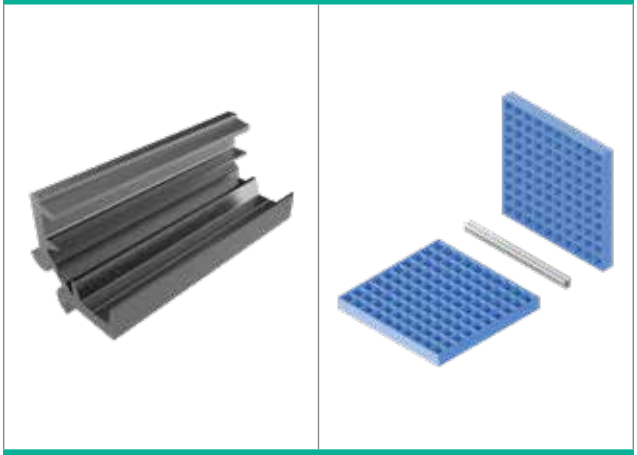
3. In the event of product dissatisfaction, Treadwell be permitted access to the site for the purpose of verifying that the complaint is a direct result of Treadwell's design and/or installation.

For further information, contact your Treadwell representative.

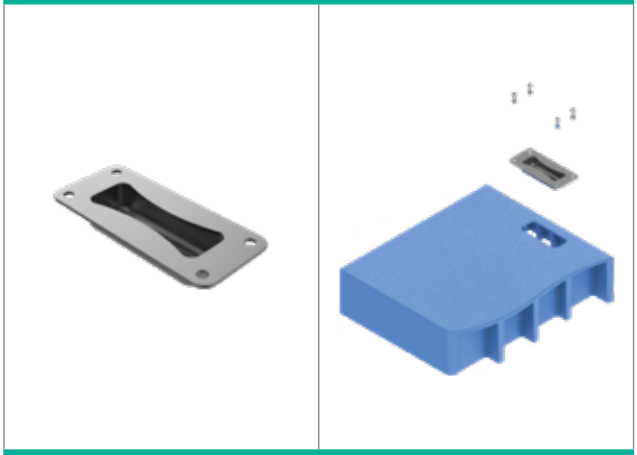
## Access Hatches, Handles & Hinge Systems

Treadwell can custom design any type of cover or hatch using GratEX® Solid Surface Mesh and can simply and effectively make these lockable, removable and even hinged through the use of standard and custom ancillary products such as handles, hinges, frames and cam locks.

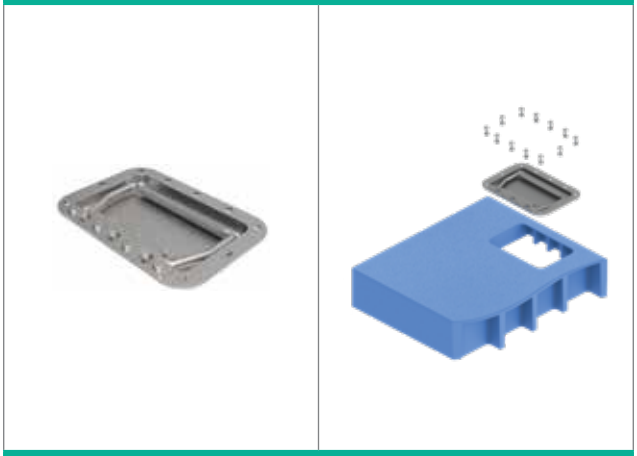
### EX-Series® Non-Metallic Hinge



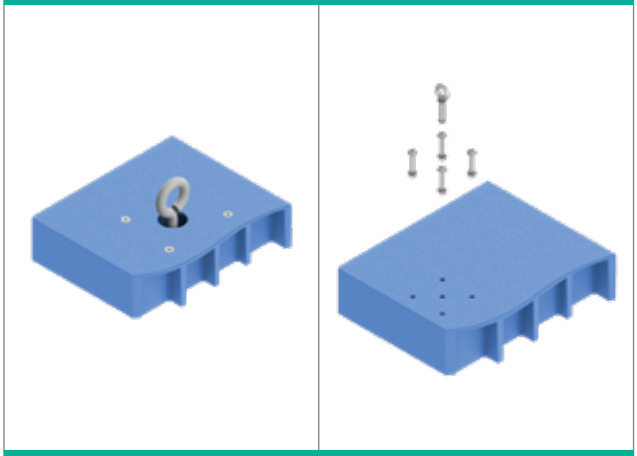
### EX-Series® Non-Metallic Recessed Handle



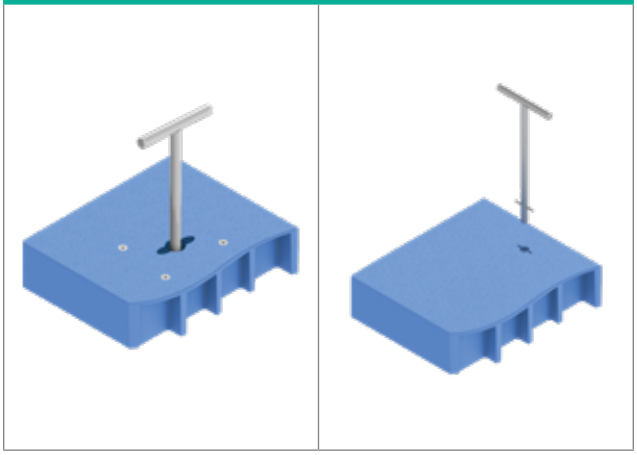
### EX-Series® Spring Loaded Handle



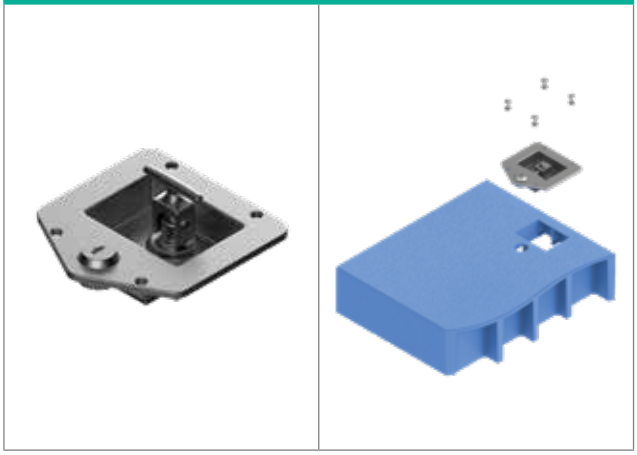
### EX-Series® Eyelet Lift Kit



### EX-Series® T-Bar Handle/Keyhole Lift Kit



### EX-Series® Lockable Handle



Not drawn to scale

# COLOSSUS

## False Floor Pedestal System

This unique range of non-metallic adjustable screw-jack elevated flooring pedestals offer uninterrupted adjustability and can support loads of more than 1,000 kg per pedestal. They can be adjusted to compensate up to 5% pitch, or compensate for locally uneven sub-bases up to the same amount. Once pedestals are at the required height (uninterruptedly adjustable between 17mm – 1070mm), their height can be locked / fixed with the fix collar.

### Joist Cradle

(40mm/50mm/60mm/80mm)
Support for any kind of substructure:

- timber batten(joists)
- composite battens
- aluminium or steel support sections Width of the support:up to 80mm. Fixing holes on both sides of support for mechanical fixing.

### Head

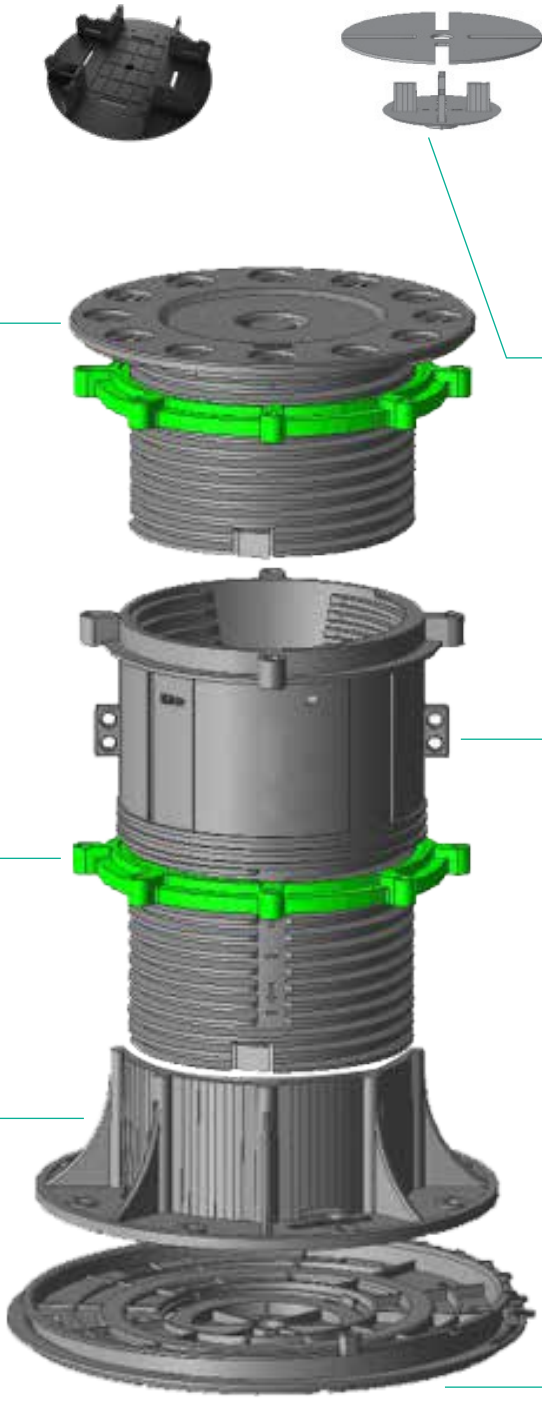
The head of the support is screwed directly on to the base, or on to the extender.Diameter of 150 mm, can be fitted with various components to support differing surfaces.

### Fix collar

Fix and lock the screws after adjustment, ensure pedestals are secured at desired heights and are easily removed when not required.

### Base

The base can be simply positioned or fixed to any substrate.



### Shim

(1mm/2mm/sloped) For use with marble, stone slabs, granite pavers,etc. for:

- added anti-slip performance
- shock and sound absorption
- compensation for stone thickness variation

### Spacer tabs

(2mm/3.5mm/5mm/8mm/10mm)
The head can be fitted with spacer tabs, to give the desired opening between tiles (for water drainage and ventilation).

### Extender

Extend and add height of adjustable pedestal Diameter 120mm

### Base slope corrector

Adjustable between 0% - 5%.

Contact Treadwell with your project requirements.

| Code | Height Range (mm) | Working Load (Kg) | | | Maximum Load (Kg) | | |
|---|---|---|---|---|---|---|---|
| | | Entire | Half | Quarter | Entire | Half | Quarter |
| GTX-PD-13 | 13 | 1630 | 1356 | 1195 | 2650 | 2439 | 1989 |
| GTX-PD-16 | 16 | 1625 | 1347 | 1189 | 2677 | 2468 | 1967 |
| GTX-PD-14-19 | 14-19 | 980 | 786 | 620 | 1350 | 1162 | 982 |
| GTX-PD-19-30 | 19-30 | 965 | 798 | 669 | 1298 | 1089 | 995 |
| GTX-PD-28-42 | 28-42 | 955 | 820 | 683 | 1250 | 1060 | 965 |
| GTX-PD-40-65 | 40-65 | 975 | 765 | 652 | 1325 | 1136 | 925 |
| GTX-PD-60-105 | 60-105 | 925 | 735 | 698 | 1386 | 1298 | 970 |
| GTX-PD-90-180 | 90-185 | 920 | 730 | 690 | 1356 | 1150 | 968 |
| GTX-PD-180-320-K | 185-320 | 926 | 760 | 685 | 1365 | 1159 | 965 |
| GTX-PD-250-370-K | 250-370 | 915 | 726 | 650 | 1265 | 1120 | 925 |
| GTX-PD-370-560-K | 370-560 | 926 | 739 | 625 | 1290 | 1129 | 920 |
| GTX-PD-500-760-K | 500-760 | 915 | 725 | 630 | 1285 | 1090 | 915 |
| GTX-PD-600-930-K | 600-930 | 925 | 719 | 626 | 1129 | 1125 | 890 |
| GTX-PD-750-1100-K | 750-1100 | 910 | 725 | 652 | 1025 | 1100 | 860 |
| GTX-PD-900-1260-K | 900-1260 | 850 | 710 | 620 | 1260 | 1120 | 810 |

Values are based off conservative calculations.

# EX-Series® RailEX®

TREADWELL

# Contents

## RailEX® ROUND




**Please consult our EX-Series® RailEX® Handrail Product Guide for more information.**

# RailEX® ROUND Tubular Handrail

## What is RailEX® ROUND Tubular Handrail?

Treadwell's RailEX® ROUND Tubular Handrail is an industrial rated composite handrail system which combines strength, durability and versatility meaning the system is ideal for use in numerous applications in a vast range of industries. Treadwell can supply RailEX® as either components or as fabricated handrail panels ready for installation.

**Smart Transposable Designs**

Unlike traditionally welded alternatives, Treadwell FRP handrail system disposes the need for drafting, engineering and onsite fabrication while minimising installation costs. Treadwell's safety handrail systems can be adapted or extended with additional components, or cut to size onsite. Pre-engineered kits are supplied as a series of components with simple assembly instructions. With our clients in mind, Treadwell aims to minimise the cost of maintenance and repairs, and damaged components easily with readily available parts and stock.

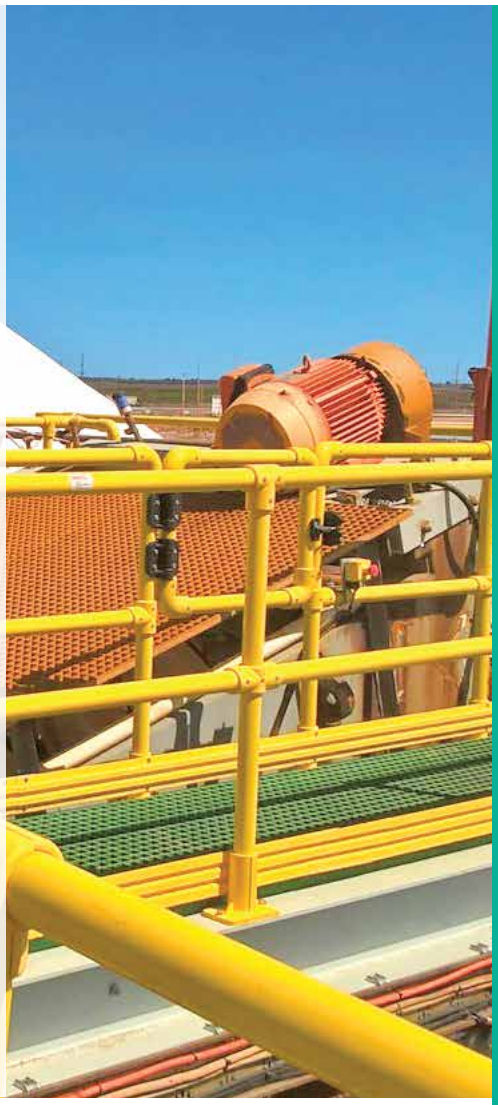
**Simple Zero Weld Assembly**

As an added benefit, fibreglass handrail kits are assembled using a simple, zero weld construction method; reducing the chances for corrosion activation. Treadwell's RailEX® designs and fittings effectively eliminate the need for specialist trades, hot works permits, fire spotters and welding protection to finished surfaces. Our selection of FRP increases safety conditions for installers by eliminating toxic fumes, welding in wet areas and fire risk hazards.

Developed by Treadwell with the input of designers, and of course plan operators, this system offers you all benefits of traditional guardrail systems without the inherent problems - corrosion, welding and hot works permits for onsite modifications. This unique system is a first to be tested and conform with Australian Standards AS 1657. RailEX® is the 'fit and forget' handrail system.

NATA APPROVED

AS 1657 This product conforms to AS1657



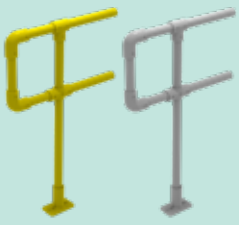
## RailEX® Features and Benefits vs. Traditional Alternatives

| | RailEX® | Stainless Steel | Galvanised Steel | Aluminium | Timber |
|---|---|---|---|---|---|
| Chemical Resistance | ●●●●● | ●●●● | ● | ●●● | ●●●● |
| Strength | ●●●●● | ●●●●● | ●●●●● | ●●●●● | ●● |
| Lightweight | ●●●●● | ● | ● | ●●●●● | ●● |
| Electrical Resistance | ●●●●● | ● | ● | ●●●●● | ●●●●● |

### EX-Series® Standard Colours

Treadwell's Standard Colours are Safety Yellow and Silver Grey.

Contact Customer Service on 1800 246 800 or email us at sales@treadwellgroup.com.au for custom requirements – custom colours are available on request.



### Did You Know?

Treadwell has the resource and expertise to fabricate handrail to your exact requirements. Furthermore, we specialize in drafting to save you the bother. See page 18 for more details.

## FAQ's

### Dubious about the actual strength of FRP handrail?

**Q:** Are RailEX® handrails are the strongest type of non-metallic handrail available?

**A:** They are, based on equal product weights comparison. For increased strength and stiffness, RailEX® handrail panels incorporate glass reinforcing what no other plastic handrail features; for example, polypropylene handrails, which can be simply welded and are light-weight, will be affected by a much smaller temperature range than FRP and will not retain their structural integrity, especially on hot days outdoors. Likewise, for additional strength, RailEX® panels typically contain 15-20% more reinforcing content (glass) in comparison to alternative FRP handrail systems on the market.

### You're perhaps au fait with metal, but not FRP?

**Q:** How simply can I modify RailEX® handrail on site or even once it is installed?

**A:** Very simply. All that will be required is the correct tools to undertake the job, which consist mainly of simple carpenters' tools. All fittings are mechanically fastened and can be simply released by undoing fixings.

### FRP handrail - why, when the frame must be metal?

**Q:** Is there a lot of point utilising RailEX® handrails, even though we are working in a corrosive environment, if frame work will be being built out of mild steel due to stainless steel not being viable?

**A:** Certainly there is. For industrial applications, Treadwell offers a family of FRP building products including structural shapes, grating, cladding and roofing, louvres, ridge vents & many other non-corrosive solutions, and our expertise includes in-house design and fabrication services.

### How can you guarantee RailEX® will last outdoors?

**Q:** Does RailEX® offer better UV protection that alternative FRP materials?

**A:** Yes, RailEX® has additional means of UV protection. RailEX®, which is only ever produced with premium EX-Series® Resin Systems, incorporates an optimum amount of UV inhibitors and stabilisers within the material. For longevity of surface serviceability, RailEX® surface veils are pre-finished with a factory applied two pack surface coating.

### One of the most common questions asked is about the cost of Treadwell products.

**Q:** How does RailEX® compare to stainless steel in price?

**A:** Treadwell's FRP materials are normally less than the cost of stainless steel.

**Q:** How does RailEX® compare to carbon steel in price?

**A:** Treadwell's FRP materials are generally more expensive than carbon steel when comparing material costs. However, when factoring in installation, handling, transportation and other associated expenses, the total installed cost of FRP is therefore more competitive.

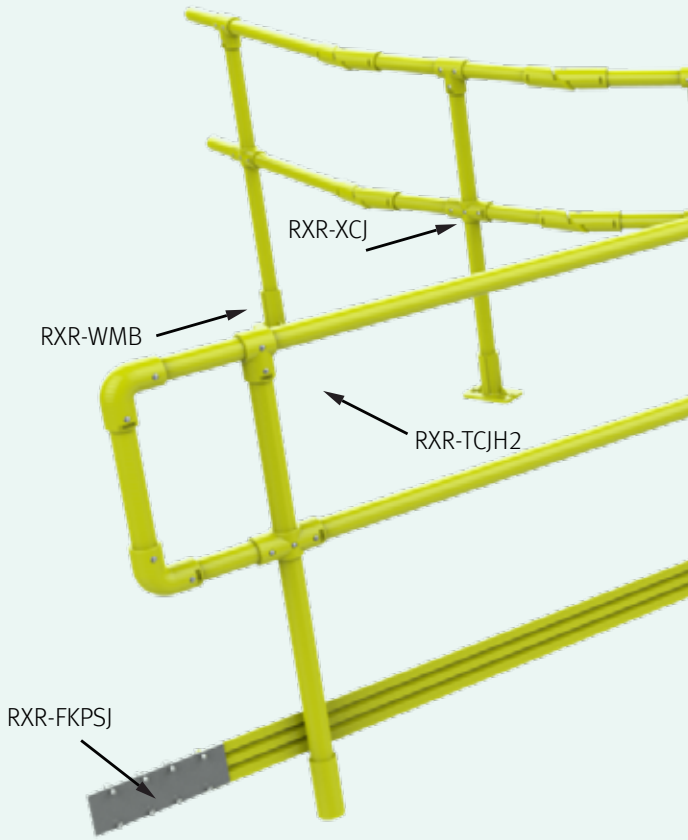
**Q:** How does RailEX® compare to aluminium in price?

**A:** Treadwell's FRP materials are usually priced competitively with aluminium and the total installed cost generally makes FRP a more price competitive choice than aluminium.

**Q:** How does RailEX® compare to wood in price?

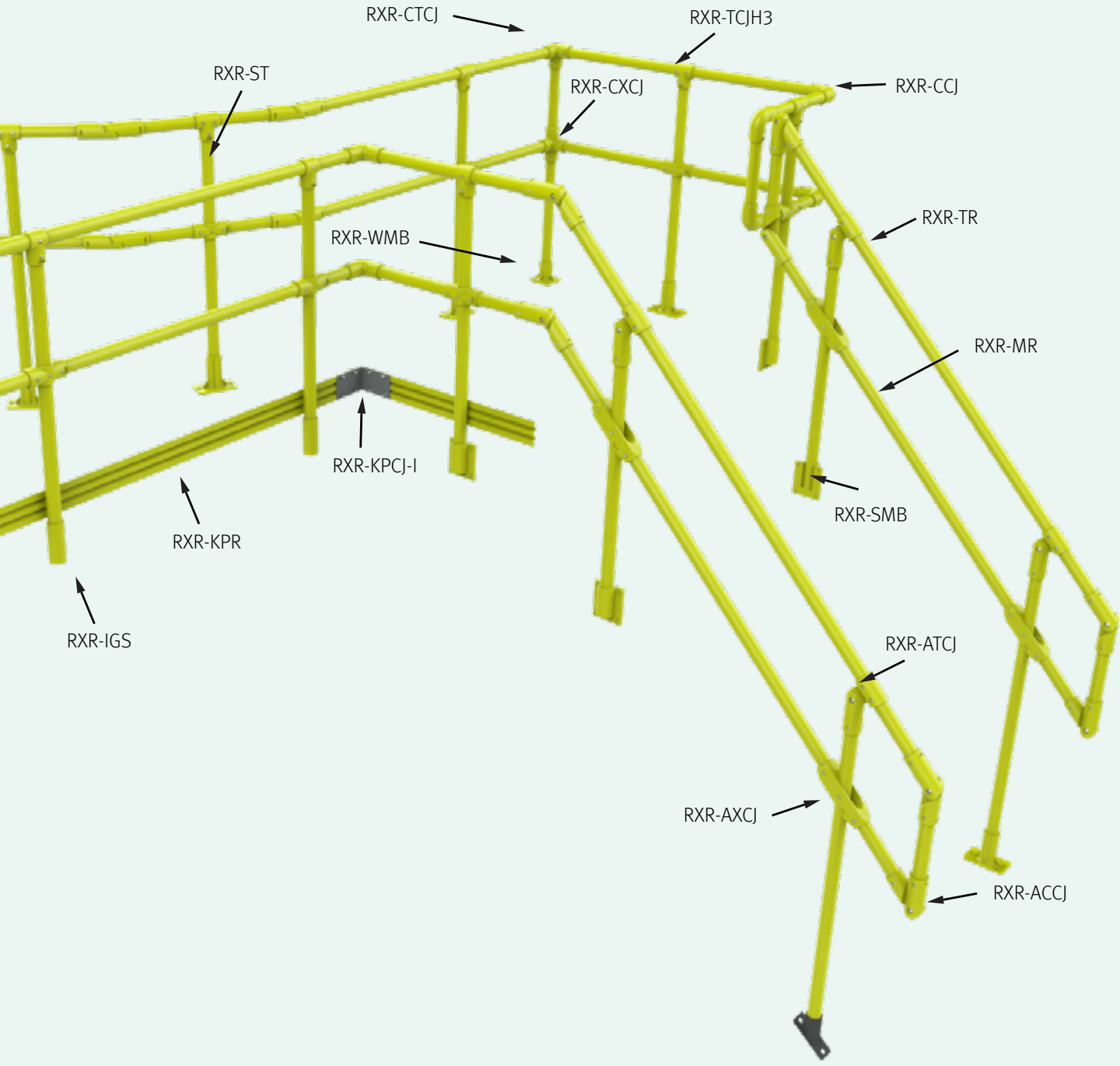
**A:** Treadwell's FRP materials cannot compete with wood on price alone. Customers considering using FRP in place of wood should evaluate the strength, not the resistance and overall performance requirements for the application and choose the best material accordingly.

# RailEX® Rou




This illustration is for parts visualization only and does not represent an actual layout.

# ND Overview

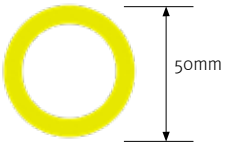

RXR-CTCJ
RXR-TCJH3
RXR-ST
RXR-CXCJ
RXR-CCJ
RXR-TR
RXR-WMB
RXR-MR
RXR-KPCJ-I
RXR-SMB
RXR-KPR
RXR-IGS
RXR-ATCJ
RXR-AXCJ
RXR-ACCJ

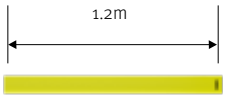
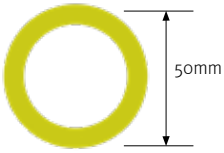
## RailEX® ROUND Componentry

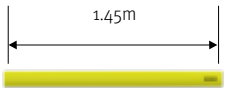
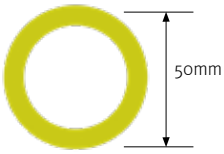
Developed to complement Treadwell's range of corrosion resistant structural solutions, RailEX® offers you the ideal solution for the harshest of destructive, chemical, laden environments, both inside and out.

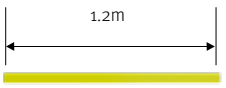
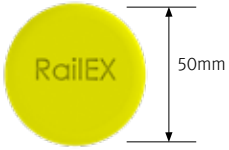
All of the RailEX® components are completely constructed from fibreglass reinforced plastic (FRP) and are coated with a two pack UV resistant coating to provide the peace of mind that premature breakdown of the product will not result from exposure to elements.

Standard Rail & Post Componentry

| RXR-TR | 3D | PLAN | ELEVATION |
|---|---|---|---|
| **Description:** Standard ROUND Fibreglass Top Rail **Length**: 3 metres |  |   |   |

| RXR-ST | 3D | PLAN | ELEVATION |
|---|---|---|---|
| **Description:** Standard ROUND Fibreglass Stanchion **Length**: 1.2 metres |  |   |   |

| RXR-MR | 3D | PLAN | ELEVATION |
|---|---|---|---|
| **Description:** Standard ROUND Fibreglass Mid Rail **Length**: 1.45 metres |  |   |   |

| RXR-ST-S | 3D | PLAN | ELEVATION |
|---|---|---|---|
| **Description:** Solid ROUND Fibreglass Stanchion Closed End **Height**: 1.2 metres |  |   |   |

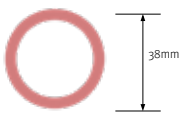
Standard Componentry

| RXR-CCJ | 3D | ELEVATION | CROSS SECTION |
|---|---|---|---|
| **Description:** Standard ROUND Fibreglass 90° Corner Connection Joint<br>**Fixings Required:** 2 x RXR-SFK06TL<br>**Parts/Unit**: Two |  |  |  |

| RXR-XCJ | 3D | ELEVATION | CROSS SECTION |
|---|---|---|---|
| **Description:** Standard ROUND Fibreglass Cross Connection Joint<br>**Fixings Required:** 3 x RXR-SFK06TL<br>**Parts/Unit**: Two |  |  |  |

| RXR-TCJH2 | 3D | ELEVATION | CROSS SECTION |
|---|---|---|---|
| **Description:** Standard ROUND Vertical Fibreglass Connection Joint<br>**Fixings Required:** 2 x RXR-SFK06TL<br>**Parts/Unit**: Two |  |  |  |

| RXR-TCJH3 | 3D | ELEVATION | CROSS SECTION |
|---|---|---|---|
| **Description:** Standard ROUND Horizontal Fibreglass Tee Connection Joint (three holes)<br>**Fixings Required:** 3 x RXR-SFK06TL<br>**Parts/Unit**: Two |  |  |  |

| RXR-TRJ | 3D | ELEVATION | CROSS SECTION |
|---|---|---|---|
| **Description:** Standard ROUND Fibreglass Top Rail Joiner (to be used in conjunction with the RXR-TCJH3 and RXR-TRC)<br>**Parts/Unit**: One |  |  |  |

Standard Componentry

## RXR-RCJ

| 3D | ELEVATION | CROSS SECTION |
|---|---|---|
|  |  |  |

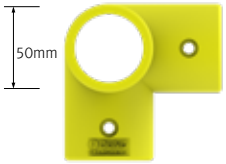
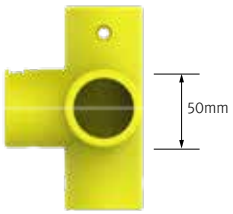
**Description:**
Standard ROUND Fibreglass Straight Connector
**Fixings Required:**
2 x RXR-SFK06TL
**Parts/Unit**: Two

## RXR-CTCJ

| 3D | ELEVATION | PLAN |
|---|---|---|
|  |  |  |

**Description:**
Standard ROUND Fibreglass Corner Tee Connection Joint
**Fixings Required:**
3 x RXR-SFK06TL
**Parts/Unit**: Two

## RXR-CXCJ

| 3D | ELEVATION | PLAN |
|---|---|---|
|  |  |  |

**Description:**
Standard ROUND Fibreglass Corner Cross Connection Joint
**Fixings Required:**
4 x RXR-SFK06TL
**Parts/Unit**: Two

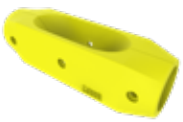
Adjustable Componentry

## RXR-ACCJ

| 3D | ELEVATION | PLAN |
|---|---|---|
|  |  |  |

**Description:**
Adjustable ROUND Fibreglass Corner Joint
**Fixings Required:**
2 x RXR-SFK06TL
1 x RXR-SFK10
**Parts/Unit**: Two

## RXR-AXCJ

| 3D | ELEVATION | PLAN |
|---|---|---|
|  |  |  |

**Description:**
Adjustable ROUND Fibreglass Cross Connection Joint
**Fixings Required:**
3 x RXR-SFK06TL
**Parts/Unit**: Two

Fasteners are available separately.

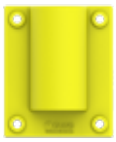
Mounting Componentry

## RXR-ATCJ

| 3D | ELEVATION | PLAN |
|---|---|---|
|  |  |  |

**Description:**
Adjustable ROUND Fibreglass Tee Connection Joint
**Fixings Required:**
3 x RXR-SFK06TL
1 x RXR-SFK10
**Parts/Unit**: Three

## RXR-SMB

| 3D | ELEVATION | PLAN |
|---|---|---|
|  |  |  |

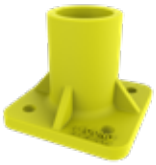
**Description:**
Standard ROUND Fibreglass Side Mounting Bracket
**Parts/Unit**: One

## RXR-NMB

| 3D | ELEVATION | PLAN |
|---|---|---|
|  |  |  |

**Description:**
Standard ROUND Fibreglass Narrow Mounting Bracket
**Parts/Unit**: One

## RXR-WMB*

| 3D | ELEVATION | PLAN |
|---|---|---|
|  |  |  |

**Description:**
Standard Fibreglass Wide Base Mounting Bracket
**Parts/Unit**: One
Not recommended as a stanchion base.

## RXR-IGS

| 3D | ELEVATION | PLAN |
|---|---|---|
|  |  |  |

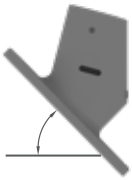
**Description:**
Standard ROUND In-Ground Sleeve Mounting Bracket
**Parts/Unit**: One

Fasteners depend on use. Please speak to us for more information.

*RXR-WMB does not comply to AS1657.

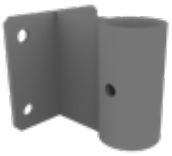
## Mounting Componentry

### RXR-ATMB-2.0-316

| 3D | ELEVATION | PLAN |
|---|---|---|
|  |  |  |

**Description:**
Angled ROUND top mount bracket SS316
**Fixings Type:** SS316 M8 Hex Head
**Parts/Unit**: One
*Angle is customisable between 20° to 45° to meet AS 1657.*

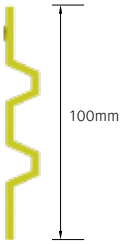
### RXR-SMB-SS316

| 3D | ELEVATION | PLAN |
|---|---|---|
|  |  |  |

**Description:** ROUND Side Mounting Bracket 316 Stainless SFK10 offset: to be nominated
**Fixings Type:** SS316 M8 Hex Head
**Parts/Unit**: One

## Kick Plate Componentry

### RXR-KPR

| 3D | ELEVATION | PLAN |
|---|---|---|
|  |  |  |

**Description:**
Standard Fibreglass Kick Plate Regular. Affix to Stanchion with RXR-KSF or RXR-RF
**Fixings Required:** RXR-KSF
**Parts/Unit**: One

### RXR-FKPCJ

| 3D | ELEVATION | PLAN |
|---|---|---|
|  |  |  |

**Description:**
Standard Fibreglass Kick Corner Joiner
**Fixings Required:** RXR-RF
**Parts/Unit**: One

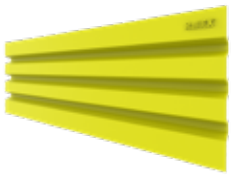
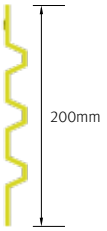
### RXR-FKPSJ

| 3D | ELEVATION | PLAN |
|---|---|---|
|  |  |  |

**Description:**
Standard Fibreglass Kick Plate Straight Joiner
**Fixings Required:** RXR-RF
**Parts/Unit**: One

Fasteners are available separately.

Kick Plate Componentry

| RXR-KPH | 3D | ELEVATION | PLAN |
|---|---|---|---|
| **Description:** Standard Fibreglass Kick Plate High. Affix to Stanchion with RXR-KSF or RXR-RF<br>**Fixings Required:** RXR-KSF<br>**Parts/Unit**: One |  |  |  |

Fixing Componentry

| RXR-SFK10 | 3D | ELEVATION | PLAN |
|---|---|---|---|
| **Description:** Standard Stainless Steel Fastener Kit M10 (stock item)<br>**Fixings Required:** N/A<br>**Parts/Unit**:Three |  |  |  |

| RXR-SFK06TL | 3D | ELEVATION | PLAN |
|---|---|---|---|
| **Description:** Standard Stainless Steel Fastener Kit M6 with Trilobular Head (stock item)<br>**Fixings Required:** N/A<br>**Parts/Unit**:Three |  |  |  |

| RXR-RF1 | 3D | ELEVATION | PLAN |
|---|---|---|---|
| **Description:** Standard Stainless Steel Rivet Fastener<br>**Fixings Required:** N/A<br>**Parts/Unit**: One |  |  |  |

Fasteners should be installed with a threadlock, such as Loctite, when installed in an area where vibration is prevalent.

Fixing Componentry

| RXR-KSF | 3D | ELEVATION | PLAN |
|---|---|---|---|
| **Description:** Standard Stainless Kick Plate to Stanchion Fastener Kit<br>**Fixings Required:** N/A<br>**Parts/Unit**: Four |  |  |  |

Fixing Componentry

| RXR-SFK06-TLD | 3D | ELEVATION | PLAN |
|---|---|---|---|
| **Description:** Standard Stainless Steel Driver Kit M6 Type with Trilobular Head<br>**Fixings Required:** N/A<br>**Parts/Unit**: One |  |  |  |

| RXR-SFK06-TLID | 3D | ELEVATION | PLAN |
|---|---|---|---|
| **Description:** Standard Stainless Steel Trilobular Head Impact Drill Head<br>**Fixings Required:** N/A<br>**Parts/Unit**: One |  |  |  |

| RXR-SFK06-TLD-K | 3D | ELEVATION | PLAN |
|---|---|---|---|
| **Description:** Standard Stainless Steel Install Kit with Driver and Impact Drill Head M6 Type with Trilobular Head<br>**Fixings Required:** N/A<br>**Parts/Unit**: One |  |  |  |

# RailEX® Side Mounting Offset Block

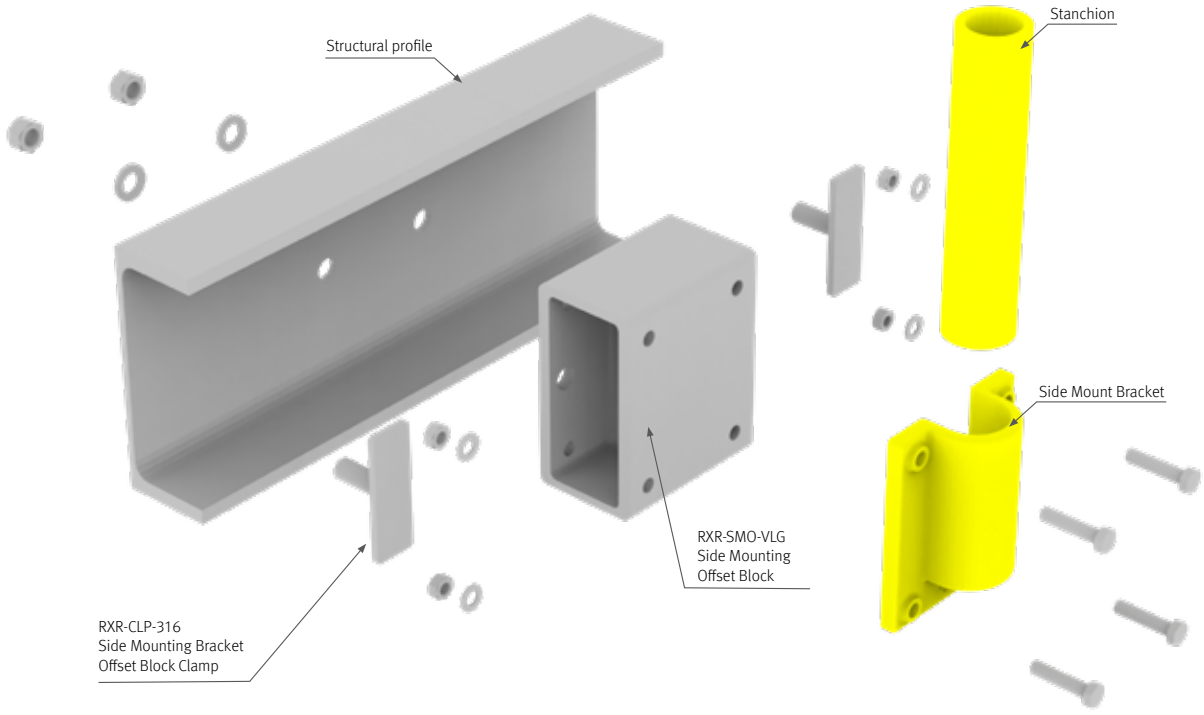
## RailEX® ROUND Componentry

This handrail Side Mounting Offset (SMO) block has been designed to make it easier to install RailEX® FRP Handrails in areas where a side-mounted offset metallic handrail has been previously used. Constructed with Fibreglass Reinforced Plastic (FRP), its naturally corrosion-resistant characteristics eliminate concerns associated with dissimilar metals that can occur with aluminium or stainless-steel handrails.

The SMO block adapts the RailEX® SMB 4-Bolt pattern to a commonly used 2-Bolt pattern generally found with steel and other conventional handrail products. This further simplifies installation and makes it easier to utilise FRP Handrail.

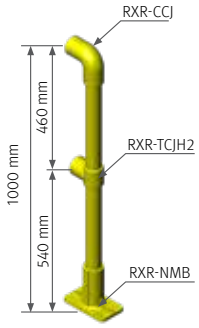
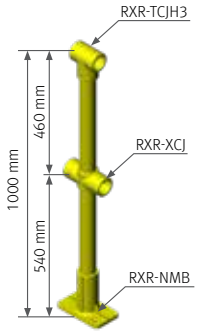
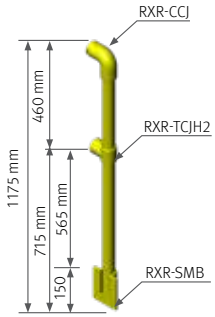
These are paired with RailEX® side mount brackets, which attach directly to the mounting surface, with the offset block acting as an intermediary. Our designs include pre-drilled holes for fasteners to simplify installation. These components are especially useful in staircases, ramps, and safety barriers. Their versatility, combined with customisable options, makes offset blocks a practical solution for achieving secure, professional, and code-compliant handrail installations.

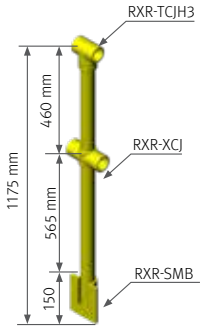
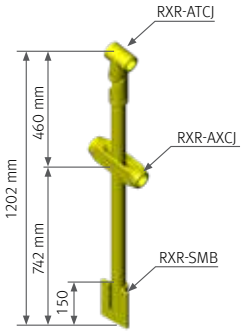
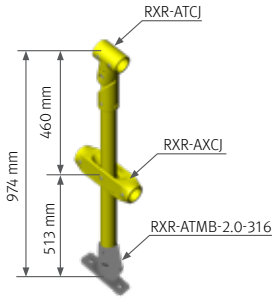
### Product Overview

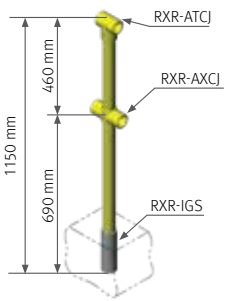
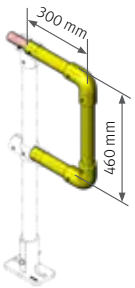


# RailEX® ROUND Stanchion Kits

Treadwell has created options of RailEX® handrail stanchion kits. This ensures that all the required parts are included, making for easy planning and installation. Please note that the list below is just a selection of our most popular handrail assemblies. For a more comprehensive selection, please consult our RailEX® Product Guide .

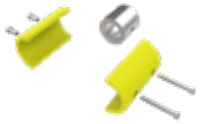
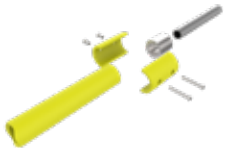
| RXR-SK-EN-VY-K | RXR-SK-SN-VY-K | RXR-SK-ES-VY-K |
|---|---|---|
| RailEX® ROUND Stanchion Sales Kit, End Stanchion with Narrow Mounting Bracket, V-Series® Safety Yellow, including Stainless Steel Fasteners. | RailEX® ROUND Stanchion Sales Kit, Standard Stanchion with Narrow Mounting Bracket, V-Series® Safety Yellow, including Stainless Steel Fasteners. | RailEX® ROUND Stanchion Sales Kit, End Stanchion with Side Mounting Bracket, V-Series® Safety Yellow, including Stainless Steel Fasteners. |
|  |  |  |
| NOTE: Assembly excludes fasteners to connect to structure. | | |

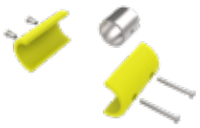
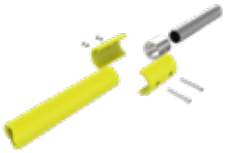
| RXR-SK-SS-VY-K | RXR-SK-AS-VY-K | RXR-SK-AA-VY-K |
|---|---|---|
| RailEX® ROUND Stanchion Sales Kit, Standard Stanchion with Side Mounting Bracket, V-Series® Safety Yellow, including Stainless Steel Fasteners. | RailEX® ROUND Stanchion Sales Kit, Adjustable Stanchion with Side Mounting Bracket, V-Series® Safety Yellow, including Stainless Steel Fasteners. | RailEX® ROUND Stanchion Sales Kit, Adjustable Stanchion with Angled Round Top Mount Bracket, V-Series® Safety Yellow, including Stainless Steel Fasteners. |
|  |  |  |
| NOTE: Assembly excludes fasteners to connect to structure. | | |

| RXR-SK-SI-VY-K | RXR-SK-SC-VY-K |
|---|---|
| RailEX® ROUND Stanchion Sales Kit, Standard Stanchion with In-Ground Sleeve Mounting Bracket, V-Series® Safety Yellow, including Stainless Steel Fasteners. | RailEX® ROUND Stanchion Sales Kit, Adjustable Stanchion with Side Mounting Bracket, V-Series® Safety Yellow, including Stainless Steel Fasteners. |
|  |  |
| NOTE: Assembly excludes fasteners to connect to structure. | |

# RailEX® ROUND Typical Sections

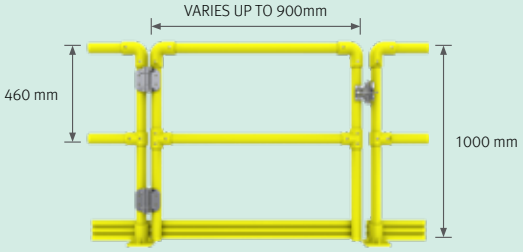
Fixing Componentry

| RXR-RCJ-VY-25NBMKIT | 3D | ELEVATION | PLAN |
|---|---|---|---|
| **Description:** RailEX® ROUND Standard Rail Fibreglass Rail Joiner/Coupler Kit, Safety yellow with sleeve for 25NB Rail<br>**Fixings Required:** N/A<br>**Parts/Unit**: Seven |  |  |  |

| RXR-RCJ-VY-32NBMKIT | 3D | ELEVATION | PLAN |
|---|---|---|---|
| **Description:** RailEX® ROUND Standard Rail Fibreglass Rail Joiner/Coupler Kit, Safety yellow with sleeve for 32NB Rail<br>**Fixings Required:** N/A<br>**Parts/Unit**: Seven |  |  |  |

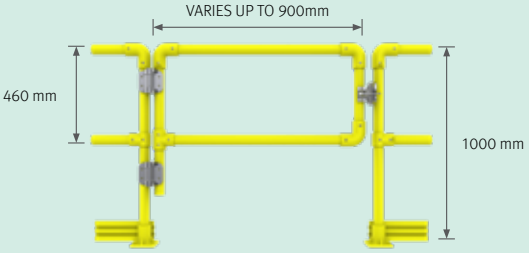
# RailEX® Self Closing Gates

## RailEX® Premium Gate RXR-SK-PG-VY




Brief:
Premium RailEX® gates are supplied with kick plates for added safety and awareness around sites.

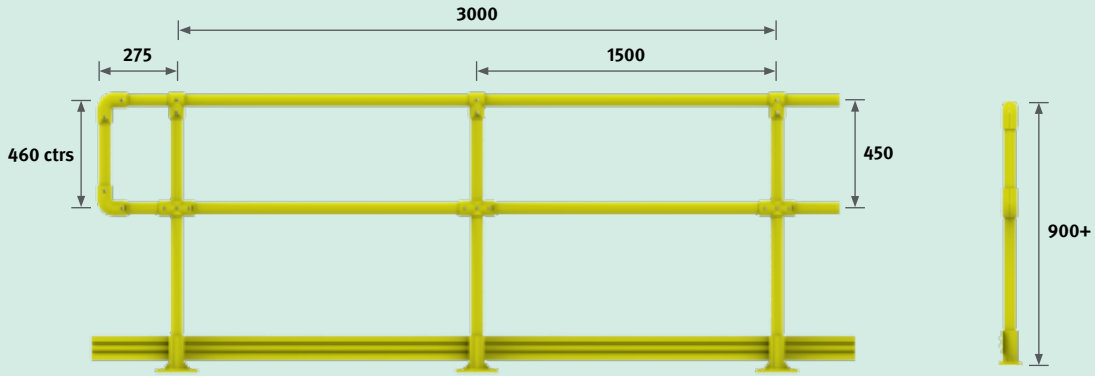
## RailEX® Economy Gate RXR-SK-EG-VY




Brief:
A solid industrial safety gate, the economy RailEX® self-closing gate features a spring-loaded mechanism which increases safety in any environment by automatically closing behind after use.

# RailEX® ROUND Typical Sections

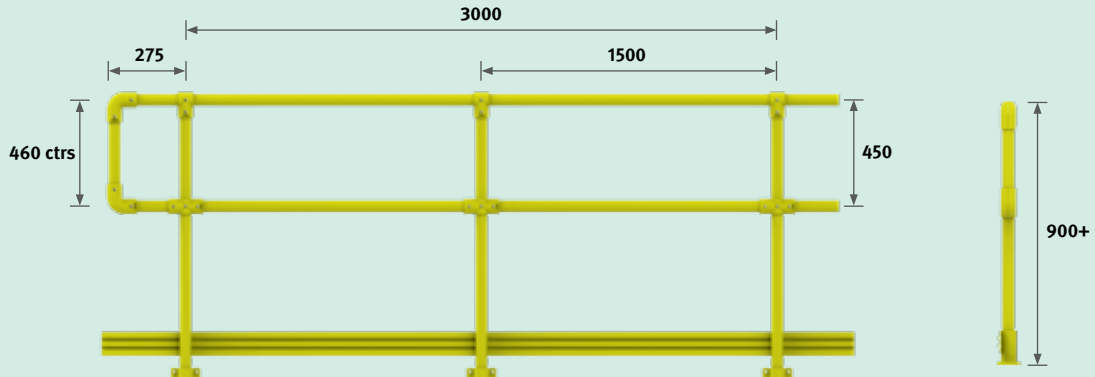
## Top Mounted Section




SIDE VIEW

END VIEW

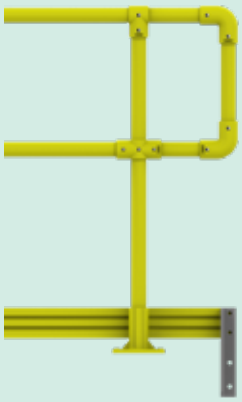
## Side Mounted Section



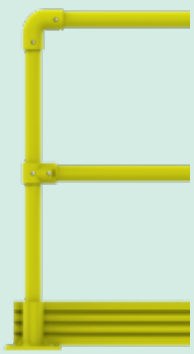

SIDE VIEW

END VIEW

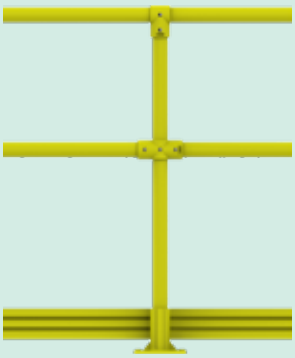
## Closure Bend section



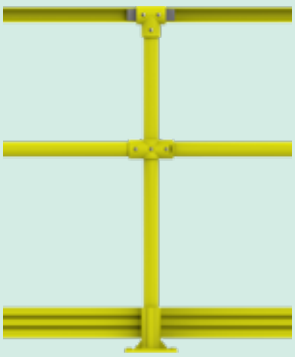
## End Stanchion Section



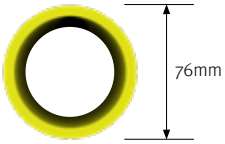
## Continual Top Rail Section



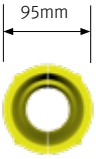
## Top Rail Join Section

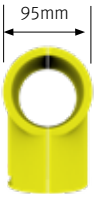


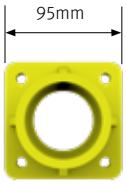
# RailEX® JUMBO Typical Sections

| RXJ-R | 3D | PLAN | ELEVATION |
|---|---|---|---|
| **Description:**<br>Standard ROUND Fibreglass Top Rail |  |  |  |

| RXJ-CCJ | 3D | ELEVATION | CROSS SECTION |
|---|---|---|---|
| **Description:**<br>RailEX JUMBO Standard Fibreglass 90° Corner Connection Joint<br>**Parts/Unit**: Two |  |  |  |

| RXJ-XCJ | 3D | ELEVATION | CROSS SECTION |
|---|---|---|---|
| **Description:**<br>RailEX JUMBO Standard Fibreglass Cross Connection Joint<br>**Parts/Unit**: Two |  |  |  |

| RXJ-TCJH2 | 3D | ELEVATION | CROSS SECTION |
|---|---|---|---|
| **Description:**<br>RailEX JUMBO Standard Fibreglass Two Hole Tee Connection Joint<br>**Fixings Required:**<br>2 x RXR-SFK06TL<br>**Parts/Unit**: Two |  |  |  |

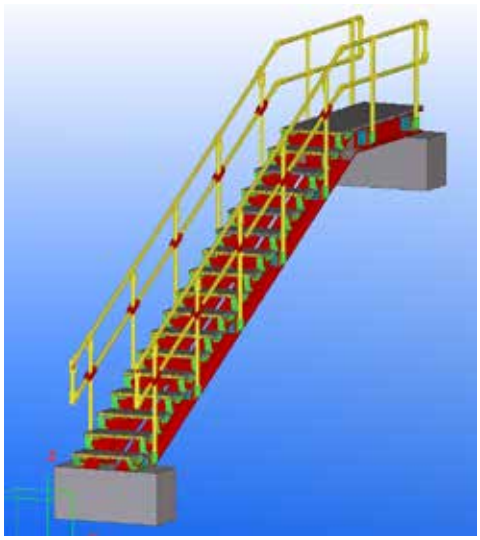
| RXJ-WMB | 3D | ELEVATION | CROSS SECTION |
|---|---|---|---|
| **Description:**<br>RailEX JUMBO Standard Fibreglass Wide Mounting Bracket |  |  |  |

Note: JUMBO handrails are not AS1657 compliant.

# RailEX® ROUND Engineering & Design Assistance

CAD

**Because Treadwell is ever conscious that designers are a key stakeholder in our business, we have made the entire RailEX® componentry range available in several electronic file configurations. Contact us on 1800 246 800 to request your copy immediately.**



## Engineering Design & Assistance

Treadwell specialises in supplying handrail panels manufactured to suit your exact requirements.

From initial design through to site delivery, Treadwell has the expertise and capacity to provide a turnkey handrail solution. From drafting or design, through to fabrication of handrail panels or modules and delivery as well. Treadwell can organise the lot for you.

All Treadwell requires in order to undertake this service is the outline of parameters from you to which the handrail needs to be manufactured and our experienced design team can produce a detailed set of design drawings. These will then be submitted for client review and approval prior to being released to the Treadwell manufacturing department for actual fabrication.

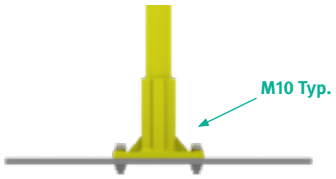
This saves you excessive site labour costs, makes for fast and efficient onsite installation and ensures you will end up with a satisfactory and professional finished product.

Treadwell's RailEX® gates are self-closing and are designed to attach to RailEX® stanchions. Both Economy and Premium gates can also be simply fitted to LadderEX® ROUND & SQUARE Grab Stiles. Single gates should not exceed 900mm.

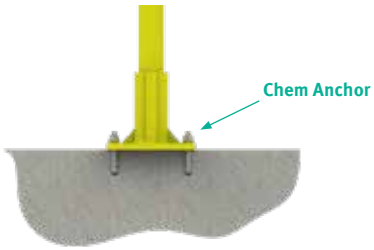
## RailEX® ROUND Typical Mounting Suggestions

### RailEX® ROUND Typical Mounting Suggestions

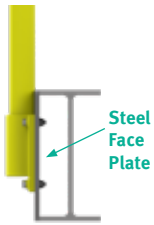
**Surface Mounted to Steel Section***



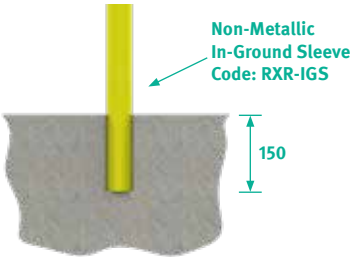

**Surface Mounted to Concrete***



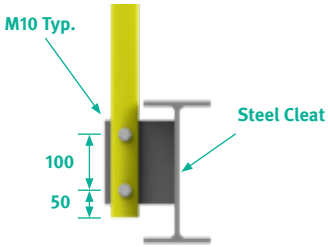

**Side Mounted to Steel***



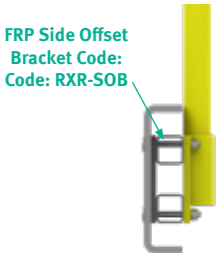

**Removable Mounting to Concrete**




**Off-Set Mounting to Steel section**




**Side Off-Set Mounting to FRP/Steel***




*Note: Top and side mount bases are friction fit. Adhesive is optional.

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# RailEX® ROUND Specification Guide

## General

### 1.0 Scope

1.1 The handrail/guard rail shall conform to the material and fabrications requirements as per this specification

### 2.0 Standards/Related Documents

2.1 AS 1657 – 2018 Fixed platforms, walkways, stairways and ladders – design, construction and installation.

2.2 ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.

2.3 ASTM D 635 Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.

2.4 AS 4020 – 2005 Testing of materials in contact with drinking water (potable).

### 3.0 Design Criteria

3.1 The design criteria of the fibreglass products (FRP) shall be in accordance with governing building codes and generally accepted standards in the FRP industry.

### 4.0 Submittals

4.1 Shop drawings of all fabricated guard rail/ handrail modules shall be submitted by Treadwell (unless provided by the client) displaying clearly material sizes, types, styles, product codes and including types and sizes of fasteners as well as a layout if required.

4.2 Technical data and sample pieces can also be submitted if required.

4.3 No fabrication will commence prior to the client approving the submittal drawings.

### 5.0 Quality Assurance

5.1 Quality surrounds every aspect of Treadwell's commitment to our superior products and efficiency. Treadwell's quality assurance strictly adheres to the high quality control standards placed to conform to relevant specifications, codes, Australian Standards and contractual requirements in a timely manner.

### 6.0 Product Delivery Storage

6.1 All handrail/guard rail and components or ancillary items shall be fabricated as per the design and piece marked to design drawings.

6.2 All manufactured materials shall be delivered in unbroken packages.

6.3 Handrails/guard rails shall be fully assembled, ready for installation OR handrails/guard rails shall be trial assembled and flat packed for site assembly and installation.

## Product System

### 7.0 Manufacturing Process

7.1 All fiberglass (FRP) items listed under this section shall be constructed from fiberglass reinforcement and resin of the quality necessary to meet the design requirements and dimensions as specified.

7.2 Fibreglass reinforcement shall be continuous roving and shall be in sufficient quantities as required for the application.

7.3 Resins shall be (refer to page 8) with chemical formulations as necessary to provide the corrosion resistance, strength and any other physical properties as required.

7.4 All finished surfaces are to be smooth, resin-rich free of voids and without dry spots, cracks reinforced areas and all fiberglass reinforced shall be well covered with resin to protect against exposure due to weather or wear.

7.5 All fiberglass (FRP) items shall be EITHER fire retardant OR have a tested flame spread rating of 25 or less when tested in accordance with the ASTM E-84 Tunnel Test.

7.6 All metallic accessories shall be manufactured from 316 stainless steel OR galvanized steel OR Monel. (OR refer to specific uncommon customer requests.)

7.7 The fiberglass reinforcement content shall be maintained at acceptable levels for a) pultruded items and b) SMC moulded items so as to ensure excellent resilience and performance over time.

7.8 All fibreglass material shall have an ultraviolet light inhibiting chemical additive to resist UV degradation.

7.9 Colour shall be any Treadwell standard colours (Safety Yellow, Light Grey or a custom colour)

### 8.0 Fabrication & Workmanship

8.1 All cut or machined edges, holes and abrasions shall be sealed with a resin equivalent to the EX-Series® Resin System from which the handrail/guard rail is constructed.

### 9.0 Installation

9.1 All FRP handrail/guard rail sections shall be installed by others as shown on the approved shop drawings.

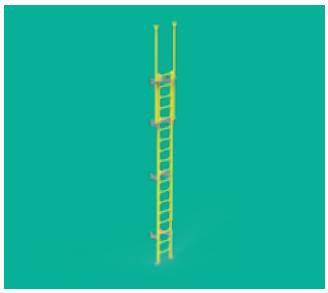
### 10.0 Acceptable Manufacture

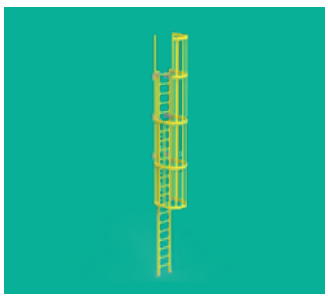
The fibreglass (FRP) ROUND Handrail System shall be manufactured by Treadwell Group pty Ltd of Australia.

# EX-Series® LadderEX®

TREADWELL

# Contents








**Please consult our EX-Series® LadderEX® Product Guide for more information.**

# What is LadderEX®?

**LadderEX® is the superior alternative to metallic ladders and cage systems, providing excellent corrosion resistance and electrical transparency. Even in complete immersion applications, Treadwell's fibreglass ladders have outlasted aluminium and steel, and required little or no maintenance.**

Our products in this range are made from superior fibreglass which offers unparalleled advantages, leaving behind alternatives that are metal or steel based. Our ladders and ladder cage systems are produced using a premium grade polyester resin system with flame retardant and ultraviolet (UV) inhibitor additives. A vinylester resin system is available upon request for additional corrosion resistance. Standard side rails and cages are in safety yellow. The rungs are a pultruded fibreglass polyester tube with a fluted, non-skid surface.

LadderEX® fibreglass ladder systems are fabricated and designed with FRP according to AS 1657-2018. The pultruded parts are produced with a fire retardant polyester resin which meets the ASTM E-84 test for flame spread of 25 or less and contains a UV inhibitor. The colour is in standard OSHA safety yellow though colour matching can be provided.

Ladders are shop assembled and may be pre-drilled and prepared for field attachment with standoff clips and/ or base brackets systems.

The LadderEX® product range can easily be integrated into any existing platform or structure. It can come in a variety of configurations to suit any purpose as well.

## Treadwell FRP Vs Alternative Materials

| Characteristic | FRP | Steel | Aluminum | Timber | Recycled Plastics | Composite Timber |
|---|---|---|---|---|---|---|
| Corrosion Resistance | ● ● ● ● ● | ● ● | ● ● ● ● | ● ● | ● ● ● ● ● | ● ● ● ● ● |
| Strength | ● ● ● ● ● | ● ● ● ● ● | ● ● ● ● ● | ● ● | ● ● | ● ● |
| Weight | ● ● | ● ● ● ● ● | ● ● | ● ● ● ● | ● ● ● ● | ● ● ● ● |
| Electrical | ● ● | ● ● ● ● ● | ● ● ● ● ● | ● ● ● | ● ● | ● ● |
| Conductivity | ● | ● ● | ● ● ● ● ● | ● ● | ● ● | ● ● |
| Thermal Expansion | ● | ● ● ● ● ● | ● ● ● ● ● | ● ● | ● ● ● ● | ● ● |
| RF Transparency | ● ● | ● ● ● ● ● | ● ● ● ● ● | ● ● | ● ● | ● ● |
| Fabrication | ● ● | ● ● ● | ● ● ● | ● ● ● ● ● | ● ● ● ● ● | ● ● ● ● ● |
| Life Cycle Cost | ● ● | ● ● ● ● ● | ● ● ● ● ● | ● ● | ● ● | ● ● |
| Slip Resistance | ● ● ● ● ●[1] | ● ● | ● ● | ● ● | ● ● | ● ● |
| Fire Rating | ● ● ● ● ●[2] | ● ● ● ● ● | ● ● ● ● ● | ● ● | ● ● ● ● | ● ● ● ● |

1 Tested to comply with A5 4586, 2013
2 Tested to comply with BCA C10.1

### LadderEX® Standard Colour

Treadwell's standard colour for our ladders is Safety Yellow

Contact Customer Service on 1800 246 800 or email us at sales@treadwellgroup.com.au for custom requirements - custom colours are available on request.

### Did You Know?

Treadwell has the resource and expertise to fabricate ladders to your exact requirements and furthermore, we specialise in drafting to save you the bother.

## FAQ's

### Costs of Treadwell's FRP vs other materials?

**Q:** How does Treadwell's FRP compare to stainless steel in price?

**A:** Treadwell's FRP typically cost less than stainless steel.

**Q:** How does Treadwell's FRP compare to carbon steel in price?

**A:** Treadwell's FRP materials are generally more expensive than carbon steel when comparing material costs. However, when factoring in installation, handling, transportation and other associated expenses, the total installed cost of FRP is therefore more competitive.

**Q:** How does Treadwell's FRP compare to aluminium in price?

**A:** Treadwell's FRP is usually priced competitively with aluminium and the total installed cost generally makes FRP a more price competitive choice than aluminium.

**Q:** How does Treadwell's FRP compare to wood in price?

**A:** Treadwell's FRP cannot compete with wood on price alone. Customers should also evaluate the strength, resistance and overall performance requirements for the application and as well as maintenance moving forwards.

### Unsure about the strength of FRP ladders?

**Q:** Are LadderEX®® ladders the strongest type of non-metallic ladders available?

**A:** Treadwell's FRP ladders boasts higher strength and stiffness. LadderEX® incorporates glass reinforcing which no other plastic handrail features. Our ladders consists of 15-20% more reinforcing content compared to alternative FRP ladder systems on the market.

### Ease of Installation

**Q:** How simply can I install LadderEX® onsite?

**A:** Very simply. Our ladders are prefabricated according to requirements and packed in segments for easy installation onsite. Further, FRP is lightweight, making it easy to handle with very little need for future maintenance.

### Corrosion issues?

**Q:** Is there a point in using FRP handrails in a corrosive environment? Would the other framework surrounding it affect FRP?

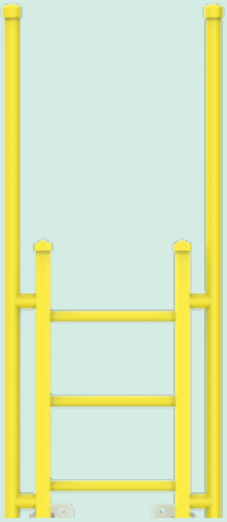
**A:** For challenging applications where exposure to chemicals and the elements would typically corrode traditional materials, FRP is the obvious choice. With strong resistance to chemicals and the ability to work alongside other materials easily, there is hardly any better option.

### Outdoors as well?

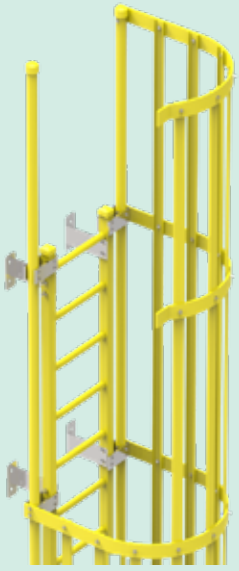
**Q:** Does LadderEX® offer better UV protection than alternative materials?

**A:** Yes it does. With an optimum amount of UV inhibitors and stabilisers within the material, our EX-Series® Resin Systems will offer premium UV protection.

# LadderEX



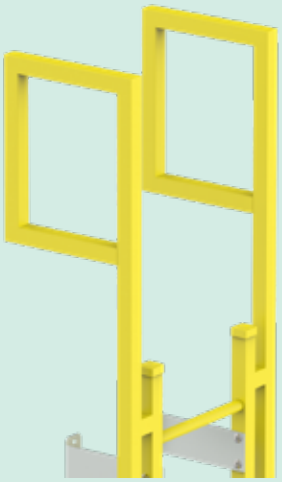
ROUND Grab Stiles



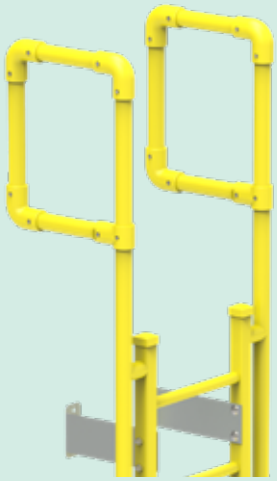
LadderEX® Side Access Cage

LadderEX® Standard Safety Cage

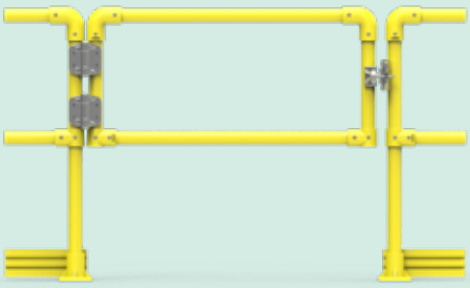
# Overview



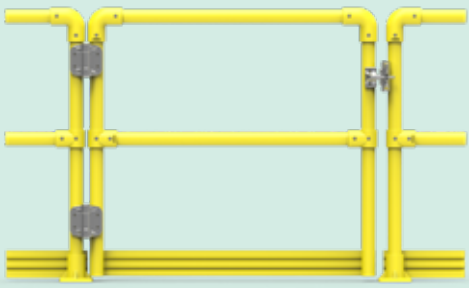
SQUARE Return



ROUND Return

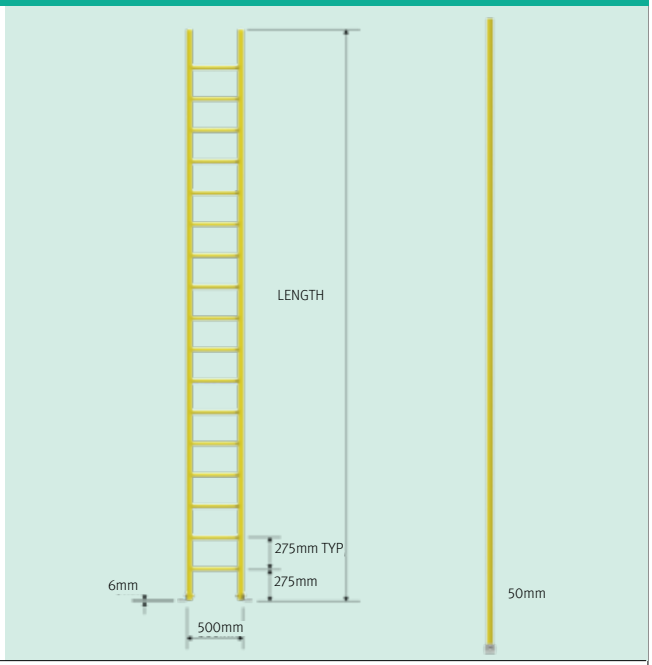


RailEX® Economy Self Closing Gate



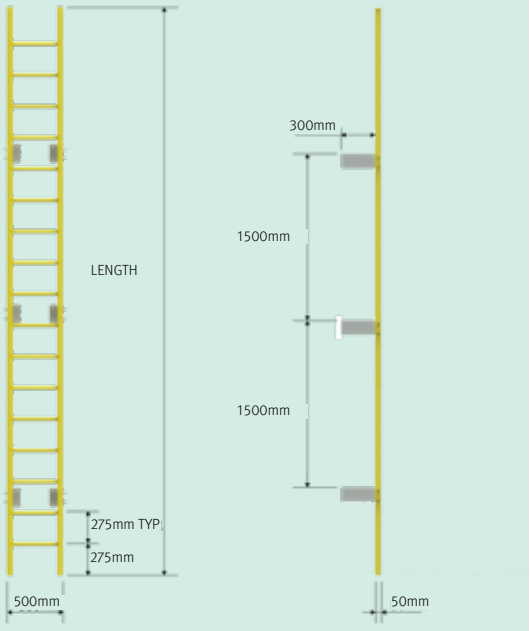
RailEX® Premium Self Closing Gate

## LadderEX® Standard Floor Mounted SQUARE Ladder — LDX-SL




Brief:
Treadwell's floor mounted ladders are an important addition to sections where there is a requirement to provide safe, designated access to elevated areas. These ladders are securely fastened to the floor with a standard floor mount bracket to ensure safe and sturdy passage.

## LadderEX® Standard Wall Mounted SQUARE Ladder — LDX-SL

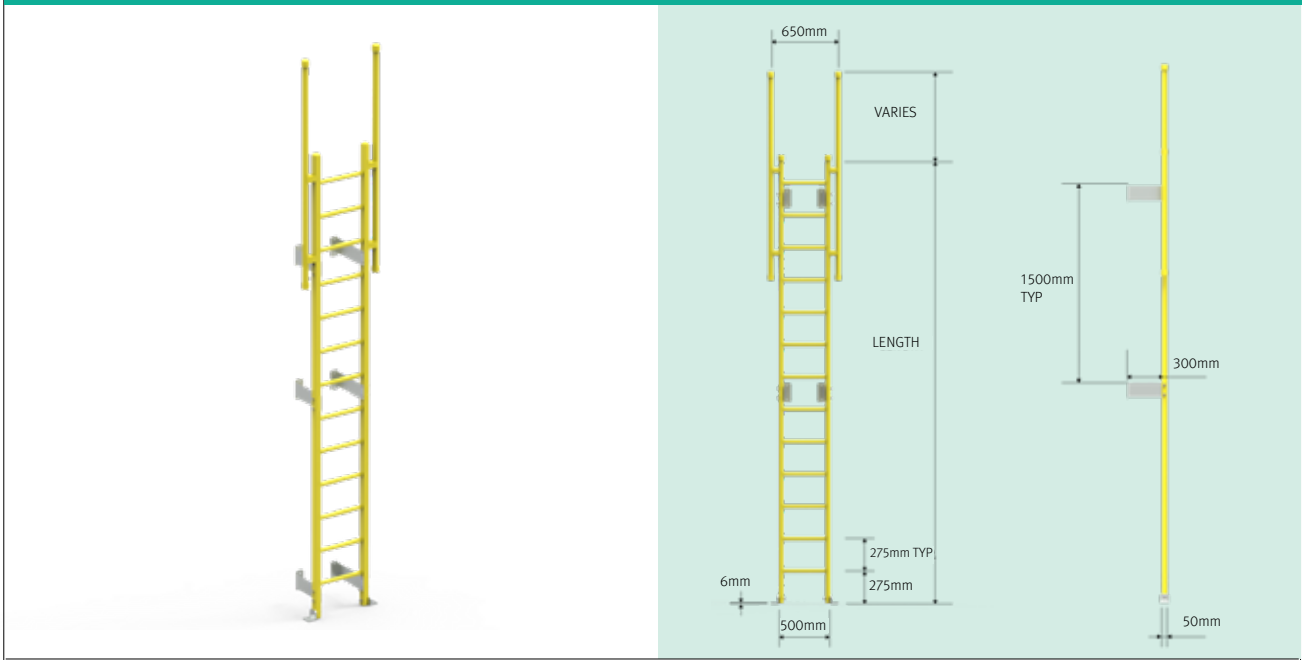



Brief:
LadderEX® wall mounted ladders are an integral addition to any structure to help provide safe, designated access to elevated areas such as rooftops, ceiling spaces, and maintenance platforms. Wall brackets as well as floor mounts can be utilised in securing safe and stable access.

Heavy duty options available based on application.

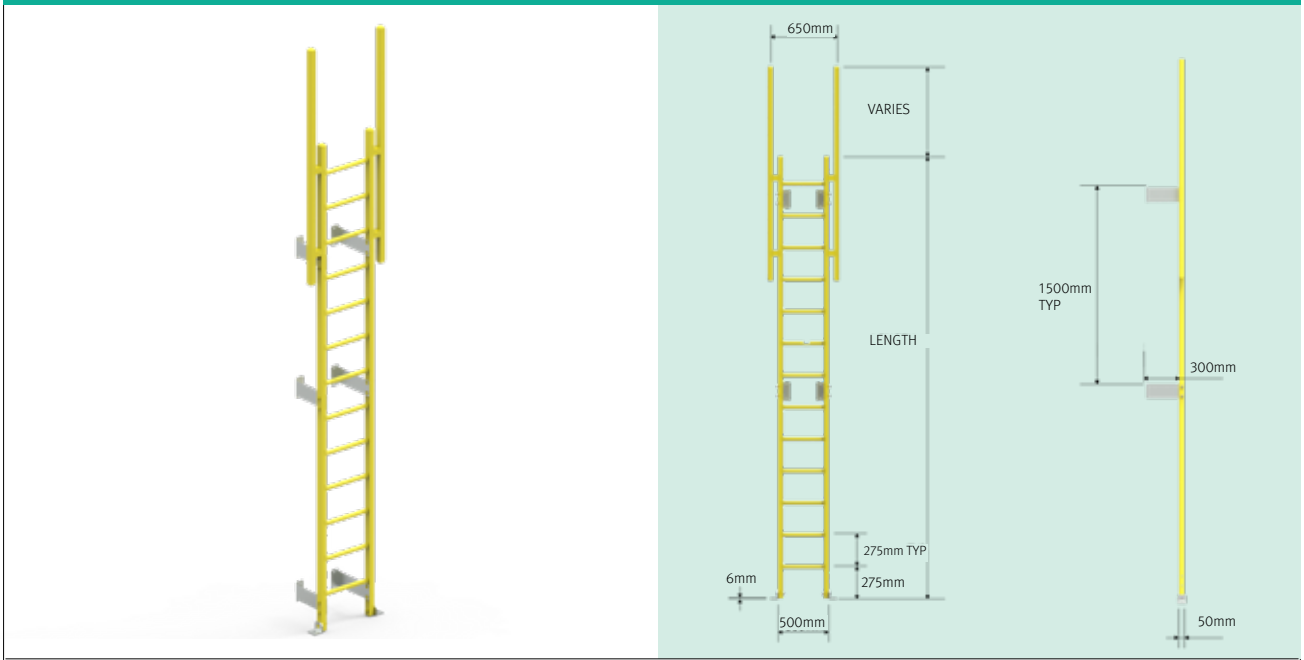
# LadderEX® Standard Access Ladders with Grab Stiles

## LadderEX® Standard Ladder with ROUND Grab Stiles — LDX-RG




Brief:
In instances where there is a requirement for extra security above 1.5m, Treadwell can supply standard access ladders without returns with a round grab stile.

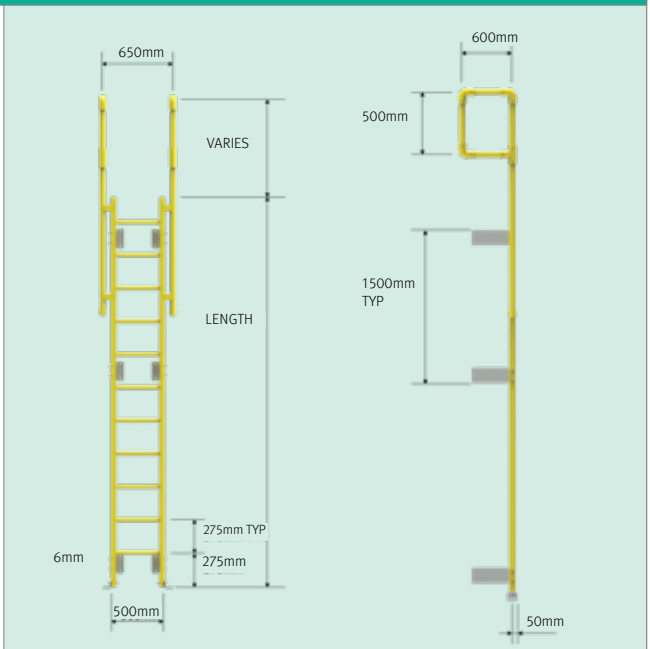
## LadderEX® Standard Ladder with SQUARE Grab Stiles — LDX-SG




Brief:
In instances where there is a requirement for extra security above 1.5m, Treadwell can supply standard access ladders without returns with a square grab stile.

# LadderEX® Standard Access Ladders with Returns

## LadderEX® Standard Ladder with ROUND Returns — LDX-RR

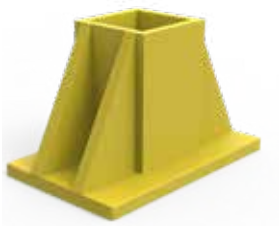



Brief:
This configuration is designed to provide access to platforms such as a roof area and features walk-through hand railing and a return ladder to assure safe entry and exit. Returns in this instance are round.

## LDX-FMB

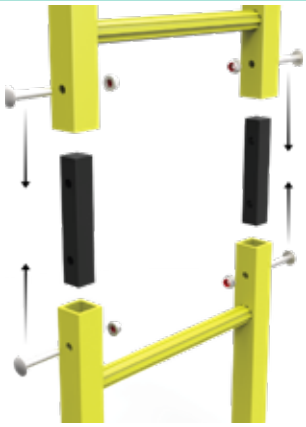
Description:
LadderEX® Floor Mount Bracket

## LDX-FMBHD



Description:
LadderEX® Heavy Duty Floor Mount Base

## LDX-SK



Description:
LadderEX® Standard Splice Kit (ladder not included)

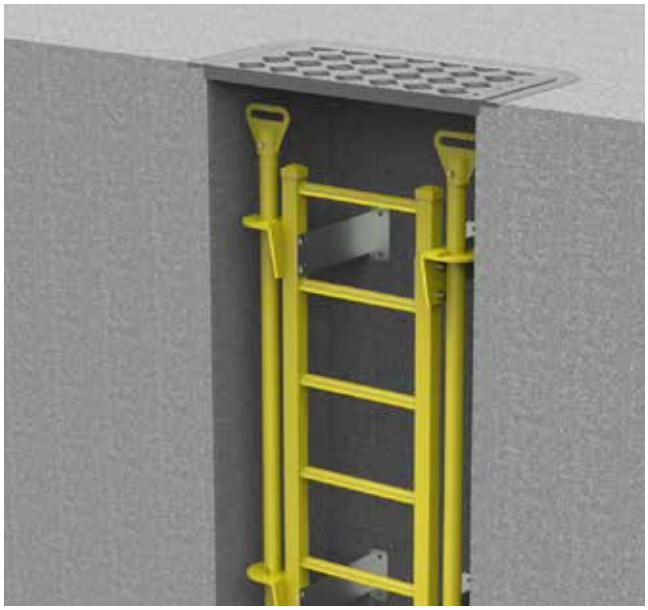
## LDX-SCP

Description:
LadderEX® SQUARE cap

## LDX-RCP

Description:
LadderEX® ROUND cap

# RETRACT-A-STILES



## What are LadderEX® Retract-A-Stiles?

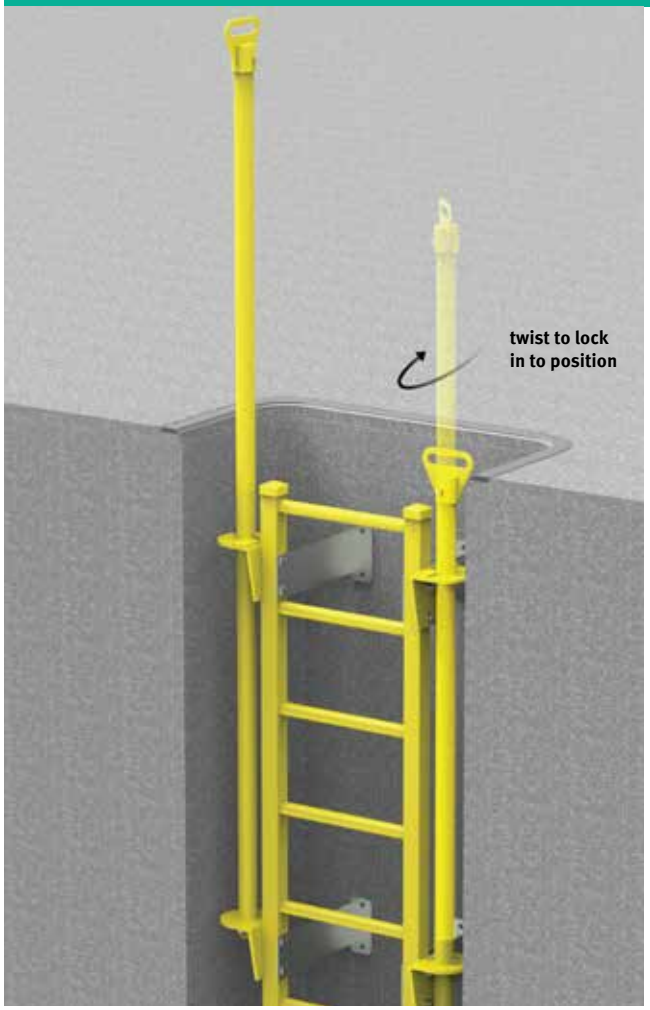
LadderEX® Retract-A-Stiles are the perfect solution for convenience and flexibility for added safety, especially in confined spaces. Made from FRP, they are corrosion resistant and require very little maintenance if any.

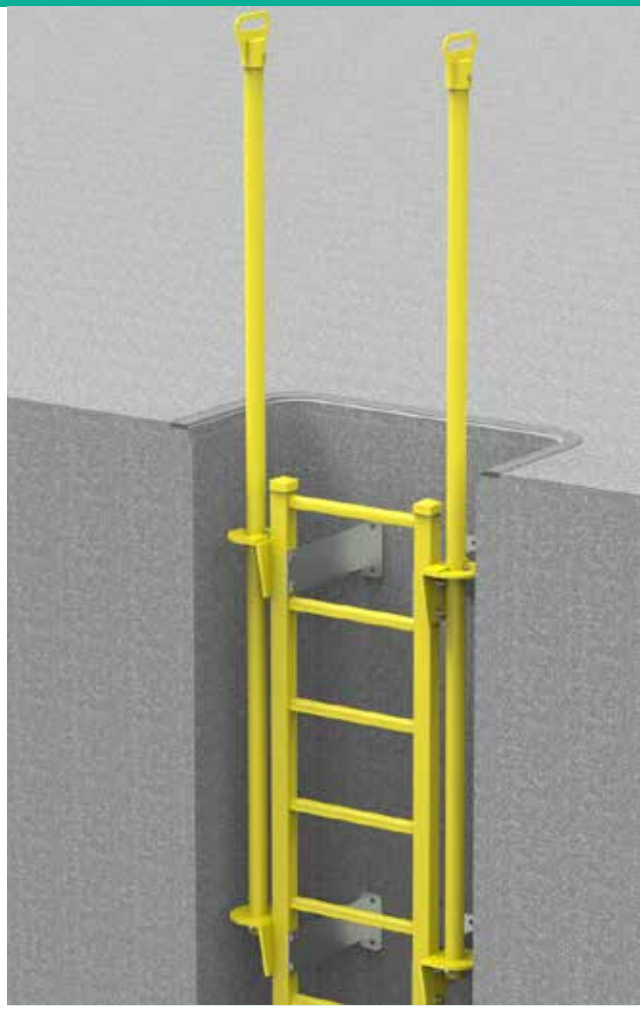
LadderEX® Retract-A-Stiles are also easy to install and maximise safety when working at heights. The handles are ergonomically designed for maximum grip and the fixing brackets are suited for utmost strength and versatility.

LadderEX® components are fabricated in modular sections which then allows for construction of endless ladder and access configurations to suit specific site requirements. We can easily accomodate your needs into any of our designs with our Retract-A-Stile.

To comply with AS 1657, minimum total length of ladder must be no shorter than 1700mm and the stiles should extend at least 1000mm above the top landing. Additionally, spacing between the ground level and first rung should be no less than 90% of the rest of the ladder.

**Retract-A-Stiles** **LDX-RS**



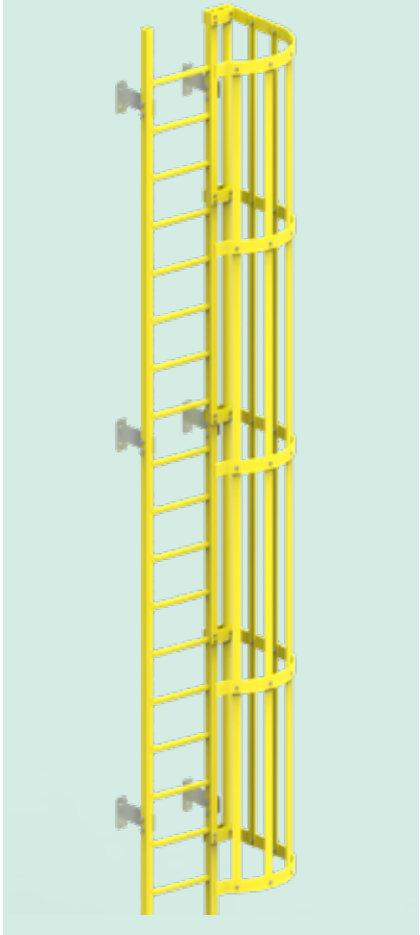
## What are LadderEX® Safety Cages?

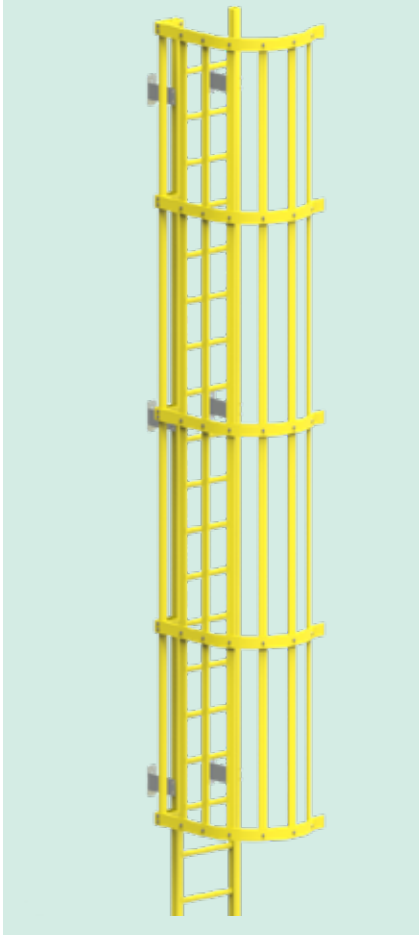
The side rails, rungs and cage straps are manufactured from pultruded fibreglass reinforced components which can be found in Treadwell's RailEX® componentry. The side rails are either 50mm round or square tube with a wall thickness of 4mm or greater. The rungs shall be pultruded 32mm across the FRP fluted tube.

Cage hoops are constructed by the open mould hand lay-up process with a width of 76mm and thickness of 6mm minimum at the top and bottom and 50mm x 6mm at the intermediate hoops. The cage shall be interconnected with 50mm x 4.8mm pultruded straps spaced 230mm on centre around the hoop.

## LadderEX® Safety Cage Options Overview

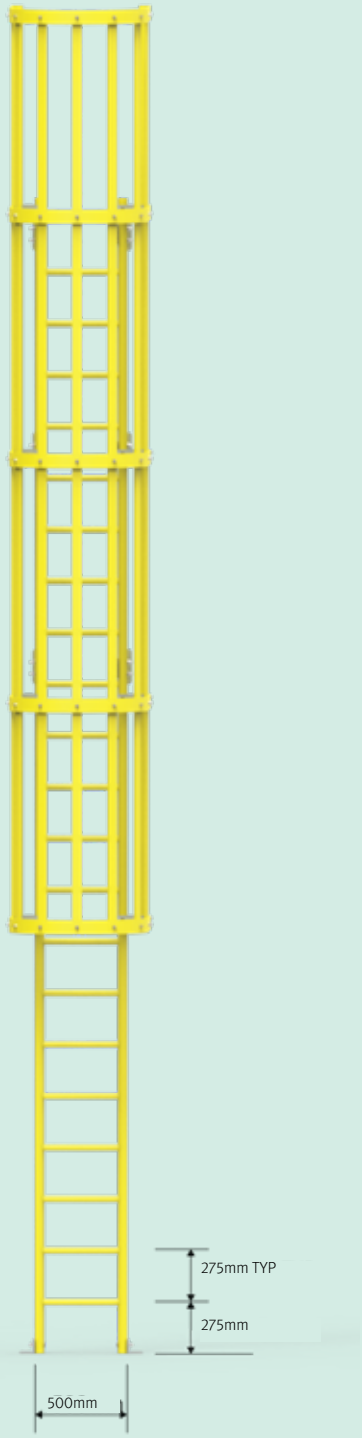
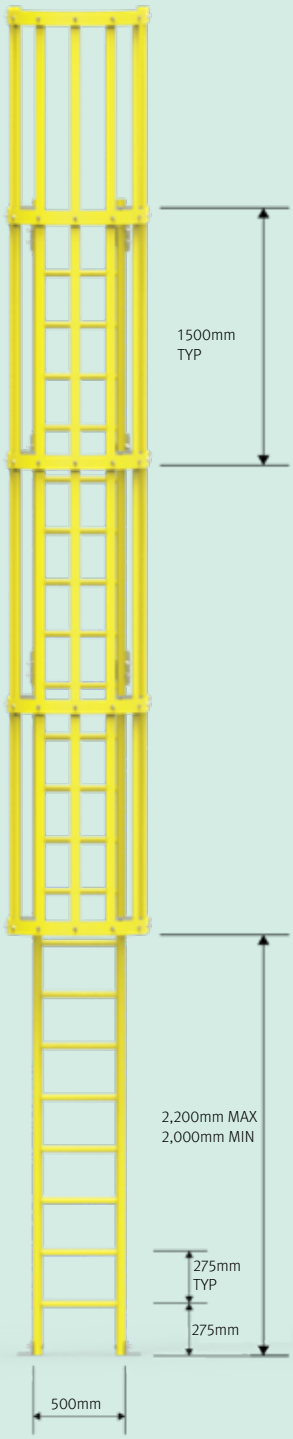
| WALKTHROUGH | LDX-SC | LEFT ACCESS | LDX-LC | RIGHT ACCESS | LDX-RC |
|---|---|---|---|---|---|





# Safety Cages

Treadwell's caged ladders add an extra dimension of permanent safe access for personnel access and are compliant with AS 1657-2018.

| Side Elevation | Front Elevation | Basic Dimension Diagram |
|---|---|---|
|  |  |  |

TREADWELL

# Specification Guide

## General

### 1.0 Scope

1.1 The ladders shall conform to the material and fabrication requirements as stipulated per this specification.

### 2.0 Standards/Related documents

2.1 AS 1657-2018 Fixed platforms, walkways, stairways and ladders – design, construction and installation.
2.2 ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.
2.3 ASTM D 635 Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
2.4 AS 4020 – 2005 Testing of materials in contact with drinking water (potable).

### 3.0 Design Criteria

3.1 The design criteria of the fibreglass (FRP) products shall be in accordance with governing building codes and generally accepted standards in the FRP industry.

### 4.0 Submittals

4.1 Shop drawings of all fabricated items shall be submitted by Treadwell (unless provided by client) clearly displaying material sizes, types, styles, product codes and including types of fasteners as well as layout if required.
4.2 Submittal drawings shall display clearly all critical dimensional parameters i.e. overall height of ladders, location of mounting brackets etc.
4.3 No fabrication will commence prior to the client approving the submittal drawings.

### 5.0 Quality Assurance

5.1 Quality surrounds every aspect of Treadwell's commitment to our superior products and efficiency. Treadwell's quality assurance strictly adheres to the high quality control standards placed to conform to relevant specifications, codes, Australian Standards and contractual requirements in a timely manner.

### 6.0 Product Delivery and Storage

6.1 All ladders, components and ancillary items shall be fabricated per the design and piece marked accordingly.
6.2 Ladders shall be fully assembled, ready for installation OR ladders shall be trial assembled and flat packed for site assembly and installation.
6.3 The ladder cages shall be shipped assembled OR shipped unassembled for field assembly and installation.

## Product System

### 7.0 Materials & Manufacturing Process

7.1 All fibreglass (FRP) items listed under this section shall be constructed from fibreglass reinforcement and resin of the quality necessary to meet the design requirements and dimensions as specified.
7.2 Fibreglass reinforcement shall be continuous roving and shall be in sufficient quantities as required for the application.
7.3 Resins shall be (refer to page 8) with chemical formulations as necessary to provide the corrosion resistance, strength and any other physical properties as required.
7.4 All finished surfaces are to be smooth, resin-rich free of voids and without dry spots, cracks reinforced areas and all fibreglass reinforced shall be well covered with resin to protect against exposure due to weather or wear.
7.5 All fibreglass (FRP) items shall be EITHER non-fire retardant OR have a tested flame spread rating of 25 or less when tested in accordance with the ASTM E-84 Tunnel Test.
7.6 All metallic accessories shall be manufactured from 316 Stainless Steel OR galvanized steel OR Monel. (OR refers to specific uncommon customer requests.)
7.7 The fibreglass reinforcement content shall be maintained at acceptable levels for a) pultruded items and b) SMC moulded items so as to ensure excellent resilience and performance over time.
7.8 All fibreglass material shall have an ultraviolet light inhibiting chemical additive to resist UV degradation.
7.9 Colour shall be any Treadwell standard colours (Safety Yellow, Light Grey or a custom color)

### 8.0 Fabrication & Workmanship

8.1 All cut or machined edges, holes and abrasions shall be sealed with a resin equivalent to the EX-Series® Resin System from which the ladder is constructed.

### 9.0 Installation

9.1 All FRP ladder sections shall be installed by others as shown on the approved shop drawings.

### 10.0 Acceptable Manufacturer

10.1 The fibreglass ladder system shall be manufactured by Treadwell Group Pty Ltd of Australia.

**Are you specifying Treadwell products? To make the process simpler for you, we have standard specifications available in Microsoft Word format. For a copy, simply call us at 1800 246 800 or email us at sales@treadwellgroup.com**

# ArchitEX™ Structural Profiles

# ArchitEX™

## Benefits of FRP Composite

- Strong
- Lightweight
- Corrosion resistant
- Dimensionally stable
- Low maintenance
- EMI/RFI Transparent
- Low thermal conductivity
- Electrically non-conductive

### Scope of Shapes

Easy integration to various parts due to the capability to essentially shape any item with a constant cross section which can be pultruded.

### Composite Design Engineering

A standard shape customised into a pultrusion by modifying the resin or reinforcement to achieve a particular customer need.

### Optimising Resins

Standard resins can be modified or special resins can be used to maximise performance of the pultrusion in challenging environments, such as those found in high temperature or extremely corrosive areas. Typical resins include polyesters, vinyl esters, PVC, epoxies, phenolics, urethanes and blends.

### Colour Matching

**We can match any colour you need.**

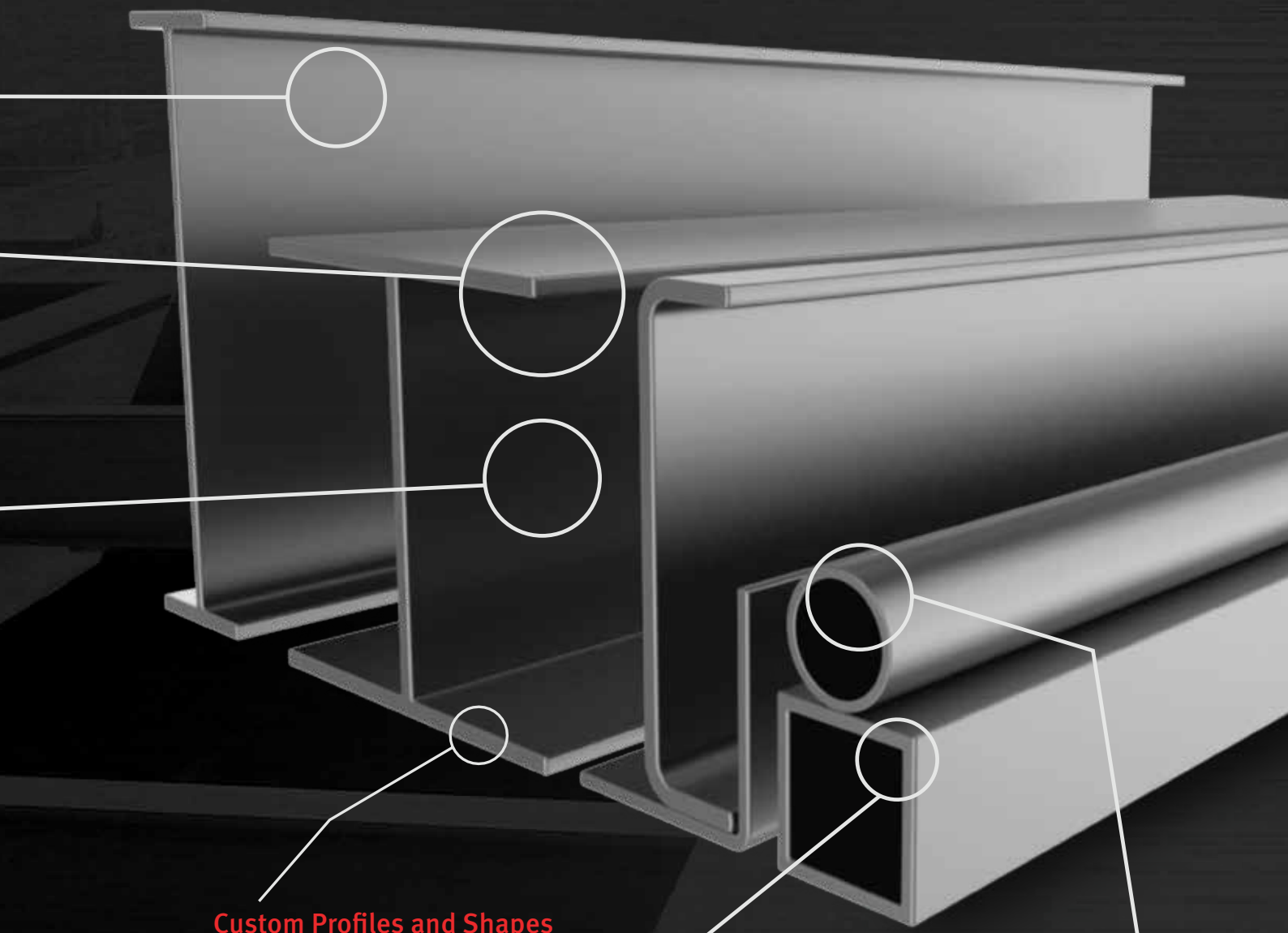


Oil and Gas


Water and Waste Water


Mining and Minerals


Aquaculture



## Custom Profiles and Shapes

Treadwell has expertise in producing custom shapes specific to client requirements.

## Core Materials Options

Treadwell can provide a range of core material options on request.

## Choice of Reinforcements

The type, form, placement and quantity of reinforcements can be customised to optimise economy, develop ascribed strength and create or enhance other physical characteristics of a pultruded part. Typical reinforcements used include glass or carbon fibres in multifilament strands, mat (long fibres held together with a resinous binder) or stitched fabrics.




TREADWELL

# Contents

## ArchitEX™



**Please consult our ArchitEX™ Structural Product Guide for more information.**

## Composition of FRP Pultrusions

### What are Pultrusions made of?

Pultrusions are composed of two key elements; glass fibre products and resin formulations. The glass contributes its inherent tensile flexural strength while the addition of resin ensures impact and corrosion resistance.

The glass fibre component normally consists of two different arrangements: glass roving which is unidirectional, and continuous mat which can be arranged in different ways to provide bi-directional stability as well as contributing to longitudinal strength properties.

Another integral part of a pultrusion is the surface veil which provides enhanced UV protection, corrosion resistance and aesthetics.

### Roving

Roving is made up of fibreglass unidirectional filaments which are manufactured on continuous rolls. Roving is usually the principal element in a pultrusion, comprising 50% - 70% percent of the total glass content.

While supplying the necessary strength to pull the profile during manufacture, the roving also provides unsurpassed tensile and flexural properties. The percentage of roving in a pultrusion is the major variable in section stiffness.

### Mat

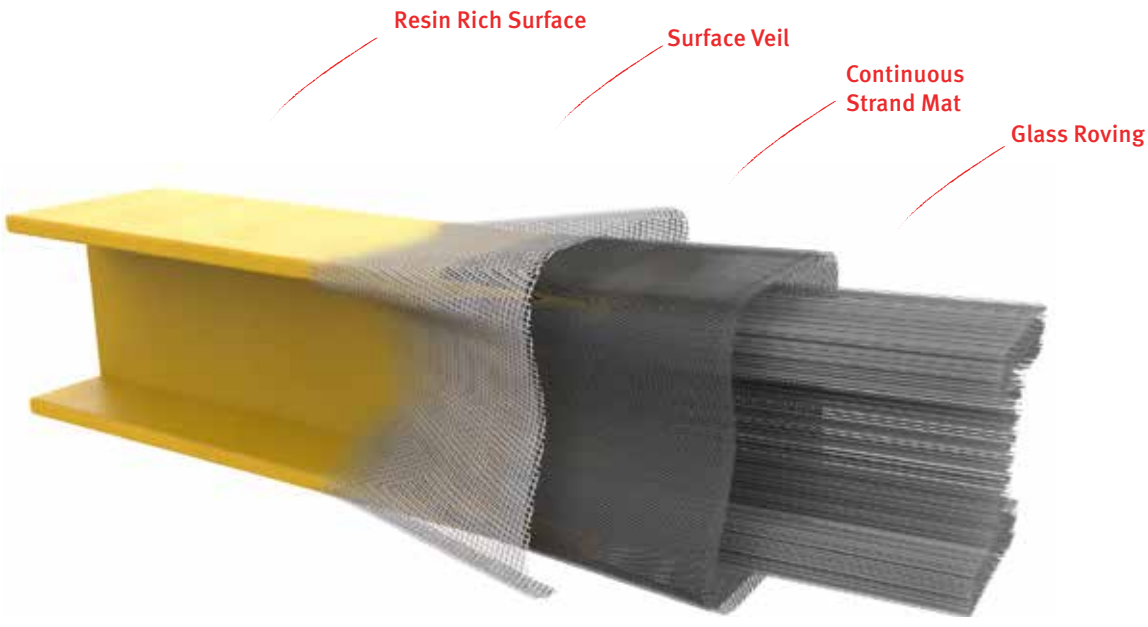
Continuous strand mat constitutes the remainder of the glass reinforcement used in the pultrusion process. This would typically be 30% - 50% of the total glass content. It is important to differentiate between continuous strand mat and other hand-laid-up or press-moulded processes that utilise short chopped fibres. The mat that is used in the pultrusion process requires good tractive strength to ensure that it enters the die properly.

Fibreglass continuous strand mat is predominately applied to obtain the desired transverse properties of the product, whereas roving provides longitudinal stability to a section. Roving lacks the required lateral cohesion that is also an essential element in maintaining the maximum strength from a profile, it is the continuous strand mat that is principally responsible for this.

### Surface Veil

Veils are utilised to enhance the surface properties of pultruded profiles. Most widely used today are synthetic variations which enhance the UV resistance properties and aesthetics. The veil also increases the resin content of the surface of the pultrusion which provides added corrosion resistance. The veil protects the section against moisture and therefore the mechanical characteristic values remain unchanged for sustained end-use conditions.

### Cross Section of Pultrusion



## Resin Systems

**When choosing a resin type for your application, we highly recommend you consult with us in relation to the application to ensure the correct resin is specified. Considerations such as corrosion, environment, temperature, fire resistance, smoke and smoke toxicity requirements must be taken into account, and will dictate which resin system should be utilised for optimum performance over time. Below is an overview of the resin systems offered in the ArchitEX™ range.**

O-Series® is an architectural grade polyester resin system with an intermediate level of chemical resistance, and is a good choice for commercial or light industrial applications, especially in areas where moisture is prevalent. O-Series® is often utilised for public infrastructure applications where it has been proven to outperform traditional timber decking products. This system is available with or without fire retardant additives. This resin system is only available upon request.

I-Series® is a premium isopthalic resin system. This system provides an intermediate level of chemical resistance and is the correct choice for areas subjected to splash and spill contact with harsh chemicals. This system is an excellent general purpose resin and is a more favourably priced alternative to the vinyl ester system. This system has a flame spread of 25 (approximately 15) or less.

V-Series® Vinylester resin is the most high quality chemical resistant system offered in the industry and has been developed for use in environments where FRP products are subject to frequent and direct contact with the harshest of chemical, including a broad range of acids and caustics. This system has a flame spread of 25 (approximately 15) or less.

P-Series® The phenolic resin system is a system designed specifically for use where fire resistance, low smoke and low toxic fumes are critical. P-Series® is typically used in offshore applications and confined spaces where such criteria are an absolute necessity. This system is tested in accordance with ASTM E-84. Various products also conforming to US Coast Guard Approvals, Level 2 and 3, are also offered by Treadwell. This particular resin system has a flame spread rating of 5 and a smoke density rating of 5.

## Standards Resin Systems Comparison Chart

| Resin Type | Chemical Resistance | Fire Rwsistance | Fire Retardant | Low Smoke | Halogen Free | Temperature Performance | Non - Conductivity |
|---|---|---|---|---|---|---|---|
| I-Series® Isopthalic | •• | •• | ••••• | — | — | •• | ••••• |
| V-Series® Vinylester | ••••• | •• | ••••• | — | — | ••• | ••••• |
| P-Series® Phenolic | •••• | ••••• | ••••• | •••• | ••••• | ••••• | ••••• |

## ArchitEX™ Features and Benefits vs. Traditional Alternatives

| | ArchitEX™ | Stainless Steel | Galvanised Steel | Aluminium | Polyurethane |
|---|---|---|---|---|---|
| Chemical Resistance | ••••• | •••• | • | ••• | •••• |
| Strength | ••••• | ••••• | ••••• | ••••• | ••• |
| Lightweight | ••••• | • | • | ••••• | ••• |
| Electrical Resistance | ••••• | • | • | • | ••••• |
| Cost Effectiveness | ••••• | ••• | •••• | •• | ••••• |

## The Pultrusion Process

### How the Pultrusion Machine Works

Pultruding is the process that is used to form continuous structural profiles out of fibreglass and resin composites. The process is performed by a pultrusion machine. The first pultrusion process was developed in the mid-1940s with further major development and greater recognition in the mid-1950s.

The term pultrusion was derived from a combination of the word pull and extrusion. There are some parallels between the two processes given that they both produce continuous profiles and involve some sort of forming die. The main difference being that the pultrusion process utilises a series of pullers, which draw the product through the entire process as compared to extruding, which uses pressure or a pushing force.

The pultrusion process commences with fibreglass roving being pulled off rolls, through a guide and then being combined with the continuous strand mat. It is this fibreglass component that provides the resistance to tension that is necessary in the pultrusion process. The raw fibre is pulled through a series of guides or rollers and then enters a resin impregnation bath. The resin is usually a thermo-setting resin.

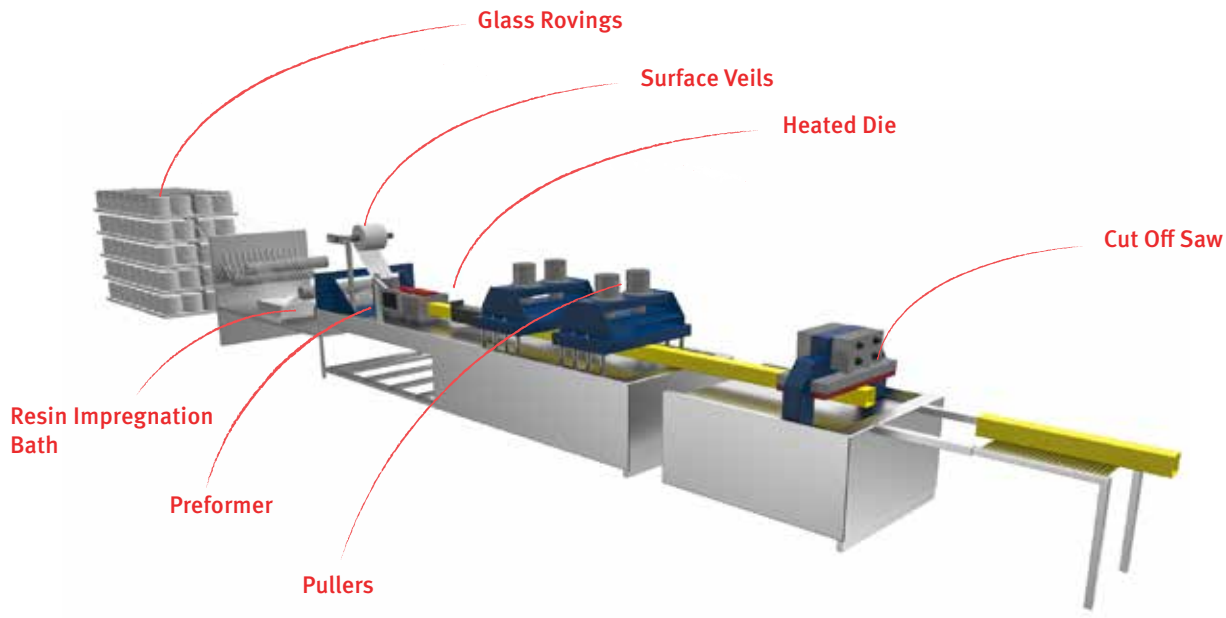
Now that the fibres are thoroughly 'wetted out' with the resin, they pass through a series of tooling which arranges the fibres correctly and removes excesses of resin. This set of tooling and guides is referred to as the pre-former. At this stage, the surface veil is added.

The uncured composite is then pulled into a heated die which commonly consists of 2-3 differing stages of temperature which initiate the curing of the resin component. The profile that exits the die is now a cured pultruded fibreglass reinforced plastic composite.

It is this rigid profile that is gripped further down the line by the pulling mechanism which provides steady and continuous tractive effort. After passing through the pullers, the FRP profile reaches a cut-off saw. The saw cuts the pultrusion to the desired length without slowing or halting the process.

This way high strength and lightweight profiles can be created from fibreglass reinforced plastic to virtually any length required.

### Pultrusion Machine



## Environmental Conditions

### Temperature

When designing a structure that is going to incorporate FRP sections, it is essential to consider environment changes such as temperature. Continued exposure to elevated temperatures can cause polyester and vinylester fibreglass pultrusions to lose certain percentages of their properties.

These tables shows the percentage of property retention when exposed to certain continuous temperatures.

### Ultimate Stress

| Temperature | Polyester | Vinylester |
|---|---|---|
| 37°C | 85% | 90% |
| 51°C | 70% | 80% |
| 65°C | 50% | 80% |
| 79°C | Not Recommended | 75% |
| 93°C | Not Recommended | 50% |

### Modulus of Elasticity

| Temperature | Polyester | Vinylester |
|---|---|---|
| 37°C | 100% | 100% |
| 51°C | 90% | 95% |
| 65°C | 85% | 90% |
| 79°C | Not Recommended | 88% |
| 93°C | Not Recommended | 85% |

### Weathering

As with most plastic products, fibreglass reinforced pultrusions will undergo some form of visual degradation when exposed to outdoor weathering.

Typically, the surface of ArchitEX™ Pultrusions have good water and ambient temperature resistant properties but are susceptible to ultra-violet (UV) light. UV light is the light spectrum between 290 and 400 nanometres. This light has a higher energy and causes significant degradation to polymers by breaking chemical bonds or starting chemical reactions. The fire retardant polyester formulations contain a halogen which makes these plastics typically more susceptible to UV light degeneration.

Deterioration that has been caused by UV light can be identified by 'fade' and 'yellowing' on the pultrusion surface. Over an extended period of exposure, the actual glass fibres closest to the surface will become exposed. This state is known as fibrebloom and does not directly or immediately affect the physical properties of the section.

Treadwell adds a UV stabiliser into the resin formulation. This is especially important due to the extreme exposure that our products experience in the Pacific region. Also, to ensure that our pultruded products endure a protracted lifespan, we use high quality polyester surface veils to ensure that the structural component of the composite is protected as well as possible from damaging and corroding elements.

The ArchitEX™ range is also offered with a range of exterior coatings to enhance aesthetics. If a urethane coating is applied, this will also provide a hugely effective protection barrier to outdoor weathering.

# Pultrusion Availability

Treadwell is arguably the largest stockist of FRP pultrusion products in Australia. We always stock a comprehensive range of I-Beam, C Section, Hollow Section and Angle products which are commonly in high demand. Due to the consistent and rapid evolution of the fibreglass pultrusion market, we are continually revaluating our range of stocked products to ensure that our holdings accurately reflect customer demand.

We utilise efficient transport networks across Australia to ensure rapid delivery to remote locations and stock products in most capital cities.

Our complete range of products available is listed in the Section Properties tables. To obtain price and availability or find out if the product you require is a stock item, call Treadwell on 1800 246 800.

## ArchitEX™ Profiles

The test results for typical coupon properties of Treadwell's structural fibreglass profiles are shown below. Properties are obtained via the ASTM test method shown. Ultraviolet inhibitors and synthetic surfacing veils come as standard.

| Mechanical Properties | ASTM | Units | Value |
|---|---|---|---|
| Tensile Stress, LW | D-638 | MPa | 206.8 |
| Tensile Stress, CW | D-638 | MPa | 48.2 |
| Tensile Modulus, LW | D-638 | GPa | 20.7 |
| Tensile Modulus, CW | D-638 | GPa | 5.5 |
| Compressive Stress, LW | D-6641 | MPa | 206.8 |
| Compressive Modulus, LW | D-6641 | GPa | 20.7 |
| Compressive Modulus, CW | D-6641 | GPa | 6.9 |
| In-Plane Shear Modulus | D-5379 | GPa | 3.1 |
| Interlaminar Shear Strength | D-2344 | MPa | 31.0 |
| In-Plane Shear Strength | D-5379 | MPa | 68.9 |
| Pin-bearing Strength, LW | D-953[A] | MPa | 144.8 |
| Pin-bearing Strength, CW | D-953[A] | MPa | 124.1 |

| Thickness of Profile (mm) | ASTM Required | Strength (kN) |
|---|---|---|
| t=9.525mm | TBC | 2.9 |
| t=12.7mm | TBC | 4.0 |
| t=19.05mm | TBC | 5.6 |

| Pull-through Strength Per Fastener |
|---|
| *The pull-through strength per fastener corresponds to the thickness and the ASTM required. |
| For example, when ASTM required is D-790 and t= 9.525mm, the pull-through strength is 2.9kN. |

| Physical Properties | ASTM | Units | Value |
|---|---|---|---|
| Barcol Hardness | D-2583 | ----- | 45 |
| 24 Hour Water Absorbtion | D-570 | % max. | 0.45 |
| Density | D-792 | g/cc | 1.72-1.94 |
| Coefficient of Thermal Expansion, LW | D-696 | $10^{-6}$mm/mm/°C | 12 |
| Glass Transition Temperature | D-4065 | °C | 83 |

| Electrical Properties | ASTM | Units | Value |
|---|---|---|---|
| Arc Resistance, LW | D-495 | seconds | 120 |
| Dielectric Strength, LW | D-149 | kv./mm | 1.37 |
| Dielectric Strength, PF | D-149 | volts/mil. | 200 |
| Dielectric Constant, PF | D-150 | @60hz | 5 |

| Fire Retardant Polyester and Fire Retardant Vinyl Ester Structural Profiles: | | | |
|---|---|---|---|
| **Flammability Properties** | **ASTM** | **Units** | **Value** |
| Tunnel Test | E-84 | Flame Spread | 25 max. |
| Flammability | D-635 | ---- | Nonburning |
| UL | 94 | VO | ---- |
| NBS Smoke Chamber | E-662 | Smoke Density 600-700 | ---- |

| CW = Crosswise | LW = Lengthwise | PF = Perpendicular to Laminate Face |
|---|---|---|

## Typical Properties of Threaded Rod / Nuts

Treadwell Group's threaded rod and nuts are manufactured using premium Vinylester resin containing UV inhibitors. The properties listed below are the result of the ASTM test method indicated.

| Properties | ASTM | Units | Diameter - Threads per Inch (UNC) | | | | |
|---|---|---|---|---|---|---|---|
| | | | 9.5mm | 12.7mm | 15.9mm | 19.0mm | 25.4mm |
| Ultimate Transverse Shear (Double Shear) | B-565 | Newton | 18,680 | 30,240 | 44, 480 | 59,600 | 106,750 |
| Longitudinal Compresive Strength | D-695 | MPa | 344 | 344 | 344 | 344 | 344 |
| Flexural Strength | D-790 | MPa | 482 | 482 | 482 | 482 | 482 |
| Flexural Modulus | D-790 | GPa | 17.2 | 17.2 | 17.2 | 17.2 | 17.2 |
| Flammability | D-635 | Self-extinguishing for all | | | | | |
| Fire Retardant | Class 1 | | | | | | |
| Water Absorption (24 hr. immersion) | D-570 | % max. | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| Longitudinal Coefficient of Thermal Expansion | D-696 | $10^{-6}$mm/mm/°C | 11 | 11 | 11 | 11 | 11 |
| Ultimate Thread Shear (using fibreglass nut) | -- -- | Newton | 5,337 | 10,670 | 16,010 | 17,790 | 36,470 |
| Ultimate Torque Strength (fibreglass nut lubricated with SAE 10W30 motor oil) | | NewtonMeter | 10 | 21 | 47 | 67 | 149 |
| Rod Weight | -- -- | Kg./m | 0.104 | 0.119 | 0.297 | 0.447 | 0.789 |
| Nut Weight | -- -- | grams | 4.5 | 9.1 | 18.1 | 27.2 | 63.6 |
| Nut Dimensions | -- -- | mm.(square) x mm.(thick) | 17.2 X 11.4 | 21.8X 14.2 | 26.9 X 17.5 | 31.5 X 20.8 | 41.4 X 27.9 |
| Color | Gray | | | | | | |

## Typical Properties of Rod, Bar, and Flat Sheet

Below are test results for typical coupon properties of Treadwell Group's Rod, Bar, and Flat Sheet reinforced with all unidirectional longitudinal fibreglass roving. Properties are derived per the ASTM test method shown.

| Properties | ASTM | Units | Rod | Bar | Flat Sheet |
|---|---|---|---|---|---|
| Tensile Stress | D-638 | MPa | 620.5 | 165.5 | 620.5 |
| Tensile Modulus | D-638 | GPa | 34.7 | 27.6 | 34.7 |
| Compressive Stress | D-695 | MPa | 413.7 | 344.7 | 344.7 |
| Flexural Stress | D-790 | MPa | 689.5 | 620.5 | 689.5 |
| Flexural Modulus | D-790 | GPa | 41.4 | 31.0 | 31.0 |
| Barcol Hardness | D-2583 | | 60 | 60 | 60 |
| Izod Impact | D-256 | J/mm | 2.14 | 2.14 | 2.14 |
| Density | D-792 | gr/cc | 1.80-2.07 | 1.80-2.07 | 1.80-2.07 |
| Water Absorption (24 hour) | D-570 | % | 0.2 | 0.2 | 0.2 |

## Typical Coupon Properties of Flat Sheet

The test results for typical coupon properties of Treadwell's fibreglass flat sheets are shown below. Properties are obtained via the ASTM test method shown. Ultraviolet inhibitors and synthetic surfacing veils come as standard.

| Mechanical Properties | ASTM | Units | Thickness | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | STD & FR | | | VE | | |
| | | | 3.2 | 4.8 - 6.4 | 9.5 - 25.4 | 3.2 | 4.80 - 6.4 | 9.5 - 25.4 |
| Tensile Stress, LW | D-638 | MPa | 165.5 | 165.5 | 165.5 | 165.5 | 165.5 | 165.5 |
| Tensile Stress, CW | D-638 | MPa | 51.7 | 68.9 | 68.9 | 51.7 | 68.9 | 68.9 |
| Tensile Modulus, LW | D-638 | GPa | 13.8 | 13.8 | 13.8 | 13.8 | 13.8 | 13.8 |
| Tensile Modulus, CW | D-638 | GPa | 6.9 | 7.6 | 9.6 | 6.9 | 7.6 | 9.6 |
| Compressive Stress, LW | D-6641 | MPa | 165.5 | 165.5 | 165.5 | 165.5 | 165.5 | 165.5 |
| Compressive Stress, CW | D-6641 | MPa | 106.9 | 113.8 | 113.8 | 113.8 | 120.7 | 120.7 |
| Compressive Modulus, LW | D-6641 | GPa | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 |
| Compressive Modulus, CW | D-6641 | GPa | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 |
| Flexural Stress, LW | D-790 | MPa | 241.3 | 241.3 | 206.8 | 241.3 | 241.3 | 206.8 |
| Flexural Stress, CW | D-790 | MPa | 103.4 | 103.4 | 124.1 | 103.4 | 103.4 | 124.1 |
| Flexural Modulus, LW | D-790 | GPa | 11.0 | 13.8 | 13.8 | 11.0 | 13.8 | 13.8 |
| Flexural Modulus, CW | D-790 | GPa | 6.2 | 7.6 | 9.6 | 6.2 | 7.6 | 9.6 |
| In-Plane Shear Strength | D-5379 | MPa | 41.3 | 41.3 | 41.3 | 41.3 | 41.3 | 41.3 |
| In-Plane Shear Modulus | D-5379 | GPa | 2.76 | 2.76 | 2.76 | 2.76 | 2.76 | 2.76 |
| Interlaminar Shear Strength | D-2344 | MPa | 24.1 | 24.1 | 24.1 | 24.1 | 24.1 | 24.1 |
| Pin-bearing Strength, LW | D-953[A] | MPa | 144.8 | 144.8 | 144.8 | 144.8 | 144.8 | 144.8 |
| Pin-bearing Strength, CW | D-953[A] | MPa | 89.7 | 89.7 | 89.7 | 89.7 | 89.7 | 89.7 |

| Thickness of Profile (mm) | ASTM Required | Strength (kN) |
|---|---|---|
| t=9.525mm | TBC | 2.9 |
| t=12.7mm | TBC | 4.0 |
| t=19.05mm | TBC | 5.6 |

**Pull-through Strength Per Fastener**

*The pull-through strength per fastener corresponds to the thickness and the ASTM required.

For example, when ASTM required is D-790 and t= 9.525mm, the pull-through strength is 2.9kN.

| Physical Properties | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Barcol Hardness | D-2583 | --- | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 |
| 24 Hour Water Absorption | D-570 | % max. | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Density | D-792 | g/cc | 1.72 - 1.94 | 1.72 - 1.94 | 1.72 - 1.94 | 1.72 - 1.94 | 1.72 - 1.94 | 1.72 - 1.94 |
| Coefficient Thermal Expansion, DW | D-696 | $10^{-6}$mm/mm /°C | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| Glass Transition Temperature | D-4065 | °C | 83 | 83 | 83 | 83 | 83 | 83 |
| **Electrical Properties** | | | | | | | | |
| Arc Resistance, LW | D-495 | seconds | 120.0 | 120.0 | 120.0 | 120.0 | 120.0 | 120.0 |
| Dielectric Strength, LW | D-149 | kv./mm | 1.37 | 1.37 | 1.37 | 1.37 | 1.37 | 1.37 |
| Dielectric Strength, PF | D-149 | volts/mil. | 200.0 | ---- | ---- | 200.0 | ---- | ---- |

| Flammability Properties For FR and VE | | |
|---|---|---|
| Tunnel Test | E-84 | Flame Spread 25 max. |
| Flammability | D-635 | Non-burning |
| UL | 94 | VO |
| NBS Smoke Chamber | E-662 | Smoke Density 600-700 |

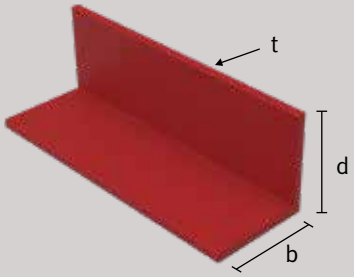
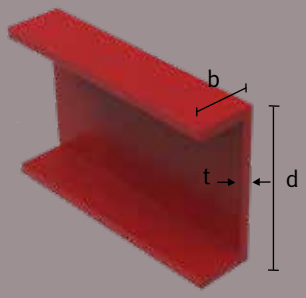
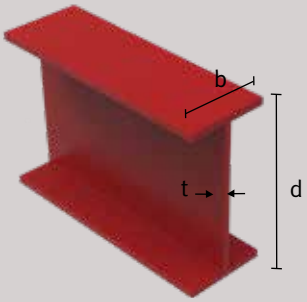
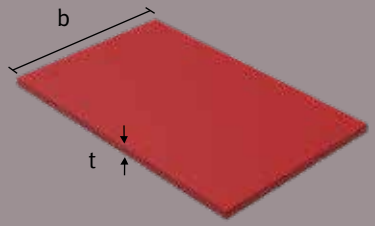
| | |
|---|---|
| CW | Crosswise |
| LW | Lengthwise |
| PF | Perpendicular to Laminate Face |

# Coupon Properties

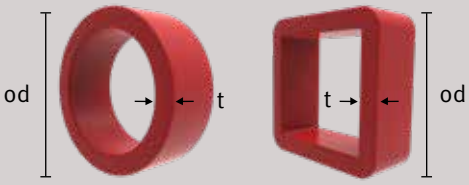
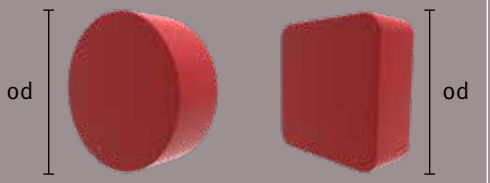
| COMPARE | | | |
|---|---|---|---|
| | **ArchitEX™** | vs | **Steel** |
| Corrosion Resistance | ArchitEX™ is available in either polyester or vinyl ester resin for resistance to a broad range of chemicals.<br>Painting is beneficial in assisting with UV resistance when subjected to prolonged exposure. | | Subject to oxidation and corrosion.<br>Requires painting or galvanizing for many applications. |
| Weight | Lightweight - weight 25% as much as steel.<br>12.7mm thick plate = 22.95 kg/m² | | Could require lifting equipment to move and place.<br>12.7mm thick plate = 99.6 kg/m² |
| Conductivity | Low electrical conductivity properties - high dielectric capability<br>Low thermal conductivity 4 (BTU/SF/HR/F°/IN). | | Conducts electricity. Potential Shock Hazard<br>Thermal Conductivity 260-460 (BTU/SF/HR/F°/IN). |
| Strength | ArchitEX™ has a high strength-to-weight ratio and pound-for-pound is stronger than steel in the lengthwise direction.<br>Tensile strength = 206.8MPa , CW = 48.2MPa | | Homogeneous material.<br>Tensile strength = 413.7MPa<br>Yield strength = 248.2MPa |
| Stiffness | Modulus of Elasticity = 17.2GPa<br>Will not permanently deform under working load. | | Flexural modulus = 200MPa<br>Modulus of Elasticity = 200GPa |
| Impact Resistance | Glass mats in ArchitEX™ distributes impact load to prevent surface damage. Will not permanently deform under impact. | | Can permanently deform under impact. |
| EMI/RFI Transparency | Transparent to EMI/RFI transmissions. | | Can interfere with EMI/RFI transmissions. |
| Versatility | Pigments added to the resin provide color throughout the part. Special colors available. | | Must be painted for color. To maintain color and corrosion resistance, repainting may be required. |
| Easy Field Fabrication | ArchitEX™ can be field fabricated using simple carpenter tools with carbide or diamond tip blades.<br>Lightweight for easier erection and installation. | | Often requires welding and cutting torches.<br>Heavier material requires special handling equipment to erect and install. |
| Cost | Lower installation and maintenance costs in industrial applications often equals lower lifecycle costs. | | Lower initial cost. |

# General Tolerances

## Cross Sectional Tolerances

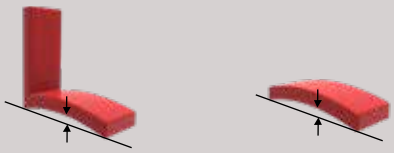
| Shapes | Dimension | Tolerance % of Nominal | * Maximum or Minimum Tolerances |
|---|---|---|---|
| Angles   | t = thickness | ± 10 % | ± 0.26mm min. |
| | b = flange width | ± 4 % | ± 2.4mm max. |
| | d = depth | ± 4 % | ± 2.4mm max. |
| C Sections   | t = thickness | ± 10 % | ± 0.26mm min. |
| | b = flange width | ± 4 % | ± 2.4mm max. |
| | d = depth | ± 4 % | ± 2.4mm max. |
| I, Wide Flange Section   | t = thickness | ± 10 % | ± 0.26mm min. |
| | b = flange width | ± 4 % | ± 2.4mm max. |
| | d = depth | ± 4 % | ± 2.4mm max. |
| Flat Sheet   | t = thickness | ± 15%<br>± 10 % | ± 0.25mm min<br>± 1.27mm max |
| | b = width | ± 4 % | ± 2.4mm max. |

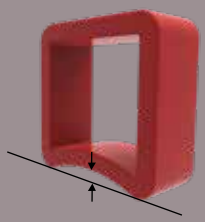
## Cross Sectional Tolerance

| Shapes | Dimension | Outside Dimension Condition | Tolerances |
|---|---|---|---|
| Closed Shapes<br>Round, Square and Rectangular Tubes<br>  | t = thickness | All | ± 0.25mm min |
| | od = outside dimension | All | ± 2.39mm max |
| Round Rod & Square Bar<br>  | od = outside dimension | All | ± 2.39mm max |

## Flatness

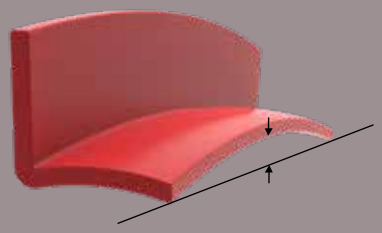
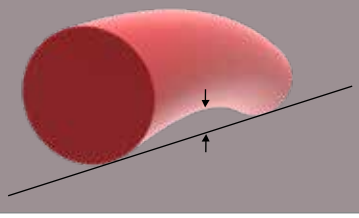
Flatness is measured in the center with the weight of the profile minimising the deviation by contact with a flat surface

| Structural Shapes<br>Rods, Bars & Flat Sheet<br>  | Allowable deviation from flat | |
|---|---|---|
| | Width (W) | All Thickness |
| | Up to 25.4mm | 0.2mm |
| | Over 25.4mm | 0.008 X W; 6.35 MAX |

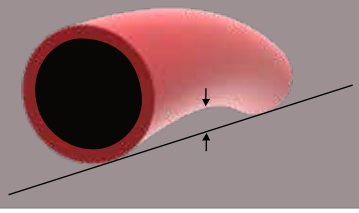
| Hollow Shapes<br>  | Allowable deviation from flat | | |
|---|---|---|---|
| | Width | Thickness under 4.8mm | Thickness 4.8mm and over |
| | Up to 25.4mm | 0.3mm | 0.2mm |
| | Over 25.4mm | 0.012 x width | 0.008 x width |

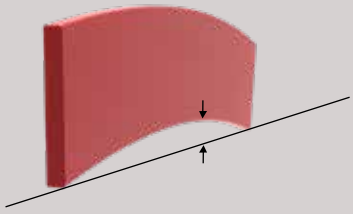
## Straightness

Straightness is measured in the centre with the weight of the pultrusion minimising the deviation by contact with a flat surface.

| Angle, Beam and C Section  | Allowable deviation from straight | |
|---|---|---|
| | All widths | 4.17 mm/m |
| Rods and Square Bars  | All Diameter/Depth | 2.5 mm/m |

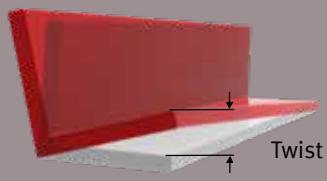
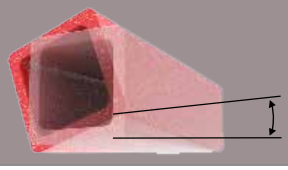
| Rectangular Bar  | Width | Thickness | Allowable deviation from straight |
|---|---|---|---|
| | Up to 38.1mm | Up to 2.4mm | 4.17mm/m |
| | | 2.4mm and over | 3.33mm/m |
| | 38.1mm and over | All thickness | 3.33mm/m |

| Round, Square, and Rectangular Tube  | Allowable deviation from straight | |
|---|---|---|
| | Diameter/Depth | 2.5mm/m |

| Flat Sheet and Plate  | Allowable deviation from straight | |
|---|---|---|
| | All thickness and widths | 2.5mm/m |

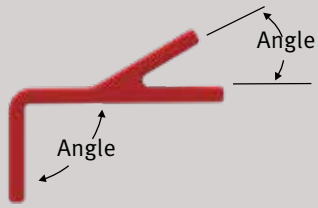
## Twist

Twist is measured with the weight of the pultrusion minimising the twist.

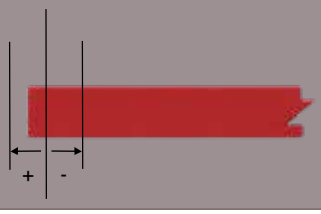
| | Allowable twist |
|---|---|
| Bars and other Structural Profiles other than Tubes   | 0.003°/mm |
| Closed Profiles (Tubes)   | 0.003°/mm ; 7° Max |

## Angularity

Angularity is the angle measured between two prependicular faces of the profile.

| | Allowable deviation from specific angle | |
|---|---|---|
| All Profiles   | Thickness up to 19mm | ± 2° |

## Cut Lengths

| | Allowable deviation from specific length | |
|---|---|---|
| All Profiles   | up to 2.44m | 0 + 6.35mm |
| | 2.44m <= 7.32m | 0 + 12.7mm |
| | > 7.32m | 0 + 76.2mm |

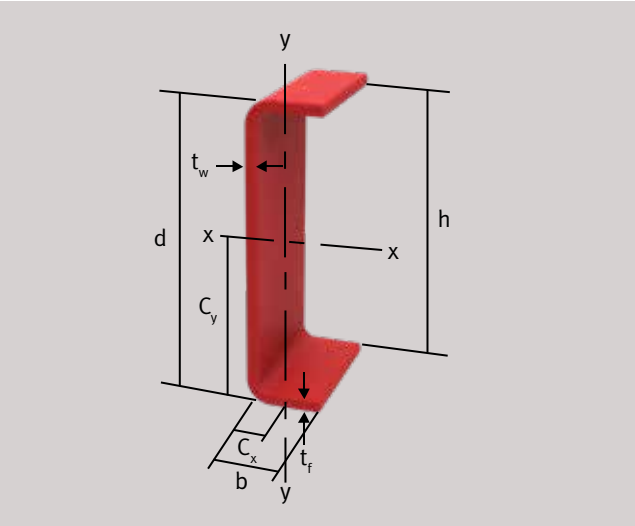
*All parts being cut from stock must allow for blade width

## Squareness of Endcut

| | Allowable deviation from specific length | |
|---|---|---|
| All Profiles | Profiles 50.8mm and under | ± 2° |
| | Profiles over 50.8mm | ± 1° |

## Sectional Properties - C Section

The section values shown on this page have been calculated from the nominal dimensions of the profile. All the shapes listed in the table are available but not all are stocked. For information on availability and price, contact Treadwell Group on 1800 246 800.

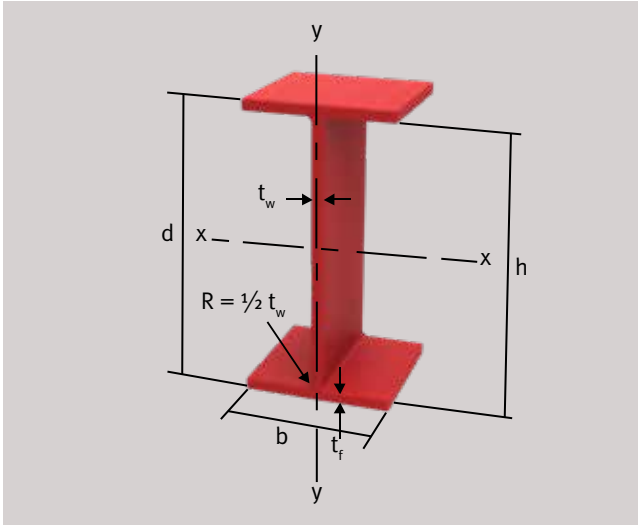



| C Section | | C Section Dimensions | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Part | Part Number | d mm | b mm | $t_w$ mm | $t_f$ mm | h mm | $C_x$ mm | $C_y$ mm |
| | | Web | Flange | | | | | |
| 50.8 x 14.2 x 3.2mm | ARX-CS0511403 | 50.8 | 14.2 | 3.2 | 3.2 | 44.8 | 3.8 | 25.4 |
| 76.2 x 22.2 x 6.4mm | ARX-CS0762206 | 76.2 | 22.2 | 6.4 | 6.4 | 63.5 | 6.4 | 38.1 |
| 76.2 x 25.4 x 6.4mm | ARX-CS0762506 | 76.2 | 25.4 | 6.4 | 6.4 | 63.5 | 7.4 | 38.1 |
| 76.2 x 38.1 x 6.4mm | ARX-CS0763806 | 76.2 | 38.1 | 6.4 | 6.4 | 63.5 | 11.8 | 38.1 |
| 88.9 x 3.2 x 30.2 x 4.8mm | ARX-CS0893005 | 88.9 | 30.2 | 3.2 | 4.8 | 79.4 | 8.8 | 44.5 |
| 88.9 x 38.1 x 4.8mm | ARX-CS0893805 | 88.9 | 38.1 | 4.8 | 4.8 | 79.4 | 10.5 | 44.5 |
| 101.6 x 28.6 x 6.4mm | ARX-CS1022906 | 101.6 | 28.6 | 6.4 | 6.4 | 88.9 | 7.5 | 50.8 |
| 101.6 x 34.9 x 4.8mm | ARX-CS1023505 | 101.6 | 34.9 | 4.8 | 4.8 | 92.1 | 8.9 | 50.8 |
| 139.7 x 38.1 x 6.4mm | ARX-CS1403806 | 139.7 | 38.1 | 6.4 | 6.4 | 127.0 | 9.1 | 69.9 |
| 152.4 x 41.3 x 6.4mm | ARX-CS1524106 | 152.4 | 41.3 | 6.4 | 6.4 | 139.7 | 9.7 | 76.2 |
| 152.4 x 42.9 x 9.5mm | ARX-CS1524310 | 152.4 | 42.9 | 9.5 | 9.5 | 133.4 | 11.3 | 76.2 |
| 203.2 x 55.6 x 9.5mm | ARX-CS2035610 | 203.2 | 55.6 | 9.5 | 9.5 | 184.2 | 13.4 | 101.6 |
| 254 x 69.9 x 12.7mm | ARX-CS2547013 | 254 | 69.9 | 12.7 | 12.7 | 228.6 | 17.2 | 127.0 |
| 292.1 x 69.9 x 12.7mm | ARX-CS2927013 | 292.1 | 69.9 | 12.7 | 12.7 | 266.7 | 16.2 | 146.1 |
| 304.8 x 76.2 x 12.7mm | ARX-CS3057613 | 304.8 | 76.2 | 12.7 | 12.7 | 279.4 | 17.6 | 152.4 |
| 457.2 x 60.3 x 9.5mm | ARX-CS4576010 | 457.2 | 60.3 | 9.5 | 9.5 | 438.2 | 10.2 | 228.6 |

## Sectional Properties – I Section

The section values shown on this page have been calculated from the nominal dimensions of the profile. All the shapes listed in the table are available but not all are stocked. For information on availability and price, contact Treadwell Group on 1800 246 800.

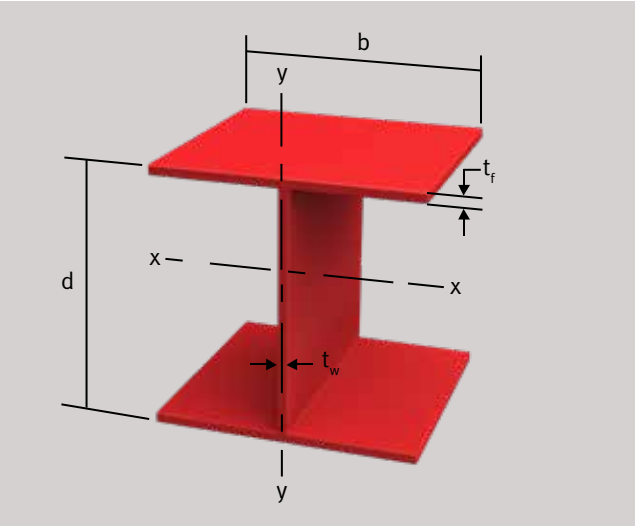
*457.20 I Section - Web = 9.53mm Flange = 12.70mm
*609.60 I Section - Web = 9.53mm Flange = 19.05mm




| I Section | | I Section Dimensions | | | | |
|---|---|---|---|---|---|---|
| Part | Part Number | d mm | b mm | $t_w$ mm | $t_f$ mm | h mm |
| | | Web | Flange | | | |
| 76.2 x 38.1 x 6.4mm | ARX-IS07603806 | 76.2 | 38.1 | 6.4 | 6.4 | 63.5 |
| 88.9 x 38.1 x 4.8mm | ARX-IS08903805 | 88.9 | 38.1 | 4.8 | 4.8 | 79.4 |
| 101.6 x 50.8 x 6.4mm | ARX-IS10205106 | 101.6 | 50.8 | 6.4 | 6.4 | 88.9 |
| 139.7 x 63.5 x 6.4mm | ARX-IS14006406 | 139.7 | 63.5 | 6.4 | 6.4 | 127.0 |
| 152.4 x 76.2 x 6.4mm | ARX-IS15207606 | 152.4 | 76.2 | 6.4 | 6.4 | 139.7 |
| 152.4 x 76.2 x 9.5mm | ARX-IS15207610 | 152.4 | 76.2 | 9.5 | 9.5 | 133.4 |
| 203.2 x 101.6 x 9.5mm | ARX-IS20310210 | 203.2 | 101.6 | 9.5 | 9.5 | 184.2 |
| 203.2 x 101.6 x 12.7mm | ARX-IS20310213 | 203.2 | 101.6 | 12.7 | 12.7 | 177.8 |
| 254 x 127 x 9.5mm | ARX-IS25412710 | 254 | 127 | 9.5 | 9.5 | 235.0 |
| 254 x 127 x 12.7mm | ARX-IS25412713 | 254 | 127 | 12.7 | 12.7 | 228.6 |
| 304.8 x 152.4 x 12.7mm | ARX-IS30515213 | 304.8 | 152.4 | 12.7 | 12.7 | 279.4 |
| 457.2 x 9.5 x 114.3 x 12.7mm | ARX-IS45711413 | 457.2 | 114.3 | 9.5 | 12.7 | 431.8 |
| 609.6 x 9.5 x 190.5 x 19.1mm | ARX-IS61019119 | 609.6 | 190.5 | 9.5 | 19.1 | 571.5 |

## Sectional Properties - WF Section

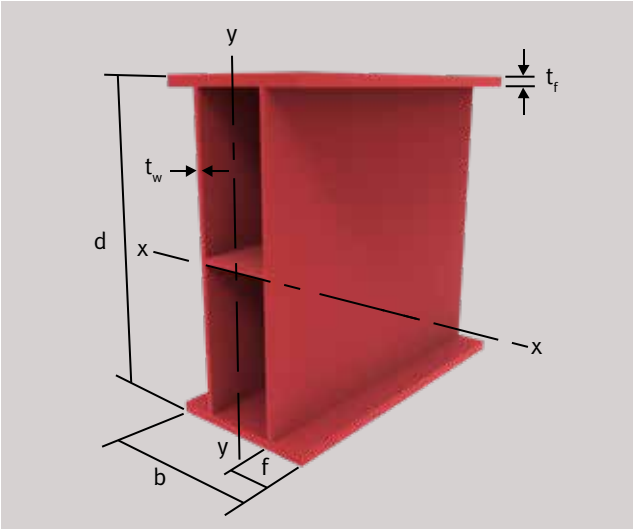
The section values shown on this page have been calculated from the nominal dimensions of the profile. All the shapes listed in the table are available but not all are stocked. For information on availability and price, contact Treadwell Group on 1800 246 800.




| WF Section | | WF Section Dimensions | | | | | | WF Section Properties | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Part | Part Number | d mm | b mm | $t_w$ mm | $t_f$ mm | Area mm² | Weight Kg./m | x-x | | | y-y | | |
| | | Web | Flange | | | | | I mm⁴ | S mm³ | r mm | I mm⁴ | S mm³ | r mm |
| 76.2 x 6.4mm | ARX-WF07606 | 76.2 | 76.2 | 6.4 | 6.4 | 1374.2 | 2.44 | 1319454 | 34577 | 31.0 | 470342 | 12290 | 18.5 |
| 101.6 x 6.4mm | ARX-WF10206 | 101.6 | 101.6 | 6.4 | 6.4 | 1864.5 | 3.20 | 3304878 | 65057 | 42.2 | 1111338 | 21959 | 24.4 |
| 152.4 x 6.4mm | ARX-WF15206 | 152.4 | 152.4 | 6.4 | 6.4 | 2832.3 | 5.06 | 11771025 | 154530 | 64.5 | 3750245 | 49161 | 36.3 |
| 152.4 x 9.5mm | ARX-WF15210 | 152.4 | 152.4 | 9.5 | 9.5 | 4180.6 | 7.29 | 16720016 | 219423 | 63.2 | 5627449 | 73906 | 36.6 |
| 203.2 x 9.5mm | ARX-WF20310 | 203.2 | 203.2 | 9.5 | 9.5 | 5632.2 | 9.66 | 41285995 | 406399 | 85.6 | 13331893 | 131260 | 48.8 |
| 203.2 x 12.7mm | ARX-WF20313 | 203.2 | 203.2 | 12.7 | 12.7 | 7425.8 | 12.95 | 52844742 | 520125 | 84.3 | 17789731 | 175178 | 49.0 |
| 254 x 9.5mm | ARX-WF25410 | 254.0 | 254.0 | 9.5 | 9.5 | 7135.5 | 13.01 | 82634425 | 650730 | 107.7 | 26031113 | 205002 | 60.5 |
| 254 x 12.7mm | ARX-WF25413 | 254.0 | 254.0 | 12.7 | 12.7 | 9361.3 | 16.22 | 106638491 | 839673 | 106.9 | 34722026 | 273336 | 61.1 |
| 304.8 x 12.7mm | ARX-WF30513 | 304.8 | 304.8 | 12.7 | 12.7 | 11296.8 | 19.64 | 188323909 | 1236404 | 129.0 | 59983111 | 393617 | 72.9 |

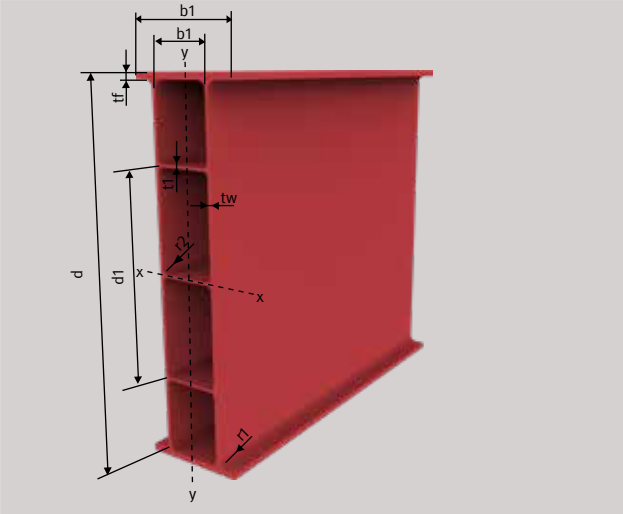
## Sectional Properties - Double Web Section

The section values shown on this page have been calculated from the nominal dimensions of the profile. All the shapes listed in the table are available but not all are stocked. For information on availability and price, contact Treadwell Group on 1800 246 800.




## Sectional Properties - Double Web Section

The section values shown on this page have been calculated from the nominal dimensions of the profile. All the shapes listed in the table are available but not all are stocked. For information on availability and price, contact Treadwell Group on 1800 246 800.

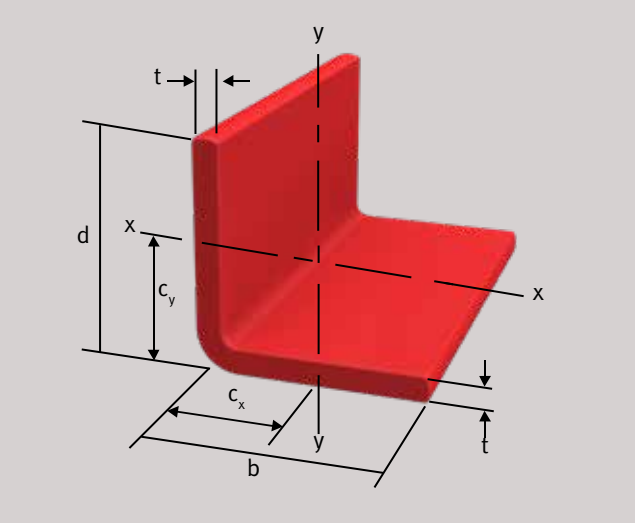



| Double Web Section | | DWB Section Dimensions | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Part | Part Number | d mm | $d_1$ mm | b mm | $b_1$ mm | $t_w$ mm | $t_f$ mm | $t_1$ mm | $r_1$ mm | $r_2$ mm |
| | | Web | | Flange | | | | | | |
| 475mm X 225mm | ARX-DW4752251016 | 475 | / | 225 | 115 | 10 | 16 | 10 | 5 | 5 |
| 610mm X 203mm | ARX-DW6102030810 | 609.6 | 355.6 | 203.2 | 101.6 | 8 | 18 | 6 | 19.1 | 12.7 |
| 914mm X 254mm | ARX-DW9142540916 | 914.4 | 508 | 254 | 152.4 | 8.5 | 16 | 6.4 | 19.1 | 12.7 |

| Double Web Section | | DWB Section Properties | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Part | Part Number | x-x | | | | y-y | | | | Area | Weight |
| | | I $mm^4$ | S $mm^3$ | r mm | $A_w$ $mm^2$ | I $mm^4$ | S $mm^3$ | r mm | $A_f$ $mm^2$ | $mm^2$ | kg/m |
| 475mm X 225mm | ARX-DW475221016 | $5.24 \times 10^8$ | $2.21 \times 10^6$ | 180.6 | 8900 | $6.07 \times 10^7$ | $5.40 \times 10^5$ | 61.5 | 7200 | 16060 | 28.9 |
| 610mm X 203mm | ARX-DW6102030810 | $9.86 \times 10^8$ | $3.23 \times 10^6$ | 226.5 | 9178 | $5.26 \times 10^7$ | $5.18 \times 10^5$ | 52.3 | 7315 | 19216 | 35.6 |
| 914mm X 254mm | ARX-DW9142540916 | $2.87 \times 10^9$ | $3.26 \times 10^2$ | 326.5 | 15001 | $1.41 \times 10^8$ | $1.11 \times 10^6$ | 72.5 | 8128 | 26908 | 49.7 |

## Sectional Properties - Equal Leg Angle

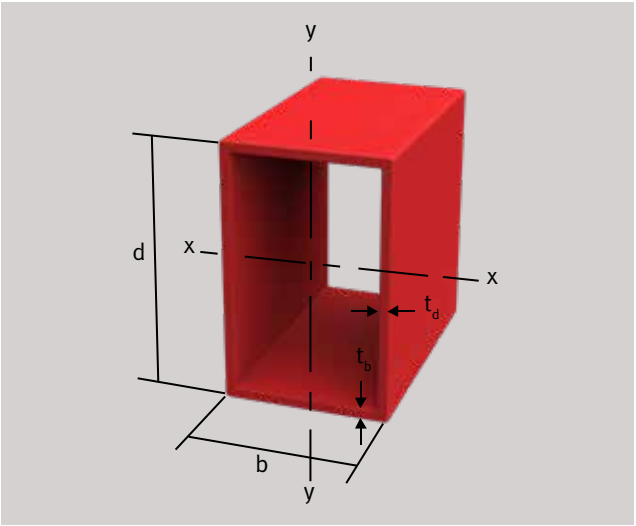
The section values shown on this page have been calculated from the nominal dimensions of the profile. All the shapes listed in the table are available but not all are stocked. For information on availability and price, contact Treadwell Group on 1800 246 800.




| Equal Leg Angle | | ELA Section Dimensions | | | | | | ELA Section Properties | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Part | Part Number | d mm | b mm | t mm | $C_x/C_y$ mm | Area $mm^2$ | Weight Kg./m | I $mm^4$ | S $mm^3$ | r mm |
| 25.4 x 3.2mm | ARX-EL02503 | 25.4 | 25.4 | 3.2 | 7.5 | 151.2 | 0.27 | 9042 | 506 | 7.7 |
| 31.8 x 3.2mm | ARX-EL03203 | 31.8 | 31.8 | 3.2 | 9.1 | 191.5 | 0.35 | 18292 | 808 | 9.8 |
| 38.1 x 4.8mm | ARX-EL03805 | 38.1 | 38.1 | 4.8 | 11.3 | 339.3 | 0.61 | 45676 | 1702 | 11.6 |
| 38.1 x 6.4mm | ARX-EL03806 | 38.1 | 38.1 | 6.4 | 11.8 | 443.4 | 0.80 | 57658 | 2195 | 11.4 |
| 50.8 x 6.4mm | ARX-EL05106 | 50.8 | 50.8 | 6.4 | 15.0 | 604.7 | 1.09 | 144678 | 4045 | 15.5 |
| 76.2 x 6.4mm | ARX-EL07606 | 76.2 | 76.2 | 6.4 | 21.4 | 927.2 | 1.67 | 517892 | 9450 | 23.6 |
| 76.2 x 9.5mm | ARX-EL07610 | 76.2 | 76.2 | 9.5 | 22.5 | 1360.6 | 2.45 | 732434 | 13650 | 23.2 |
| 76.2 x 12.7mm | ARX-EL07613 | 76.2 | 76.2 | 12.7 | 23.7 | 1773.8 | 3.20 | 922528 | 17561 | 22.8 |
| 101.6 x 6.4mm | ARX-EL10206 | 101.6 | 101.6 | 6.4 | 27.8 | 1249.7 | 2.25 | 1265063 | 17131 | 31.8 |
| 101.6 x 9.5mm | ARX-EL10210 | 101.6 | 101.6 | 9.5 | 28.9 | 1844.3 | 3.32 | 1814196 | 24959 | 31.4 |
| 101.6 x 12.7mm | ARX-EL10213 | 101.6 | 101.6 | 12.7 | 30.1 | 2418.8 | 4.36 | 2314854 | 32356 | 30.9 |
| 152.4 x 9.5mm | ARX-EL15210 | 152.4 | 152.4 | 9.5 | 41.6 | 2811.8 | 5.07 | 6404379 | 57819 | 47.7 |
| 152.4 x 12.7mm | ARX-EL15213 | 152.4 | 152.4 | 12.7 | 42.8 | 3709.7 | 6.69 | 8286266 | 75600 | 47.3 |

## Sectional Properties – Rectangular Hollow Section

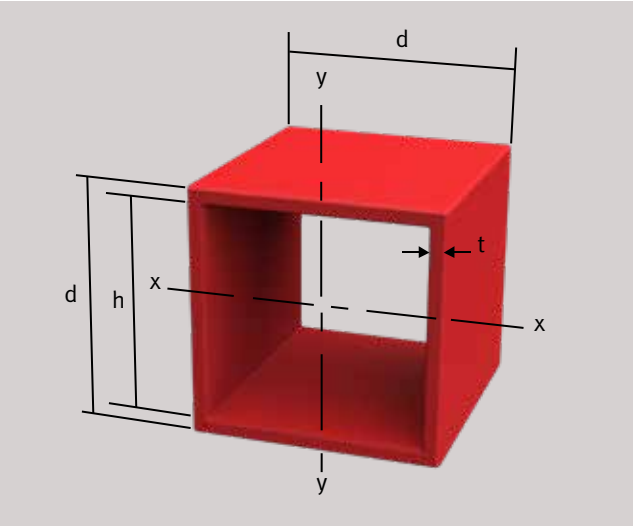
The section values shown on this page have been calculated from the nominal dimensions of the profile. All the shapes listed in the table are available but not all are stocked. For information on availability and price, contact Treadwell Group on 1800 246 800.




| Rectangular Hollow Section | | RHS Section Dimensions | | | |
|---|---|---|---|---|---|
| Part | Part Number | d mm | b mm | $t_d$ mm | $t_b$ mm |
| 38.1 x 19.1 x 3.2mm | ARX-RH03801903 | 38.1 | 19.1 | 3.2 | 3.2 |
| 38.1 x 25.4 x 3.2mm | ARX-RH03802503 | 38.1 | 25.4 | 3.2 | 3.2 |
| 50.8 x 25.4 x 3.2mm | ARX-RH05102503 | 50.8 | 25.4 | 3.2 | 3.2 |
| 100 x 75 x 5.5 | ARX-RH10007505 | 100 | 75 | 5.5 | 5.5 |
| 101.6 x 25.4 x 3.2mm | ARX-RH10202503 | 101.6 | 25.4 | 3.2 | 3.2 |
| 101.6 x 3.2 x 50.8 x 6.4mm | ARX-RH10205106 | 101.6 | 50.8 | 3.2 | 6.4 |
| 152.4 x 101.6 x 6.4mm | ARX-RH15210206 | 152.4 | 101.6 | 6.4 | 6.4 |

## Sectional Properties - Square Hollow Section

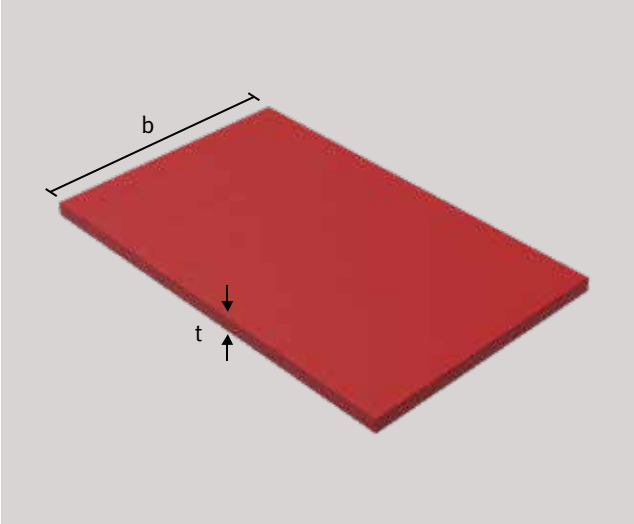
The section values shown on this page have been calculated from the nominal dimensions of the profile. All the shapes listed in the table are available but not all are stocked. For information on availability and price, contact Treadwell Group on 1800 246 800.




| Square Hollow Section | SHS Section Dimensions | | | |
|---|---|---|---|---|
| Part | Part Number | d mm | t mm | h mm |
| 25.4 x 3.2mm | ARX-SH02503 | 25.4 | 3.2 | 19.1 |
| 25.4 x 6.4mm | ARX-SH02506 | 25.4 | 6.4 | 12.7 |
| 31.8 x 3.2mm | ARX-SH03203 | 31.8 | 3.2 | 25.4 |
| 31.8 x 6.4mm | ARX-SH03206 | 31.8 | 6.4 | 19.1 |
| 38.1 x 3.2mm | ARX-SH03803 | 38.1 | 3.2 | 31.8 |
| 38.1 x 6.4mm | ARX-SH03806 | 38.1 | 6.4 | 25.4 |
| 44.5 x 3.2mm | ARX-SH04503 | 44.5 | 3.2 | 38.1 |
| 44.5 x 6.4mm | ARX-SH04506 | 44.5 | 6.4 | 31.8 |
| 50.8 x 3.2mm | ARX-SH05103 | 50.8 | 3.2 | 44.5 |
| 50.8 x 6.4mm | ARX-SH05106 | 50.8 | 6.4 | 38.1 |
| 50.8 x 9.5mm | ARX-SH05110 | 50.8 | 9.5 | 31.8 |
| 57.2 x 3.2mm | ARX-SH05703 | 57.2 | 3.2 | 50.8 |
| 76.2 x 3.2mm | ARX-SH07603 | 76.2 | 3.2 | 69.9 |
| 76.2 x 6.4mm | ARX-SH07606 | 76.2 | 6.4 | 63.5 |
| 88.9 x 6.4mm | ARX-SH08906 | 88.9 | 6.4 | 76.2 |
| 101.6 x 8mm | ARX-SH10208 | 101.6 | 8 | 85.6 |
| 101.6 x 9.5mm | ARX-SH10210 | 101.6 | 9.5 | 82.6 |
| 127 x 8mm | ARX-SH12708 | 127 | 8 | 111.0 |
| 152.4 x 9.5mm | ARX-SH15210 | 152.4 | 9.5 | 133.4 |

## Sectional Properties - Flat Sheet

The section values shown on this page have been calculated from the nominal dimensions of the profile. All the shapes listed in the table are available but not all are stocked. For information on availability and price, contact Treadwell Group on 1800 246 800.




| Flat Sheet | | FP Section Dimensions | FP Section Properties |
|---|---|---|---|
| Part | Part Number | t mm | Weight kg./m |
| 3.2mm | ARX-FP03 | 3.2 | 6.1 |
| 6.4mm | ARX-FP06 | 6.4 | 12.2 |
| 9.5mm | ARX-FP10 | 9.5 | 18 |
| 12.7mm | ARX-FP13 | 12.7 | 24.1 |
| 15.9mm | ARX-FP16 | 15.9 | 30.2 |
| 19.1mm | ARX-FP19 | 19.1 | 36.1 |
| 25.4mm | ARX-FP25 | 25.4 | 48.3 |
| Note: Standard sheet width is 1200mm. | | | |

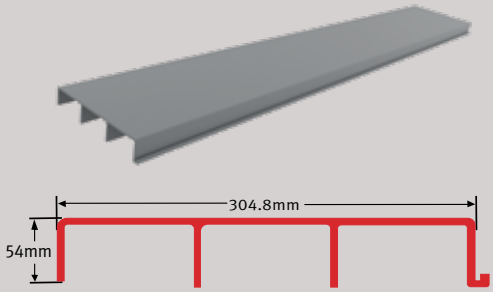
## Allowable Uniform Load Tables

Full section 3-point bending tests were conducted on Treadwell Reinforced Plastics' H-Beams, I-Beams, C Section and Square Hollow Section. The allowable uniform load tables were generated using these tests results as well as the formulas, properties, and assumptions listed below. Formulas for critical buckling and lateral-torsional buckling developed from theory are presented in Chapter 6 and 7 of the ASCE Structural Plastics Design Manual.

Treadwell also has a large range of unequal leg angles, circular hollow sections, solid bars, circular round bars and embedment angles available. Please consult our ArchitEX™ Structrual Product Guide available online, or check with your Treadwell representative.

## Part: SureLine® Standard Panel

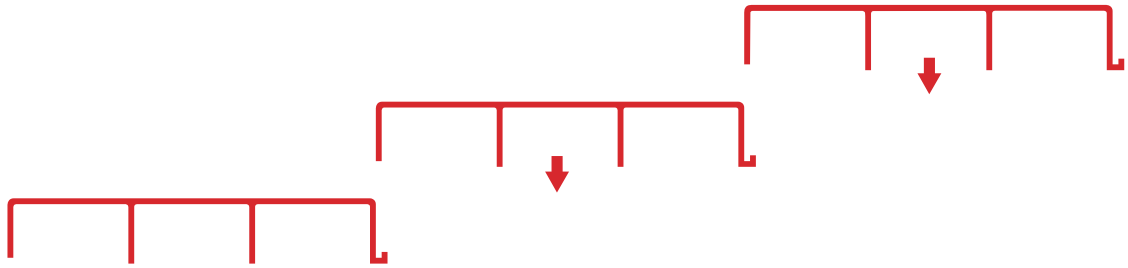
**Part Number: ARX-SL054**




Weight/ lm 4.48kg per lm

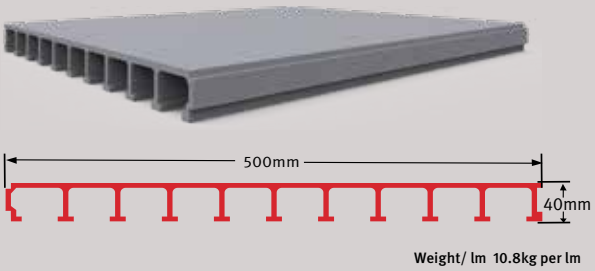
| | | | |
|---|---|---|---|
| $A_w$ | 1036 mm² | $W_t$. | 4.48 kg/m |
| I | 765865mm⁴ | S | 14798 mm³ |

## Installation



## Part: SureLine® Medium Duty Panel

**Part Number: ARX-SL040**




Weight/ lm 10.8kg per lm

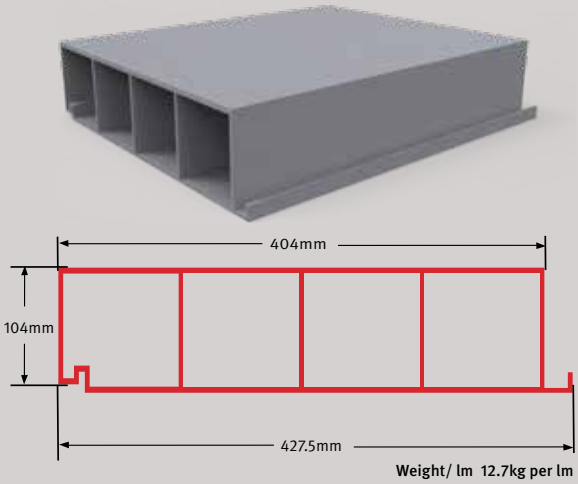
| | | | |
|---|---|---|---|
| $A_w$ | 2200 mm² | $W_t$. | 10.8 kg/m |
| I | 1021011 mm⁴ | S | 39930 mm³ |

## Installation

Special order only. Generally profiles are only produced in lengths up to 11.7m without adversely impacting on the ability to transport product.

## Part: SureLine® Heavy Duty Panel

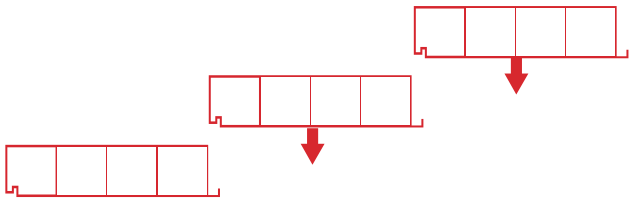
**Part Number: ARX-SL100**




Weight/ lm 12.7kg per lm

| | | | |
|---|---|---|---|
| $A_w$ | 2080 mm² | $W_t$. | 12.7 kg/m |
| I | 11096613 mm⁴ | S | 192449 mm³ |

## Installation

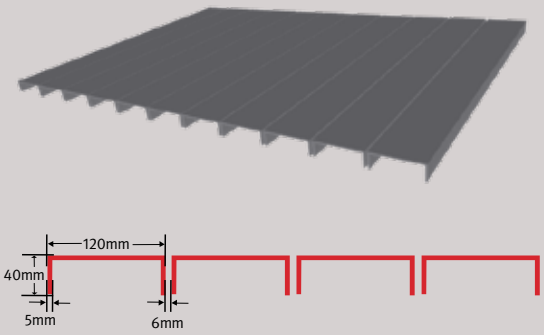


## Unique Panel Removal Feature

This allows access to a central panel without having to remove all panels.

## Part: UnidEX®40mm thick decking, 120mm bar width and 6mm gap

**Part Number: ARX-UN04012006**




**Properties per Bar**

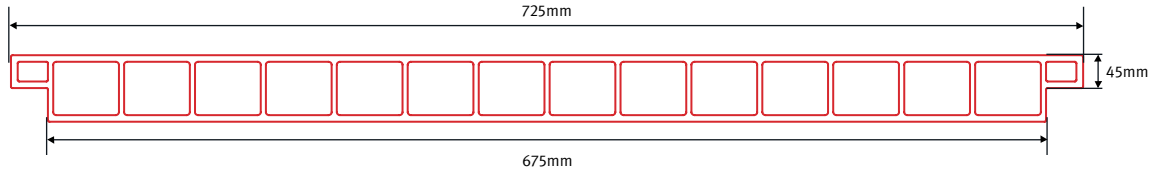
| | | | |
|---|---|---|---|
| $A_w$ | 400mm² | $W_t$. | 17 kg/m |
| I | 125400mm⁴ | S | 4716mm³ |

Special order only. Generally profiles are only produced in lengths up to 11.7m without adversely impacting on the ability to transport product.

## TreadSLAB® 45

**Part: TreadSLAB® 45mm Thick Decking, 48mm Web Distance, 4.5mm Flange Thickness and 3.5mm Web Thickness**

**Part Number: ARX-TS04504805**

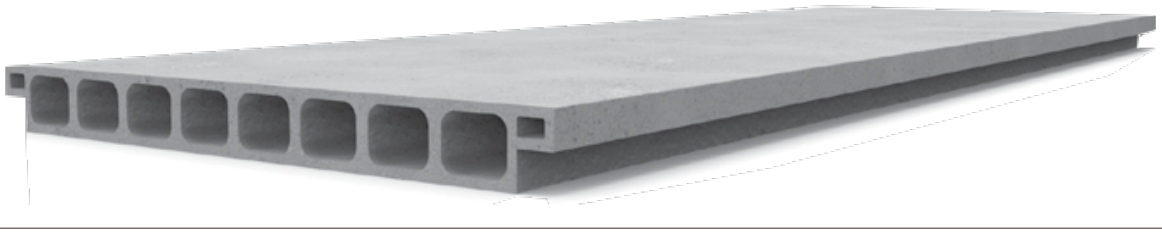


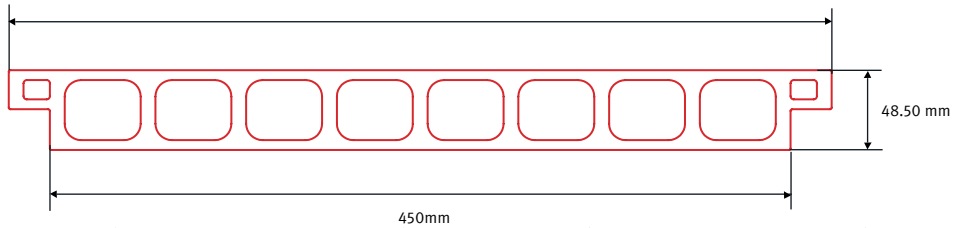

| Panel Size (mm) | | | Surface Type | Weight Per Square Metre (kg/m²) |
|---|---|---|---|---|
| Thickness | Standard Length | Width | | |
| 45mm Top | 3660 | 725 | Top Grit | 25 |
| 45mm Bottom | 3660 | 675 | Bottom Grit | |

## TreadSLAB® 50

**Part: TreadSLAB® 50mm Thick Decking, 55mm Web Distance, 6mm Flange Thickness and 9mm Web Thickness**

**Part Number: ARX-TS05005506**





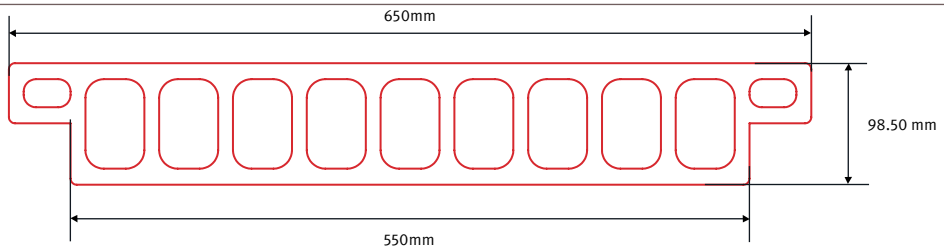

| Panel Size (mm) | | | Surface Type | Weight Per Square Metre (kg/m²) |
|---|---|---|---|---|
| Thickness | Standard Length | Width | | |
| 50mm Top | 3660 | 500 | Top Grit | 36.44 |
| 50mm Bottom | 3660 | 450 | Bottom Grit | |

Special order only. Generally profiles are only produced in lengths up to 11.7m without adversely impacting on the ability to transport product.

## TreadSLAB® 100

**Part: TreadSLAB® 100mm Thick Decking, 60mm Web Distance, 13mm Flange Thickness and 12mm Web Thickness**

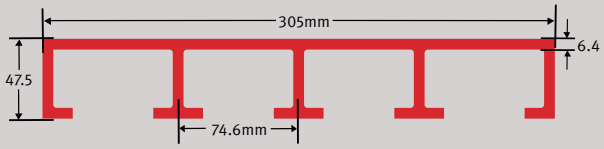
**Part Number: ARX-TS10006013**




| Panel Size (mm) | | | Surface Type | Weight Per Square Metre (kg/m²) |
|---|---|---|---|---|
| Thickness | Standard Length | Width | | |
| 100mm Top | 3660 | 650 | Top Grit | 92.17 |
| 100mm Bottom | 3660 | 550 | Bottom Grit | |

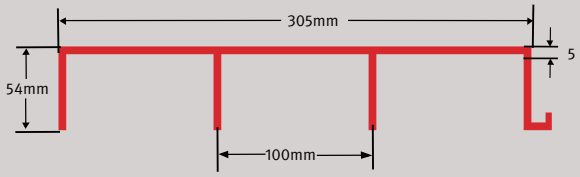
**Part: TreadSLAB® 47.5mm Thick Decking, 74.6mm Web Distance and 6.4mm Thickness**

**Part Number: ARX-TS04807506**



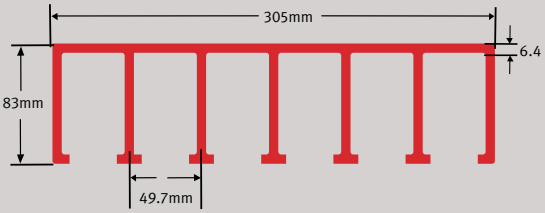

**Part: TreadSLAB® 54mm Thick Decking, 100mm Web Distance and 5mm Thickness**

**Part Number: ARX-TS05410005**




**Part: TreadSLAB® 83mm Thick Decking, 49.7mm Web Distance and 6.4mm Thickness**

**Part Number: ARX-TS08305006**




Special order only. Generally profiles are only produced in lengths up to 11.7m without adversely impacting on the ability to transport product.

Treadwell Fibreglass Reinforced Plastic louvres provide effective air control and long service life in the most demanding structural and environmental conditions.

Please consult our LouvrEX® brochure for more information.

Use our ArchitEX™ Structural Selection & Deflection Calculator on our website for structural profile data.

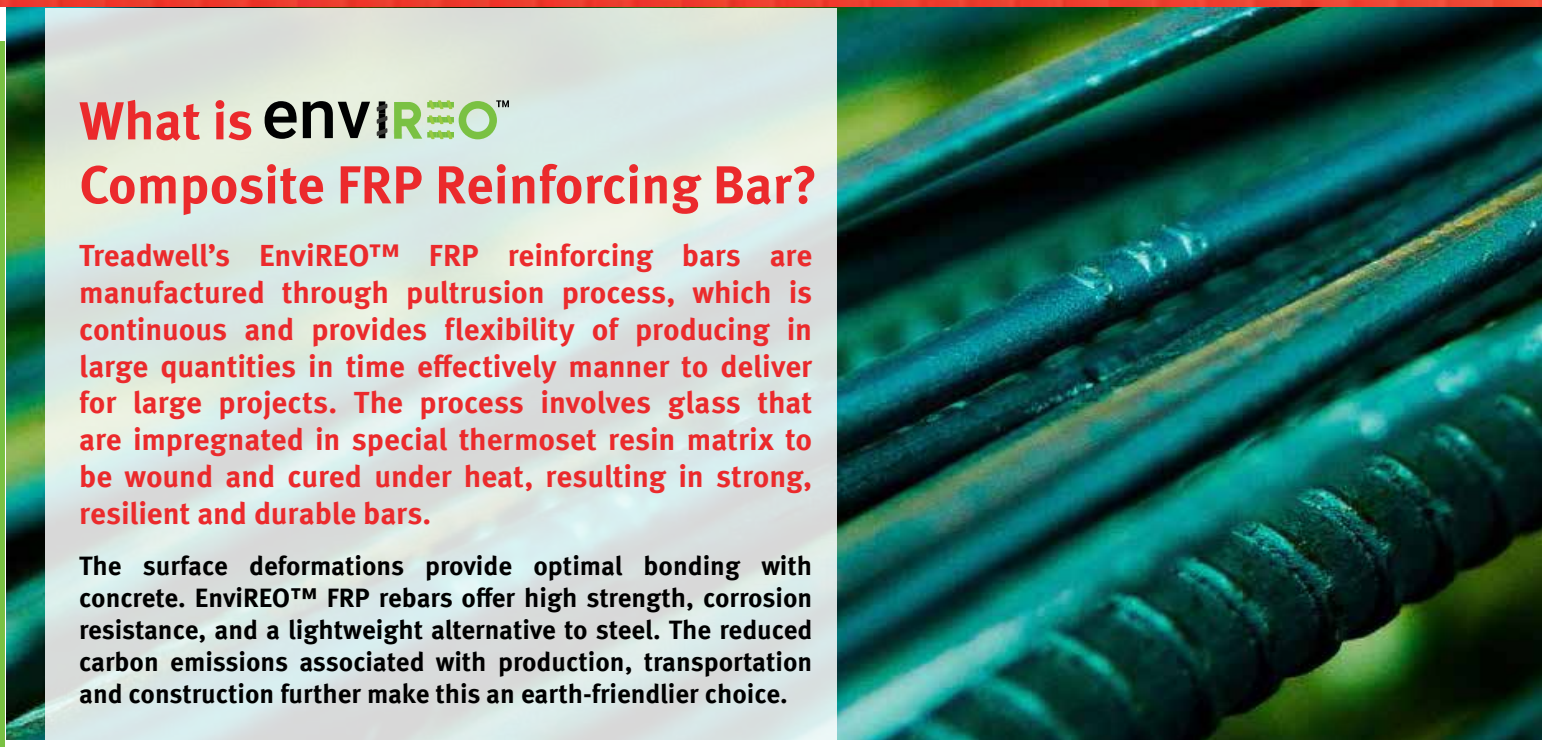
TreadSpec™

## CPX-EX-SK-500

**EX-Series® Sealer Resin Kit, include 500ml resin with 15ml catalyst**

**Ideal for sealing exposed fibres after any field cutting. This kit includes resin (standard 500ml), catalyst (standard 15ml) and is available in vinylester.**

# EnviREO™ Reinforcing Bars



## What is enviREO™ Composite FRP Reinforcing Bar?

**Treadwell's EnviREO™ FRP reinforcing bars are manufactured through pultrusion process, which is continuous and provides flexibility of producing in large quantities in time effectively manner to deliver for large projects. The process involves glass that are impregnated in special thermoset resin matrix to be wound and cured under heat, resulting in strong, resilient and durable bars.**

**The surface deformations provide optimal bonding with concrete. EnviREO™ FRP rebars offer high strength, corrosion resistance, and a lightweight alternative to steel. The reduced carbon emissions associated with production, transportation and construction further make this an earth-friendlier choice.**

## Comparison enviREO™ vs Conventional

| Comparison Snapshot | Basalt FRP | Steel | Stainless Steel | enviREO™ |
|---|---|---|---|---|
| **Strength** | +2.5x | Traditional | Traditional | +2.0X |
| **Weight** | 1/4 x | Heavy | Heavy | 1/4 x |
| **Carbon Footprint** | Low | Bad | Bad | Low |
| **Conductivity** | No | Yes | Yes | No |
| **Saltwater Deterioration** | No | 1 Day | 2-5 Years | No |
| **Easy to Transport** | Bar or Coil | Heavy, Long & Bends | Heavy, Long & Bends | Bar or Coil |

| | | **EnviREO™ 45** *(COMMONLY- STOCKED)* | **EnviREO™ 60** *(SPECIAL ORDER)* |
|---|---|---|---|
| **Tensile Strength** | Mpa | ›900 | ›1100 |
| **Modulus** | GPA | ›45 | ›60 |
| **Transverse Shear capacity** | Mpa | 160 | 180 |
| **Bond Strength** | Mpa | ›10 | ›15 |

The products range from 2mm to 36mm, while larger diameters are available on request. Standard stock length is 5.8m. Ancillary parts L- and U-shaped stirrups, anchors are available.

Mesh panels of up to 8mm diameter are also available.

*ICC test reports are available at request.*

# EXduro™ Cable Ladder & Instrument Stands

TREADWELL

# Contents



## EXduro™ Cable Ladder

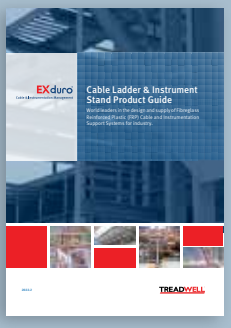


## EXduro™ Strut



## Instrumentation & Push Button Stands






**Please consult our EXduro™ Product Guide for more information.**

# Overview

EXduro™ cable ladder should be installed in compliance with the standards set by NEMA Publication FG-1. EXduro™ cable ladders can be manufactured according to specifications with pre-fabricated cable ladder and fittings.

Do observe common safety practices when assembling ladder and fittings in the field. Where possible, assemble in well-ventilated areas as dust from field cuts can accumulate. This presents no serious health hazard but can cause irritation and, if allowed to accumulate with grease and other machining lubricants, can become abrasive. Personnel should wear safety goggles, dust mask, coveralls or a shop coat when sawing, machining and sanding.

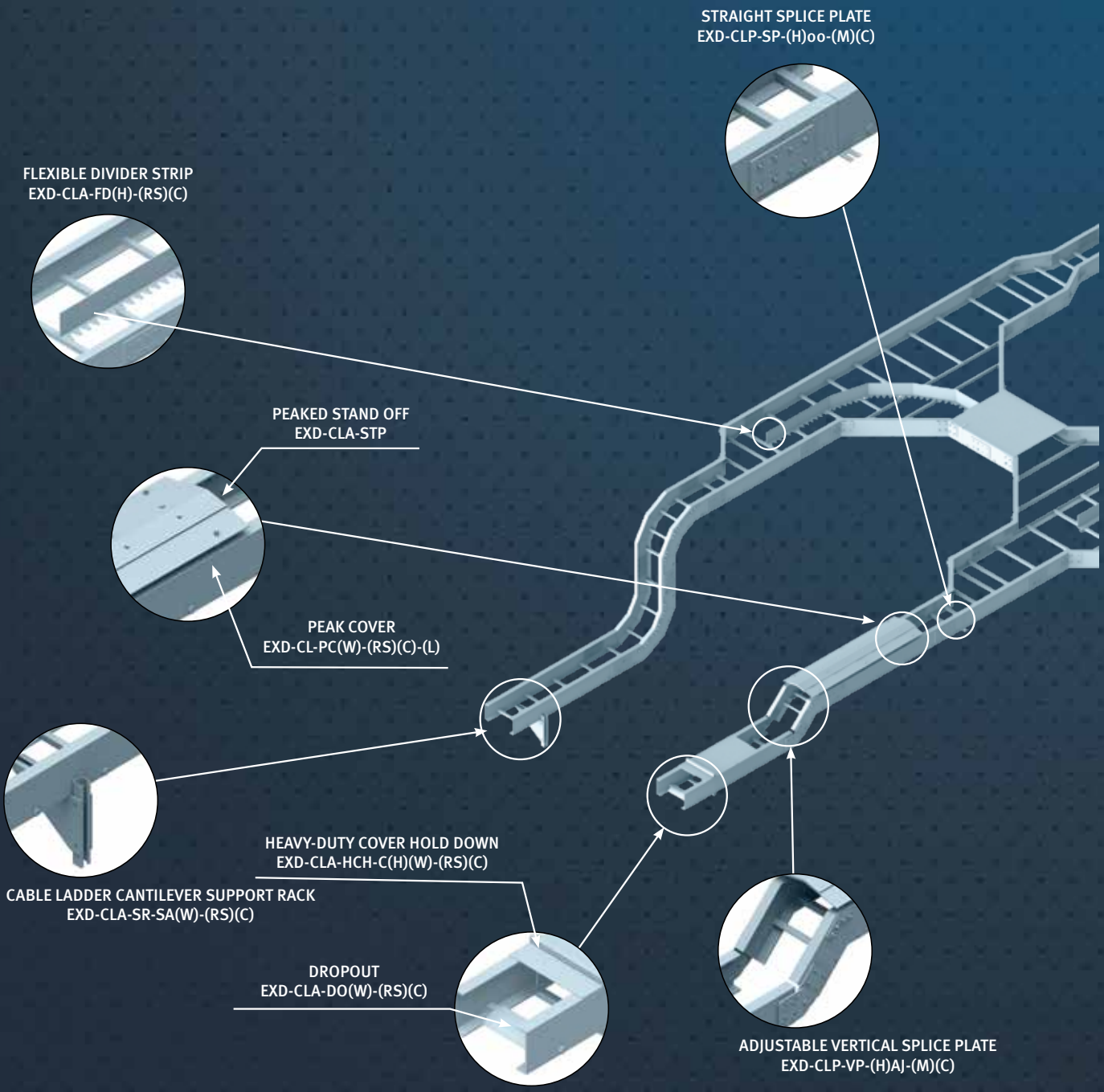
Heat softens the bonding resin in fibreglass and it is recommended to avoid generation of excessive heat especially in machine operation.

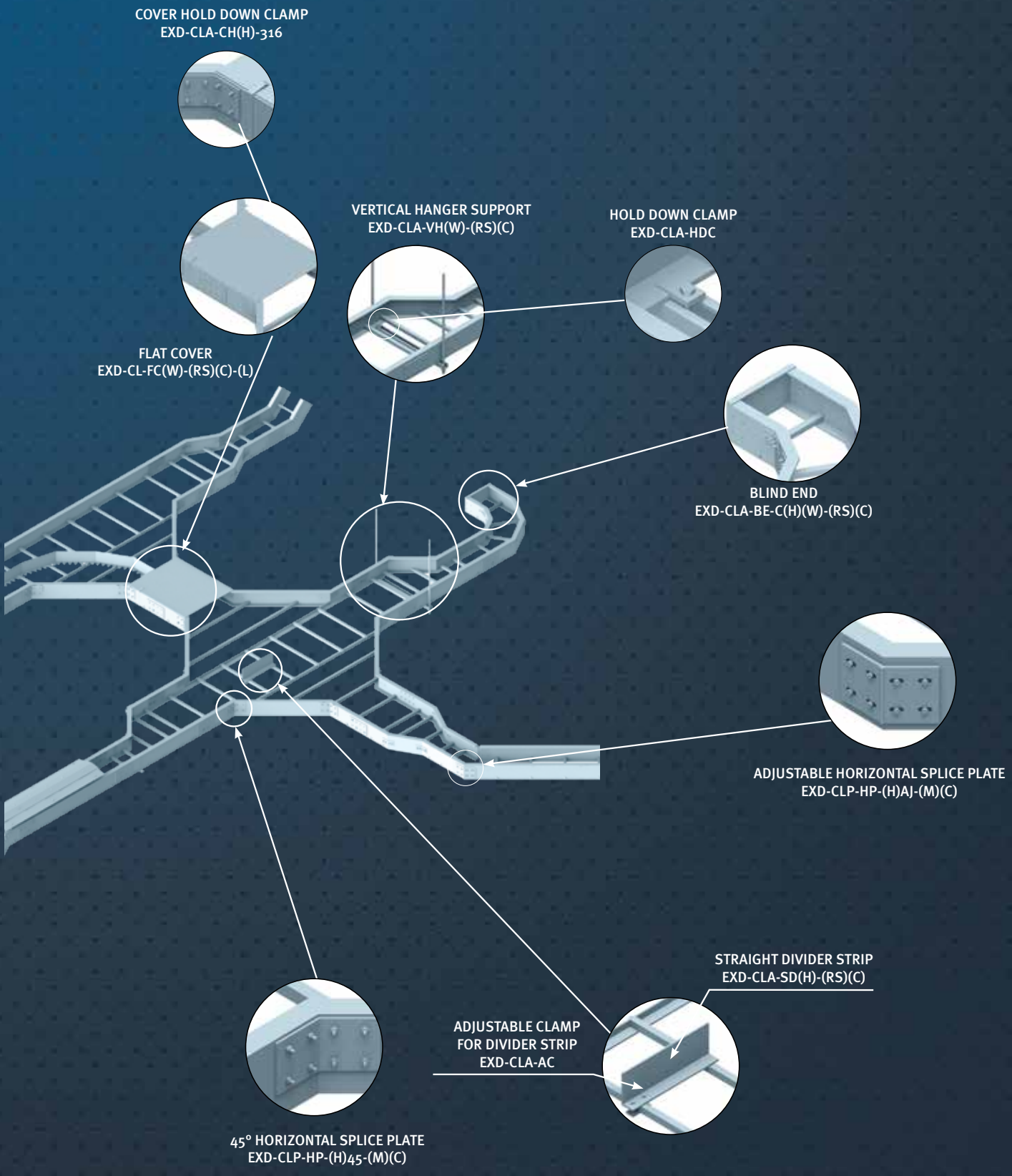
Avoid excessive pressure when sawing, drilling, routing, etc. Use carbide-tipped drill bits and saw blades to extend tool life. The use of lubricant during machining in the field is not recommended.

EXduro™ cable ladder and fittings should be secured properly during field cut operations to avoid chipping of the material at cut edges. We recommend the use of Treadwell EX-Series® sealant for sealing surfaces and cut edges after field cuts are made.

When using adhesives, be sure to prepare the surface properly before application. A combination of mechanical fasteners and adhesives is recommended for the strongest connections.

# EXduro™ Cable Ladder Overview




COVER HOLD DOWN CLAMP
EXD-CLA-CH(H)-316
VERTICAL HANGER SUPPORT
EXD-CLA-VH(W)-(RS)(C)
HOLD DOWN CLAMP
EXD-CLA-HDC
FLAT COVER
EXD-CL-FC(W)-(RS)(C)-(L)
BLIND END
EXD-CLA-BE-C(H)(W)-(RS)(C)
ADJUSTABLE HORIZONTAL SPLICE PLATE
EXD-CLP-HP-(H)AJ-(M)(C)
STRAIGHT DIVIDER STRIP
EXD-CLA-SD(H)-(RS)(C)
ADJUSTABLE CLAMP
FOR DIVIDER STRIP
EXD-CLA-AC
45° HORIZONTAL SPLICE PLATE
EXD-CLP-HP-(H)45-(M)(C)

## Typical Properties of EXduro™

| Mechanical Properties | ASTM | Units | Value |
|---|---|---|---|
| Tensile Stress, LW | D-638 | MPa | 206.8 |
| Tensile Stress, CW | D-638 | MPa | 48.2 |
| Tensile Modulus, LW | D-638 | GPa | 20.7 |
| Tensile Modulus, CW | D-638 | GPa | 5.5 |
| Compressive Stress, LW | D-6641 | MPa | 206.8 |
| Compressive Modulus, LW | D-6641 | GPa | 20.7 |
| Compressive Modulus, CW | D-6641 | GPa | 6.9 |
| In-Plane Shear Modulus | D-5379 | GPa | 2.76 |
| Interlaminar Shear Strength | D-2344 | MPa | 24.1 |
| In-Plane Shear Strength | D-5379 | MPa | 55.2 |
| Pin-bearing Strength, LW | D-953[a] | MPa | 144.8 |
| Pin-bearing Strength, CW | D-953[a] | MPa | 124.1 |

| Thickness of Profile (mm) | ASTM Required | Strength (kN) |
|---|---|---|
| t=9.525mm | TBC | 2.9 |
| t=12.7mm | TBC | 4.0 |
| t=19.05mm | TBC | 5.6 |

| Pull-through Strength Per Fastener |
|---|
| *The pull-through strength per fastener corresponds to the thickness and the ASTM required. |
| For example, when ASTM required is D-790 and t= 9.525mm, the pull-through strength is 2.9kN. |

| Physical Properties | ASTM | Units | Value |
|---|---|---|---|
| Barcol Hardness | D-2583 | ----- | 45 |
| 24 Hour Water Absorbtion | D-570 | % max. | 0.45 |
| Density | D-792 | g/cc | 1.72-1.94 |
| Coefficient of Thermal Expansion, LW | D-696 | $10^{-6}$mm/mm/°C | 12 |
| Glass Transition Temperature | D-4065 | °C | 83 |

| Electrical Properties | ASTM | Units | Value |
|---|---|---|---|
| Arc Resistance, LW | D-495 | seconds | 120 |
| Dielectric Strength, LW | D-149 | kv./mm | 1.37 |
| Dielectric Strength, PF | D-149 | volts/mil. | 200 |
| Dielectric Constant, PF | D-150 | @6ohz | 5 |

| Fire Retardant Polyester and Fire Retardant Vinyl Ester Structural Profiles: | | | |
|---|---|---|---|
| Flammability Properties | ASTM | Units | Value |
| Tunnel Test | E-84 | Flame Spread | 25 max. |
| Flammability | D-635 | ---- | Nonburning |
| NBS Smoke Chamber | E-662 | Smoke Density 600-700 | ---- |

| CW = Crosswise | LW = Lengthwise | PF = Perpendicular to Laminate Face |
|---|---|---|

Note: 1 PSI = 6.894 K Pa; 1 Ft.-Lb./In. = 5.443 kg-m/m; * Specimen tested perpendicular to laminate face ** Indicates reported value measured in logitudinal direction; Depending on the specific glass content and resin, the strength and stiffness properties may be significantly higher.

## Concentric Static Load (if required)

Various applications may require a given concentrated static load be imposed over and above the working load. These concentrated static load represents a static midspan weight applied between the side rail. When specified, the concentrated static load may be converted to an equivalent load (W) in kilograms per meter (kg/m) using the formula below and added to the static weight of cable in the ladder or tray. This combined load may be used to select a suitable load/span designation.

If the combined load exceeds the working load, please contact us. This data was obtained from the NEMA and NEC Standards Publications and other sources to assist in the proper selection of the most appropriate cable, ladder or tray from the EXduro™ range.

$$W_e = \frac{2 \times (\text{Concentrated Static Load})}{\text{span length (ft or m)}}$$

## Thermal Contraction & Expansion

The thermal contraction and expansion based on various temperature differentials for fibreglass, steel and aluminum cable ladders are compared in the table on the right. The values represent the length of cable ladder that will produce a 15.9mm movement between expansion connectors for the indicated temperature difference. As shown, fibreglass shows the least movement and Treadwell has expansion connectors that suffices for 15.9mm total movement.

**Fibreglass vs Steel vs Aluminum**

| Temp. Differential | Fibreglass Ft. (m) | Steel Ft. (m) | Aluminum Ft. (m) |
|---|---|---|---|
| 25°F (-4°C) | 417 (126) | 320 (97) | 162 (49) |
| 50°F (10°C) | 208 (63) | 160 (48) | 81 (25) |
| 75°F (24°C) | 138 (42) | 106 (32) | 54 (16) |
| 100°F (38°C) | 104 (32) | 80 (24) | 40 (12) |
| 125°F (52°C) | 83 (25) | 63 (19) | 32 (10) |
| 150°F (66°C) | 69 (21) | 53 (16) | 26 (8) |
| 175°F (79°C) | 59 (17) | 45 (13) | 23 (6) |

## Effect of Temperature - FRP

When continuously exposed to elevated temperatures, strength properties of fibreglass are reduced. Working loads shall be reduced when based on the table to the right. Percentages shown are only an approximate figure. Please contact us for unusual temperature conditions. Below freezing temperatures do not adversely affect the load rating capability of the ladder. Fibreglass does not become brittle at below freezing temperatures. For temperatures above 93.3°C, a careful review of applications should be carried out.

Note: The test values in the chart below were obtained from tests conducted by Treadwell's Vinyl Ester resin suppliers. The values shown, although obtained from an actual coupon test, are intended for illustrative purposes only, and not for use in design calculations. The values for polyester are slightly lower.

| Temp. | Polyester Strength % | Vinyl Ester Strength % |
|---|---|---|
| 75°F (24°C) | 100% | 100% |
| 100°F (38°C) | 90% | 100% |
| 120°F (52°C) | 78% | 100% |
| 150°F (66°C) | 68% | 90% |
| 175°F (79°C) | 60% | 90% |
| 200°F (93°C) | 52% | 75% |

| Test Temp. °F (°C) | -100° (-73°) | -50° (-46°) | 0° (-18°) | 50° (10°) | 77° (25°) | 100° (38°) | 150° (66°) | 200° (93°) | 250° (121°) | 300° (149°) |
|---|---|---|---|---|---|---|---|---|---|---|
| Flex. St., PSI, ASTM D790 | 101,500 | 84,100 | 79,500 | 72,300 | 68,100 | 66,300 | 58,700 | 27,400 | 13,200 | 9,200 |
| Flex. Mod., PSI x 10 , ASTM D790 | 3.36 | 3.32 | 3.42 | 3.38 | 3.24 | 3.29 | 3.07 | 1.98 | 0.98 | 0.83 |
| Tensile St., PSI, ASTM D638 | 84,100 | 70,400 | 63,900 | 58,000 | 56,100 | 54,600 | 49,900 | 41,800 | 29,600 | 22,000 |

TREADWELL

# EX-Series® Resin Systems

## Options Overview

I-Series® is a premium Isopthalic Resin System. This system provides an intermediate level of chemical resistance and is the correct choice for areas subjected to splash and spill contact with harsh chemicals. This system is an excellent general-purpose resin and is a more favourably priced alternative to the Vinyl Ester system. This system has a flame spread of 15 or less.

V-Series® Vinylester Resin System is a high quality and is the most chemical resistant system offered in the industry and has been developed for use in environments where fibreglass/FRP products are subject to frequent and direct contact with the harshest of chemicals: including a broad range of acids and caustics. This system has a flame spread of 15 or less.

P-Series® Phenolic Resin System is a system designed specifically for use where fire resistance, low smoke and low toxic fumes are critical. P-Series is typically used in offshore applications and confines spaces where such criteria are an absolute necessity. This system is tested in accordance with ASTM E-84. Various products also conforming to US Coast Guard Approvals, Level 2 and 3, are also offered by Treadwell. This particular Resin System has a flame spread rating of 5 and a smoke density rating of 5.

## Standards Resin Systems Comparison Chart

| | Chemical Resistance | Fire Retardance | Low Smoke | Halogen Free | Temperature Performance |
|---|---|---|---|---|---|
| **I-Series® Isopthalic** | ●●●●● | ●●●●● | — | — | ●●●● |
| **V-Series® Vinyl Ester** | ●●●●● | ●●●●● | — | — | ●●●●● |
| **P-Series® Phenolic** | ●●●● | ●●●●● | ●●●● | ●●●●● | ●●●●● |

## EXduro™ Features and Benefits vs. Traditional Alternatives

| | EXduro™ | Stainless Steel | Galvanised Steel | Aluminium | Polyurethane |
|---|---|---|---|---|---|
| **Chemical Resistance** | ●●●●● | ●●●● | ● | ●●● | ●●●● |
| **Strength** | ●●●●● | ●●●●● | ●●●●● | ●●●●● | ●●● |
| **Lightweight** | ●●●●● | ● | ● | ●●●●● | |
| **Electrical Resistance** | ●●●●● | ● | ● | ● | ●●●●● |
| **Cost Effectiveness** | ●●●●● | ●●● | ●●●● | ●● | ●●●●● |


**CPX-EX-SK-500**
EX-Series® Sealer Resin Kit, include 500ml resin with 15ml catalyst

Ideal for sealing exposed fibres after any field cutting. This kit includes resin (standard 500ml), catalyst (standard 15ml) and is available in vinylester.

# EXduro™ Cable Ladder

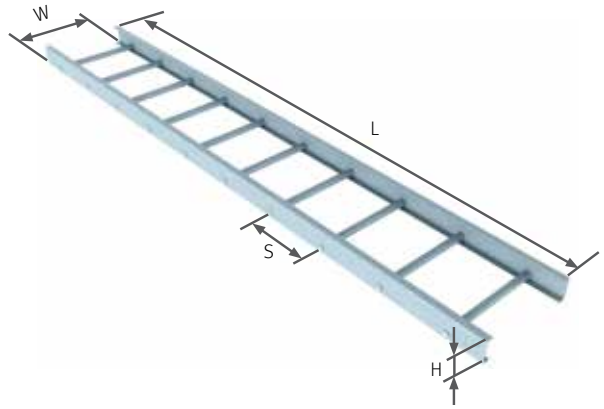
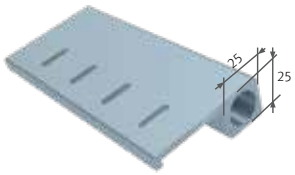
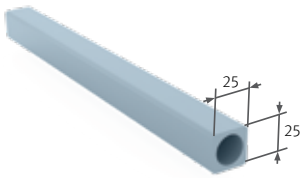
## What are EXduro™ FRP Cable Ladders?

For environments where corrosive elements play a crucial part in material selection, Treadwell has developed its FRP cable ladders as a strong alternative to metal cable ladders. Being lightweight, it allows for easier installation or onsite fabrication as well as giving the cable ladder a high strength to weight ratio.

EXduro™ fibreglass cable ladders has several other useful benefits. It is both a UV resistant and fire retardant system. Transparent to RF frequencies and electrically non-conductive are other positives it can bring to any design.

EXduro™ fibreglass cable ladders are also a cost competitive, performance proven alternative to metal systems for that corrosive/chemical environment to run your electrical cable and instrumentation pipe work. With little or no ongoing maintenance, Treadwell's system is supplied with both FRP and stainless steel fasteners to suit your application.

## EXduro™ Typical C Rail Straight Section

| C Rail Straight Section | Marine Rung | COMMONLY- STOCKED |
|---|---|---|
|  |  | |
| | Square Rung | SPECIAL ORDER |
| |  | |

**EXD-CL-C(H)(W)-(RT)(S)-(RS)(C)-(L)**

| Side Rail Height (H) | Width (W) | Rung Type (RT) | Rung Spacing (S) | Resin (RS) | Colour (C) | Length (L) |
|---|---|---|---|---|---|---|
| 50mm (050) N | 150mm (150) C | Standard Rung (S) C | 150mm (150) | I-Series® Isopthalic(I) C | Light Grey (LG) C | 3m (1) N |
| 75mm (075) N | 300mm (300) C | Marine Rung (M) N | 250mm (250) | V-Series® Vinyl Ester(V) C | Dark Grey (DG) C | 6m (2) C |
| *100mm (100) C | 450mm (450) C | Combined Rung (C) N | 300mm (300) | P-Series® Phenolic(P) | Custom Colour (CC) N | |
| **150mm (150) C | 600mm (600) C | | 450mm (450) | | | |
| 200mm (200) N | 750mm(750) C | | | | | |
| | 900mm (900) C | | | | | |

* NEMA 8A : 1.5 Safety Factor

** NEMA 8B - 20C : 1.5 Safety Factor

Note: 450mm rung spacing not available for 750mm and 900mm widths

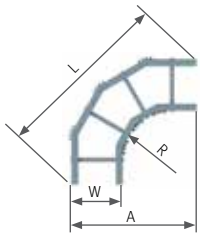
**N** Non-standard item **C** Commonly stocked

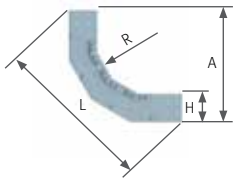
## Cable Ladder Fittings

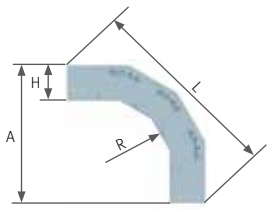
Treadwell's range of pre-fabricated for EXduro™ fibreglass cable ladder fittings are readily available when you need to change the ladders' direction or work around a site.

All sizes of cable ladder are offered with a full range of fittings that allow you to bend, tee, cross, rise, or reduce the laying widths as required. This gives the user flexibility and ease to design and create a cable ladder system to support cables onsite anytime.

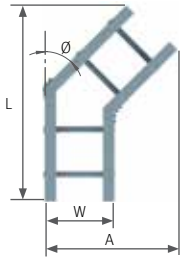
| EXD-CLF-(FT)(ϕ)-C(H)(W)(RT)(R)-(RS)(C) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Fitting Type (FT)** | **Angle (ϕ)** | **Side Rail Height (H)** | **Width (W)** | **Rung Type (RT)** | **Radius (R)** | **Resin (RS)** | **Colour (C)** |
| Horizontal Bend (HB) | 30° (30) | 50mm (050) | 150mm (150) | Standard Rung (S) | 300mm (300) | I-Series® Isopthalic(I) | Light Grey (LG) |
| Horizontal Tee (HT) | 45° (45) | 75mm (075) | 300mm (300) | Marine Rung (M) | 450mm (450) | V-Series® Vinyl Ester(V) | Dark Grey (DG) |
| Horizontal Cross (HX) | 60° (60) | 100mm (100) | 450mm (450) | | 600mm (600) | P-Series® Phenolic(P) | Custom Colour (CC) |
| Vertical Inward Bend (VI) | 90° (90) | 150mm (150) | 600mm (600) | | 900mm (900) | | |
| Vertical Outward Bend (VO) | | 200mm (200) | 750mm (750) | | Direct Bend (000) | | |
| | | | 900mm (900) | | | | |

| 90° Horizontal Bend | | Dimension (mm) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Code | | R-300 | | R-450 | | R-600 | | R-900 | |
| EXD-CLF-HB90-C(H)(W)(RT)(R)-(RS)(C) | Width | A | L | A | L | A | L | A | L |
|  | 150 | 606 | 858 | 756 | 1070 | 906 | 1282 | 1206 | 1706 |
| | 300 | 756 | 1070 | 906 | 1282 | 1056 | 1494 | 1356 | 1918 |
| | 450 | 906 | 1282 | 1056 | 1494 | 1206 | 1706 | 1506 | 2130 |
|  | 600 | 1056 | 1494 | 1206 | 1706 | 1356 | 1918 | 1656 | 2342 |
| | 750 | 1206 | 1706 | 1356 | 1918 | 1506 | 2130 | 1806 | 2555 |
| | 900 | 1356 | 1918 | 1506 | 2130 | 1656 | 2342 | 1956 | 2767 |

| 90° Vertical Inward Bend | | Dimension (mm) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Code | | R-300 | | R-450 | | R-600 | | R-900 | |
| EXD-CLF-VI90-C(H)(W)(RT)(R)-(RS)(C) | H | A | L | A | L | A | L | A | L |
|  | 50 | 501 | 708 | 651 | 920 | 801 | 1132 | 1101 | 1557 |
| | 75 | 526 | 744 | 676 | 956 | 826 | 1168 | 1126 | 1593 |
| | 100 | 552 | 780 | 702 | 992 | 852 | 1204 | 1152 | 1629 |
|  | 150 | 602 | 851 | 752 | 1063 | 902 | 1276 | 1202 | 1700 |
| | 200 | 653 | 924 | 803 | 1136 | 953 | 1348 | 1253 | 1772 |

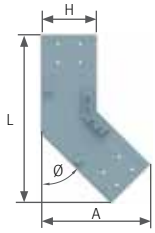
| 90° Vertical Outward Bend | | Dimension (mm) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Code | | R-300 | | R-450 | | R-600 | | R-900 | |
| EXD-CLF-VO90-C(H)(W)(RT)(R)-(RS)(C) | H | A | L | A | L | A | L | A | L |
|  | 50 | 501 | 708 | 651 | 920 | 801 | 1132 | 1101 | 1557 |
| | 75 | 526 | 744 | 676 | 956 | 826 | 1168 | 1126 | 1593 |
| | 100 | 552 | 780 | 702 | 992 | 852 | 1204 | 1152 | 1629 |
|  | 150 | 602 | 851 | 752 | 1063 | 902 | 1276 | 1202 | 1700 |
| | 200 | 653 | 924 | 803 | 1136 | 953 | 1348 | 1253 | 1772 |

## 30°/ 45°/ 60° Horizontal Bend

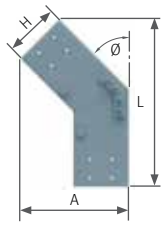
| Code | | Dimension (mm) for R-600 | | | | | |
|---|---|---|---|---|---|---|---|
| | | 30° Angle (Ø) | | 45° Angle (Ø) | | 60° Angle (Ø) | |
| EXD-CLF-HB(ϕ)-C(H)(W)(RT)(R)-(RS)(C) | W | A | L | A | L | A | L |
|  | 150 | 317 | 658 | 443 | 791 | 589 | 880 |
| | 300 | 467 | 733 | 593 | 897 | 739 | 1010 |
| | 450 | 617 | 808 | 743 | 1003 | 889 | 1140 |
|  | 600 | 767 | 883 | 893 | 1109 | 1039 | 1270 |
| | 750 | 917 | 958 | 1043 | 1215 | 1189 | 1400 |
| | 900 | 1067 | 1033 | 1193 | 1321 | 1339 | 1530 |

Other radius options available

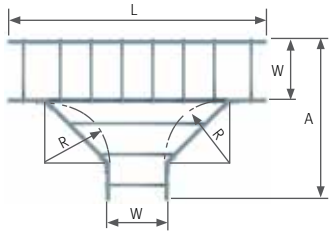
## 30°/45°/60° Vertical Inward Bend

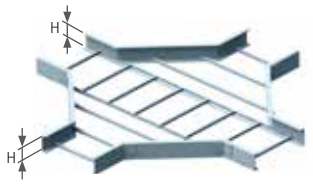
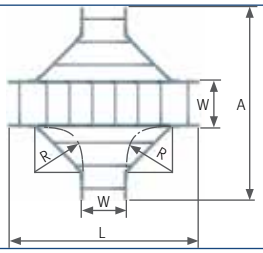
| Code | | Dimension (mm) for R-600 | | | | | |
|---|---|---|---|---|---|---|---|
| | | 30° Angle (Ø) | | 45° Angle (Ø) | | 60° Angle (Ø) | |
| EXD-CLF-VI(ϕ)-C(H)(W)(RT)(R)-(RS)(C) | H | A | L | A | L | A | L |
|  | 50 | 206 | 605 | 333 | 716 | 481 | 789 |
| | 75 | 232 | 618 | 358 | 734 | 506 | 811 |
| | 100 | 257 | 631 | 383 | 752 | 532 | 833 |
|  | 150 | 307 | 656 | 434 | 788 | 582 | 876 |
| | 200 | 359 | 682 | 485 | 824 | 633 | 921 |

Other radius options available

| 30°/45°/60° Vertical Outward Bend | | Dimension (mm) for R-600 | | | | | |
|---|---|---|---|---|---|---|---|
| Code | | 30° Angle (Ø) | | 45° Angle (Ø) | | 60° Angle (Ø) | |
| EXD-CLF-VO(ϕ)-C(H)(W)(RT)(R)-(RS)(C) | H | A | L | A | L | A | L |
|  | 50 | 206 | 605 | 333 | 716 | 481 | 789 |
| | 75 | 232 | 618 | 358 | 734 | 506 | 811 |
| | 100 | 257 | 631 | 383 | 752 | 532 | 833 |
|  | 150 | 307 | 656 | 434 | 788 | 582 | 876 |
| | 200 | 359 | 682 | 485 | 824 | 633 | 921 |

Other radius options available

| Horizontal Tee | | Dimension (mm) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Code | | R-300 | | R-450 | | R-600 | | R-900 | |
| EXD-CLF-HT90-C(H)(W)(RT)(R)-(RS)(C) | W | A | L | A | L | A | L | A | L |
|  | 150 | 606 | 1050 | 756 | 1350 | 906 | 1650 | 1206 | 2250 |
| | 300 | 756 | 1200 | 906 | 1500 | 1056 | 1800 | 1356 | 2400 |
| | 450 | 906 | 1350 | 1056 | 1650 | 1206 | 1950 | 1506 | 2550 |
|  | 600 | 1056 | 1500 | 1206 | 1800 | 1356 | 2100 | 1656 | 2700 |
| | 750 | 1206 | 1650 | 1356 | 1950 | 1506 | 2250 | 1806 | 2850 |
| | 900 | 1356 | 1800 | 1506 | 2100 | 1656 | 2400 | 1956 | 3000 |

| Horizontal Cross | | Dimension (mm) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Code | | R-300 | | R-450 | | R-600 | | R-900 | |
| EXD-CLF-HX90-C(H)(W)(RT)(R)-(RS)(C) | W | A | L | A | L | A | L | A | L |
|  | 150 | 1050 | 1050 | 1350 | 1350 | 1650 | 1650 | 2250 | 2250 |
| | 300 | 1200 | 1200 | 1500 | 1500 | 1800 | 1800 | 2400 | 2400 |
| | 450 | 1350 | 1350 | 1650 | 1650 | 1950 | 1950 | 2550 | 2550 |
|  | 600 | 1500 | 1500 | 1800 | 1800 | 2100 | 2100 | 2700 | 2700 |
| | 750 | 1650 | 1650 | 1950 | 1950 | 2250 | 2250 | 2850 | 2850 |
| | 900 | 1800 | 1800 | 2100 | 2100 | 2400 | 2400 | 3000 | 3000 |

## Cable Ladder Reducers

EXduro™ cable ladder reducers are available in widths of 150mm to 900mm with alternative widths available to meet market requirements. Reducers can be manufactured accordingly in standard width increments or decrements i.e. from 600mm to a 150mm width or vice versa.

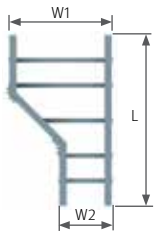
| EXD-CLR-(RT)C(H)(W1)(W2)(RT)-(RS)(C) | | | | | | |
|---|---|---|---|---|---|---|
| **Reducer Type (RT)** | **Side Rail Height (H)** | **Larger Width (W1)** | **Smaller Width (W2)** | **Rung Type (RT)** | **Resin (RS)** | **Colour (C)** |
| Right Reducer (R) | 50mm (050) | 300mm (300) | 150mm (150) | Standard Rung (S) | I-Series® Isopthalic(I) | Light Grey (LG) |
| Left Reducer (L) | 75mm (075) | 450mm (450) | 300mm (300) | Marine Rung (M) | V-Series® Vinyl Ester(V) | Dark Grey (DG) |
| Straight Reducer (S) | 100mm (100) | 600mm (600) | 450mm (450) | | P-Series® Phenolic(P) | Custom Colour (CC) |
| | 150mm (150) | 750mm (750) | 600mm (600) | | | |
| | 200mm (200) | 900mm (900) | 750mm (750) | | | |

| Straight Reducer | | W1 (mm) | | | | |
|---|---|---|---|---|---|---|
| Code | | 900 | 750 | 600 | 450 | 300 |
| EXD-CLR-SC(H)(W1)(W2)(RT)-(RS)(C) | W2 (mm) 150 | 1095 | 1020 | 945 | 870 | 795 |
|  | 300 | 1020 | 945 | 870 | 795 | ---- |
| | 450 | 945 | 870 | 795 | ---- | ---- |
|  | 600 | 870 | 795 | ---- | ---- | ---- |
| | 750 | 795 | ---- | ---- | ---- | ---- |
| | Dimension "L" (mm) | | | | | |

# EXduro™ Cable Ladder Reducers

## Left Hand Reducer

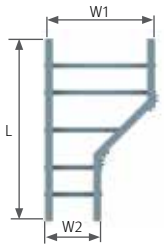
| Code | | W1 (mm) 900 | 750 | 600 | 450 | 300 |
|---|---|---|---|---|---|---|
| EXD-CLR-LC(H)(W1)(W2)(RT)-(RS)(C) | 150 | 1470 | 1320 | 1170 | 1020 | 870 |
| | 300 | 1320 | 1170 | 1020 | 870 | ---- |
| | 450 | 1170 | 1020 | 870 | ---- | ---- |
| | 600 | 1020 | 870 | ---- | ---- | ---- |
| | 750 | 870 | ---- | ---- | ---- | ---- |
| | Dimension "L" (mm) | | | | | |


W2 (mm)

## Right Hand Reducer

| Code | | W1 (mm) 900 | 750 | 600 | 450 | 300 |
|---|---|---|---|---|---|---|
| EXD-CLR-RC(H)(W1)(W2)(RT)-(RS)(C) | 150 | 1470 | 1320 | 1170 | 1020 | 870 |
| | 300 | 1320 | 1170 | 1020 | 870 | ---- |
| | 450 | 1170 | 1020 | 870 | ---- | ---- |
| | 600 | 1020 | 870 | ---- | ---- | ---- |
| | 750 | 870 | ---- | ---- | ---- | ---- |
| | Dimension "L" (mm) | | | | | |


W2 (mm)

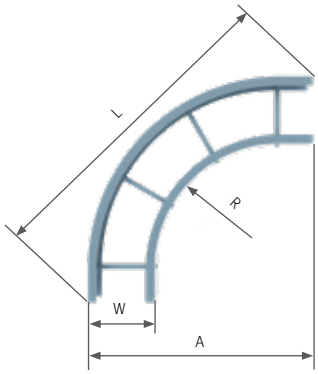
## Cable Ladder Fittings - Concentric Bends

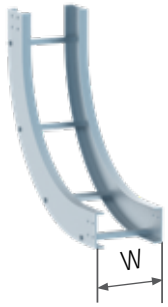
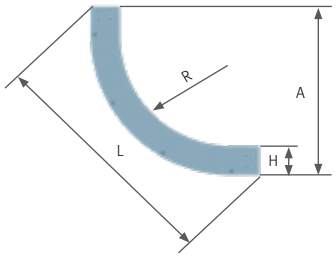
As part of the Treadwell commitment to innovation, we are excited to introduce our newly developed cable ladder fittings. Rather than the 'Segmented Fittings' that you've been used to seeing, Treadwell have developed our 'Concentric Fittings' - these fittings utilise a single-piece side rail providing a consistent, concentric radius to the fittings for superior durability. Available for our 600mm Radius fittings in both horizontal and vertical inward and outward configuration, these fittings are in production and ready to use on your projects.

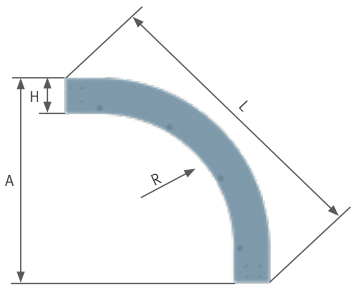
**EXD-CLF-(FT)(ϕ)-M(H)(W)(RT)(R)-(RS)(C)**

| Fitting Type (FT) | Angle (ϕ) | Side Rail Height (H) | Width (W) | Rung Type (RT) | Radius (R) | Resin (RS) | Colour (C) |
|---|---|---|---|---|---|---|---|
| Horizontal Bend (HB) | 30° (30) | 50mm (050) | 150mm (150) | Standard Rung (S) | 300mm (300) | I-Series® Isopthalic(I) | Light Grey (LG) |
| Horizontal Tee (HT) | 45° (45) | 75mm (075) | 300mm (300) | Marine Rung (M) | 450mm (450) | V-Series® Vinyl Ester(V) | Dark Grey (DG) |
| Horizontal Cross (HX) | 60° (60) | 100mm (100) | 450mm (450) | | 600mm (600) | P-Series® Phenolic(P) | Custom Colour (CC) |
| Vertical Intward Bend (VI) | 90° (90) | 150mm (150) | 600mm (600) | | 900mm (900) | | |
| Vertical Outward Bend (VO) | | 200mm (200) | 750mm (750) | | Direct Bend (000) | | |
| | | | 900mm (900) | | | | |

**90° Horizontal Bend**

| Code | | Dimension (mm) | |
|---|---|---|---|
| | | R-600 | |
| EXD-CLF-HB90-M(H)(W)(RT)600-(RS)(C) | Width | A | L |
|  | 150 | 906 | 1282 |
| | 300 | 1056 | 1494 |
| | 450 | 1206 | 1706 |
|  | 600 | 1356 | 1918 |
| | 750 | 1506 | 2130 |
| | 900 | 1656 | 2342 |

| 90° Vertical Inward Bend | | Dimension (mm) | |
|---|---|---|---|
| Code | | R-600 | |
| EXD-CLF-VI90-M(H)(W)(RT)600-(RS)(C) | Width | A | L |
|  | 150<br>300<br>450 | | |
|  | 600<br>750<br>900 | 896 | 1267 |

| 90° Vertical Outward Bend | | Dimension (mm) | |
|---|---|---|---|
| Code | | R-600 | |
| EXD-CLF-VO90-M(H)(W)(RT)600-(RS)(C) | Width | A | L |
|  | 150<br>300<br>450 | | |
|  | 600<br>750<br>900 | 896 | 1267 |

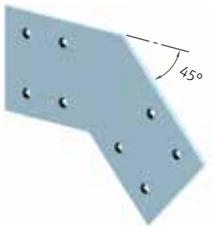
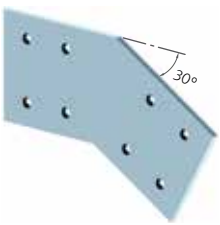
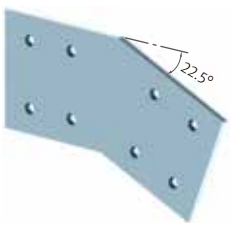
## EXduro™ Cable Ladder Splice Plates

EXduro™ splice plates are available in both horizontal and vertical orientations. We also offer the accompanying accessories separately. These plates are non-conductive and do not react to electric and magnetic fields.

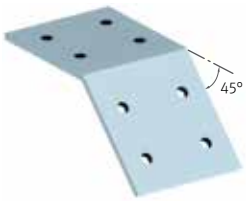
| EXD-CLP-(PT)-(H)(ø)-(M)(C) | | | | |
|---|---|---|---|---|
| **Plate Type (PT)** | **Side Rail Height (H)** | **Angle (ø)** | **Material (M)** | **Colour (C)** |
| Straight Plate (SP) | 50mm (050) | 22.5° (22) | I-Series® Isopthalic(I) | Light Grey (LG) |
| Vertical Plate (VP) | 75mm (075) | 30° (30) | V-Series® Vinyl Ester(V) | Dark Grey (DG) |
| Horizontal Plate (HP) | 100mm (100) | 45° (45) | P-Series® Phenolic(P) | Custom Colour (CC) |
| Heavy Duty Splice Plate (DP) | 150mm (150) | 90° (90) | 316 Stainless Steel (316) | |
| | 200mm (200) | Straight (00) | | |
| | | Adjustable Angle (AJ) | | |

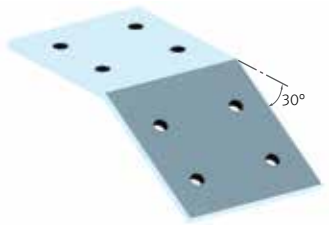
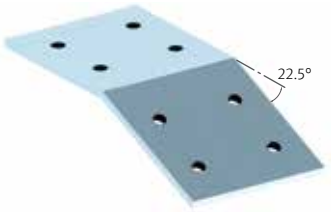
Notes:
1. 316 Stainless Steel M10 Bolt Sets included.
2. Steel Splice plates have no colour options

| Splice Plate Straight Section | Splice Plate 90° Vertical | Splice Plate Heavy Duty |
|---|---|---|
| EXD-CLP-SP-(H)00-(M)(C) | EXD-CLP-VP-(H)90-(M)(C) | EXD-CLP-HD-(H)00-(M)(C) |
|  |  Field Drilling Required |  |

| Splice Plate 45° Vertical | Splice Plate 30° Vertical | Splice Plate 22.5° Vertical |
|---|---|---|
| EXD-CLP-VP-(H)45-(M)(C) | EXD-CLP-VP-(H)30-(M)(C) | EXD-CLP-VP-(H)22-(M)(C) |
|   |   |   |

# EXduro™ Cable Ladder Splice Plates

| Splice Plate Adjustable Vertical | Splice Plate 90° Horizontal | Splice Plate 45° Horizontal |
|---|---|---|
| EXD-CLP-VP-(H)AJ-(M)(C) | EXD-CLP-HP-(H)90-(M)(C) | EXD-CLP-HP-(H)45-(M)(C) |
|  |  |  |

| Splice Plate 30° Horizontal | Splice Plate 22.5° Horizontal | Splice Plate Adjustable Horizontal |
|---|---|---|
| EXD-CLP-HP-(H)30-(M)(C) | EXD-CLP-HP-(H)22-(M)(C) | EXD-CLP-HP-(H)AJ-(M)(C) |
|  |  |  |

## Benefits of FRP

### No Hot Work or Welding Required

FRP is very simply modified or fabricated on site with easy to use hand tools. These can be done without the hassle of first needing to obtain hot work permits.

### Light Weight, High Strength & Easy Installation

Treadwell 's FRP products and systems are lightweight and very manageable. FRP has specific gravity one quarter that of steel and two thirds of aluminium.

### Environmentally Sound

Related to the lightweight, low need for maintenance and long design life of FRP, the reduced lifecycle cost and environmental footprint are highly sought after characteristics in the modern world. Continual resin formulation fine tuning and development can further raise this environmental profile of composites.

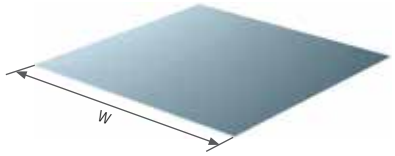
TREADWELL

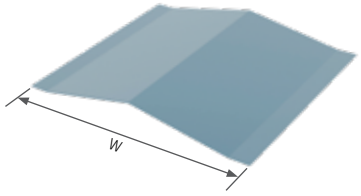
# EXduro™ Cable Ladder Cover & Accessories

## Cable Ladder Accessories

Treadwell's EXduro™ range is doubtless one of the most extensive ranges of FRP cable ladder accessories available on the market today. With unmatched quality and service, we offer a variety of styles, materials and finishes available to support virtually any commercial and industrial cable support application requirement in any environment.

## Cable Ladder Cover

| Flat Cover | |
|---|---|
| EXD-CL-FC(W)-(RS)(C)-(L) | **Width (W)** |
|  | 150mm (150) |
| | 300mm (300) |
| | 450mm (450) |
| | 600mm (600) |
| | 750mm (750) |
| | 900mm (900) |

| Peaked Cover | |
|---|---|
| EXD-CL-PC(W)-(RS)(C)-(L) | **Width (W)** |
|  | 300mm (300) |
| | 450mm (450) |
| | 600mm (600) |
| | 750mm (750) |
| | 900mm (900) |

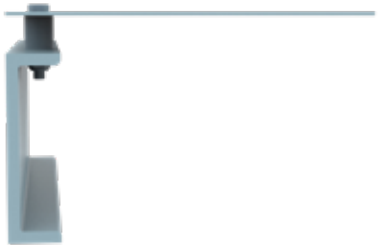
## Cable Ladder Fitting Cover

| EXD-CLF-(CT)(Φ)-(CT)(W)(R)-(RS)(C) | | | | |
|---|---|---|---|---|
| **Cover Type (CT)** | **Fitting Type (FT)** | **Angle (ø)** | **Width (W)** | **Radius (R)** |
| Flat Cover (FC) | Horizontal Bend (HB) | 30° (30) | 150mm (150) | 300mm (300) |
| Peaked Cover (PC) | Horizontal Tee (HT) | 45° (45) | 300mm (300) | 450mm (450) |
| | Horizontal Cross (HX) | 60° (60) | 450mm (450) | 600mm (600) |
| | Vertical Intward Bend (VI) | 90° (90) | 600mm (600) | 900mm (900) |
| | Vertical Outward Bend (VO) | | 750mm (750) | Direct Bend (000) |
| | | | 900mm (900) | |

## Cable Ladder Reducer Cover

| EXD-CLR-(RT)(CT)(W1)(W2)-(RS)(C) | | | |
|---|---|---|---|
| **Cover Type (CT)** | **Reducer Type (RT)** | **Larger Width (W1)** | **Smaller Width (W2)** |
| Flat Cover (FC) | Right Reducer (R) | 300mm (300) | 150mm (150) |
| Peaked Cover (PC) | Left Reducer (L) | 450mm (450) | 300mm (300) |
| | Straight Reducer (S) | 600mm (600) | 450mm (450) |
| | | 750mm (750) | 600mm (600) |
| | | 900mm (900) | 750mm (750) |

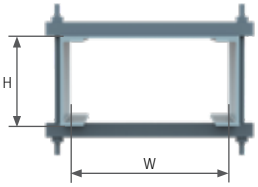
## Cover Connection

| Flat Stand Off | Cover Hold Down Clamp |
|---|---|
| EXD-CLA-STO | EXD-CLF-PC(W) |
|  |  |

# EXduro™ Cable Ladder Cover & Accessories

## Heavy Duty Cover Hold Down

EXD-CLA-HCH-C(H)(W)-(RS)(C)




| Side Rail Height (H) | Width (W) |
|---|---|
| 50mm (050) | 150mm (150) |
| 75mm (075) | 300mm (300) |
| 100mm (100) | 450mm (450) |
| 150mm (150) | 600mm (600) |
| 200mm (200) | 750mm (750) |
| | 900mm (900) |

## Floor / Panel Flange Plate

EXD-CLA-FP(H)-(RS)(C)

Field Drilling Required

| Rail Height (H) |
|---|
| 75mm (075) |
| 100mm (100) |
| 150mm (150) |
| 200mm (200) |

## Straight Divider Strip

EXD-CLA-SD-(RS)(C)

## Flexible Divider Strip

EXD-CLA-FD-(RS)(C)

Holes are pre-drilled, Equal Leg Angle fixings can be adjusted according to the actual rung position

## Adjustable Clamp for Divider Strip

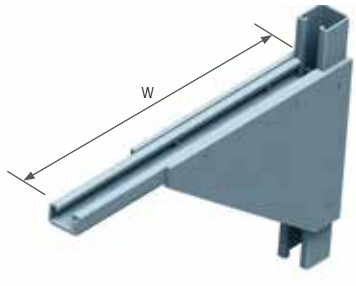
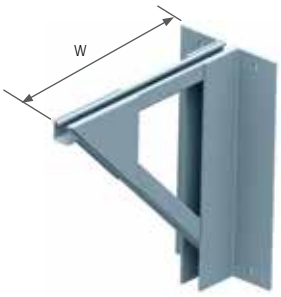
EXD-CLA-AC

## Hold Down Clamp

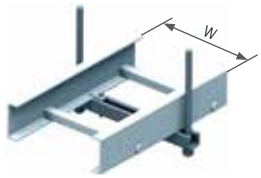
EXD-CLA-HDC

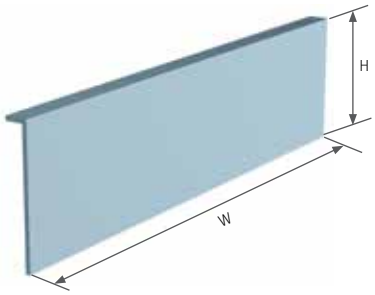
# EXduro™ Cable Ladder Cover & Accessories

## Cable Ladder Cantilever Support Racks

| EXD-CLA-SR-SA(W)-(RS)(C)* | | EXD-CLA-SR-SB(W)-(RS)(C)* | |
|---|---|---|---|
| **Type A** | **Width (W)** | **Type B** | **Width (W)** |
|  | 150mm (150) |  | 600mm (600) |
| | 300mm (300) | | 750mm (750) |
| | 450mm (450) | | 900mm (900) |
| | 600mm (600) | | |

*All cantilever supports are made to order, to client's dimensions.

| Vertical Hanger Support | | Drop Out | |
|---|---|---|---|
| EXD-CLA-VH(W)-(RS)(C) | | EXD-CLA-DO(W)-(RS)(C) | |
|  | |  | |
| **Width (W)** | | **Width (W)** | |
| 150mm (150) | 600mm (600) | 150mm (150) | 600mm (600) |
| 300mm (300) | 750mm (750) | 300mm (300) | 750mm (750) |
| 450mm (450) | 900mm (900) | 450mm (450) | 900mm (900) |

| Blind End | Side Rail Height (H) | Width (W) |
|---|---|---|
| EXD-CLA-BE-C(H)(W)-(RS)(C) | 50mm (050) | 150mm (150) |
|  | 75mm (075) | 300mm (300) |
| | 100mm (100) | 450mm (450) |
| | 150mm (150) | 600mm (600) |
| | 200mm (200) | 750mm (750) |
| | | 900mm (900) |

# Specification - Cable Ladder

## General

### 1.0 Scope

1.1 The cable ladder system shall conform to the material and fabrication requirements as per this specification.

### 2.0 Standards

2.1 The cable ladder system shall conform to applicable sections of:

- 2.1.1 NEMA Standard FG-1 (latest edition)
- 2.1.2 National Electric Code (NEC)
- 2.1.3 ASTM E-84

### 3.0 Working Load Capacity

3.1 There shall be three working load classifications and four span categories

| Class | Working Load | FOS |
|---|---|---|
| A | 74.4kg/m | 1.5 |
| B | 111.6kg/m | 1.5 |
| C | 148.8kg/m | 1.5 |

| Class | Span |
|---|---|
| 8 | 2.44m |
| 12 | 3.66m |
| 16 | 4.87m |
| 20 | 6.09m |

3.2 The load/span class designation of below table shall apply.

| LOAD/SPAN CLASS DESIGNATIONS | | |
|---|---|---|
| Working Load (kg/m) | Support Span (m) | Class Designation |
| 74.4 | 2.44 | 8A |
| 111.6 | 2.44 | 8B |
| 148.8 | 2.44 | 8C |
| 74.4 | 3.66 | 12A |
| 111.6 | 3.66 | 12B |
| 148.8 | 3.66 | 12C |
| 74.4 | 4.87 | 16A |
| 111.6 | 4.87 | 16B |
| 148.8 | 4.87 | 16C |
| 74.4 | 6.09 | 20A |
| 111.6 | 6.09 | 20B |
| 148.8 | 6.09 | 20C |

3.3 EXduro™ cable ladder's NEMA Class table.

| Side Rail Height (mm) | Loading Depth (mm) | NEMA Class FG-1 | Safety Factor |
|---|---|---|---|
| 100 | 71 | 12A | 1.5 |
| 100 | 71 | 16A | 1.2 |
| 152.4 | 121 | 20B | 2 |
| 152.4 | 121 | 20C | 1.5 |

### 4.0 Material

4.1 The glass fiber to resin content shall be maintained between 45 to 55 percent by weight in all pultruded components except flat sheet which shall be 35 to 45 percent; and 25 to 45 percent by weight in all molded components.

4.2 All composite material shall have an ultraviolet light inhibiting chemical additive to resist UV degradation.

4.3 All composite material shall be fire retardant and have a flame spread rating of 25 or less (Class 1 Rating) when tested in accordance with ASTM E-84.

4.4 All pultruded products shall have a complete surfacing veil to provide maximum chemical and UV protection.

### 5.0 Construction

5.1 Straight section ladder shall be fiberglass reinforced meeting all the requirements herein described.

- 5.1.1 The side rail members must turn in.
- 5.1.2 All rung to side member connections shall have both a mechanical and a chemical (adhesive) lock. The ladder shall be assembled by the use of a locking pin made of fiberglass reinforced thermoplastic. The locking pin shall be inserted under pressure with a high strength, chemical resistant adhesive.
- 5.1.3 All bonded connections must be sanded to maximize adhesion and structural integrity.
- 5.1.4 The ladder interior shall be clear of all projections or sharp objects.
- 5.1.5 All straight section lengths shall be pre-drilled to accept connector plates.
- 5.1.6 All cut ends and drilled holes (factory and field) shall be resin coated.

5.2 Fittings are to be pre-fabricated and shall meet all the requirements herein described.

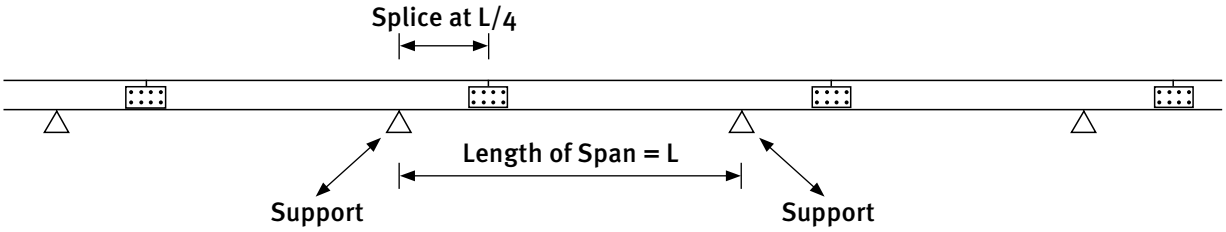
- 5.2.1 All fittings shall be pre-drilled to accept connector plates.
- 5.2.2 All fittings shall be designed and installed so as to have the same load carrying capacity as the straight sections.
- 5.2.3 Rung to side member connections shall have both a mechanical and/or chemical (adhesive) lock. Fittings shall be assembled by use of a locking pin made of fibreglass reinforced thermoplastic and/or a stainless steel rivet. The locking pin shall be inserted under pressure with a high strength chemical resistant adhesive.

5.3 Connector Plates and Fasteners:

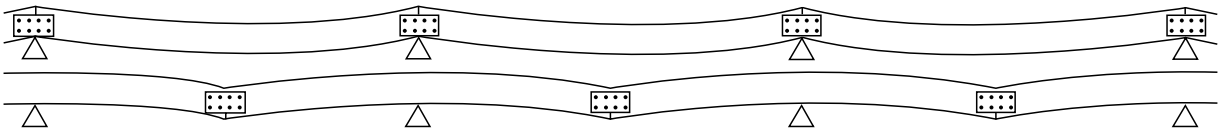
- 5.3.1 Connector plates shall be fibreglass and designed with sufficient strength so they may be installed between 0.2 and 0.3 of the length of the span from the support without derating the load carrying capacity of the ladder.
- 5.3.2 Connector plates for conductive ladder shall be stainless steel.
- 5.3.3 Fasteners shall be 316 stainless steel M10 bolt sets for cable ladder splice plates.

## Support Location Guidelines*

**Correct**




**Incorrect**



Refer to section 5.3

5.4 Accessories

5.4.1 The manufacturer shall be capable of providing all necessary parts (i.e. clamps, support assemblies, etc.) for the installation of a complete fibreglass ladder system.

5.5 Warning

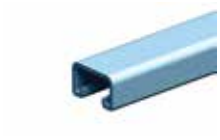
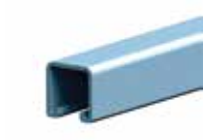
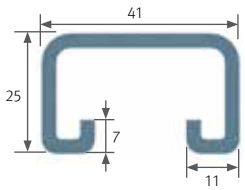
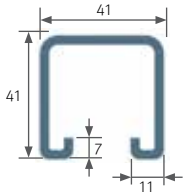
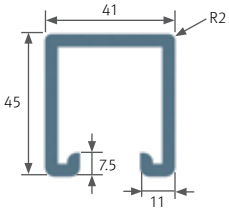
5.5.1 Treadwell's cable ladder system is designed as a support for power or control cables, or both; it is not intended or designed to be a walkway for personnel. The user is urged to display appropriate warning cautioning against the use of this support as a walkway.

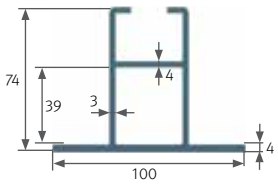
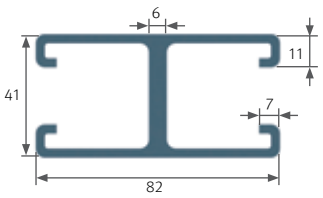
5.5.2 Rungs shall only be horizontally installed.


## 6.0 Acceptable Manufacturer

6.1 The fibreglass cable management system component shall be manufactured by Treadwell Group Pty Ltd of Australia.

**N** Non-standard item **C** Commonly stocked

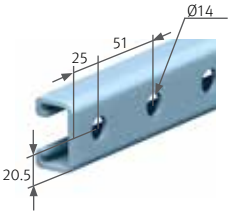
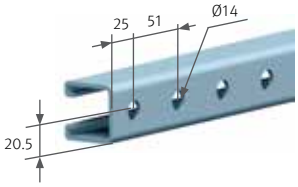
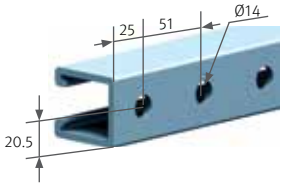
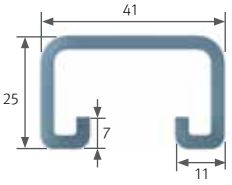
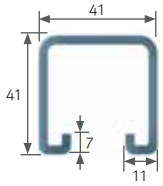
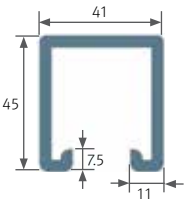
| EXD-DS-S22-(RS)(C)-(L) (Solid) | EXD-DS-S41-(RS)(C)-(L) (Solid) | EXD-DS-S45-(RS)(C)-(L) (Solid)* |
|---|---|---|
|  |  |  |
|  |  |  |

| EXD-DS-S74-(RS)(C)-(L) (Solid)* | EXD-DS-S82-(RS)(C)-(L) (Solid)* |
|---|---|
|  |  |
|  |  |

* Please be advised that the marked products are not commonly stocked. Please contact us for the confirmation of lead times.

## EXduro™ Strut

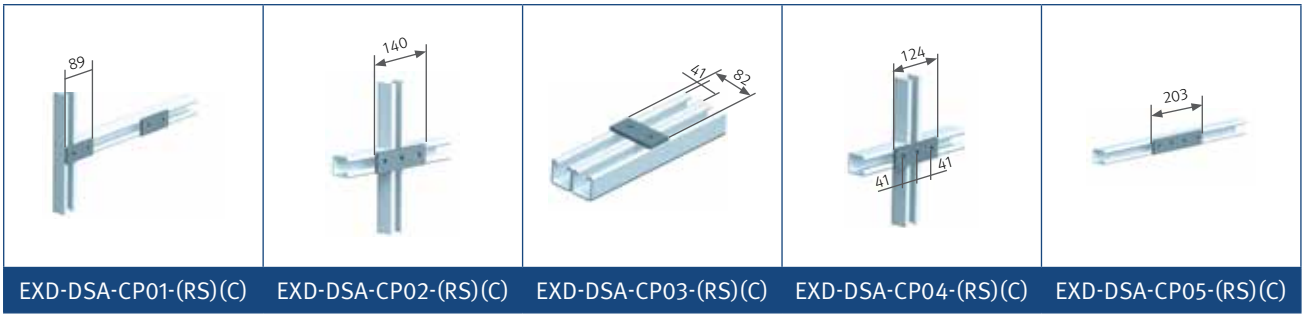
### Channel Framing (Solid & Punched)

| EXD-DS-P22-(RS)(C)-(L) (Punched)* | EXD-DS-P41-(RS)(C)-(L) (Punched)* | EXD-DS-P45-(RS)(C)-(L) (Punched)* |
|---|---|---|
|  |  |  |
|  |  |  |

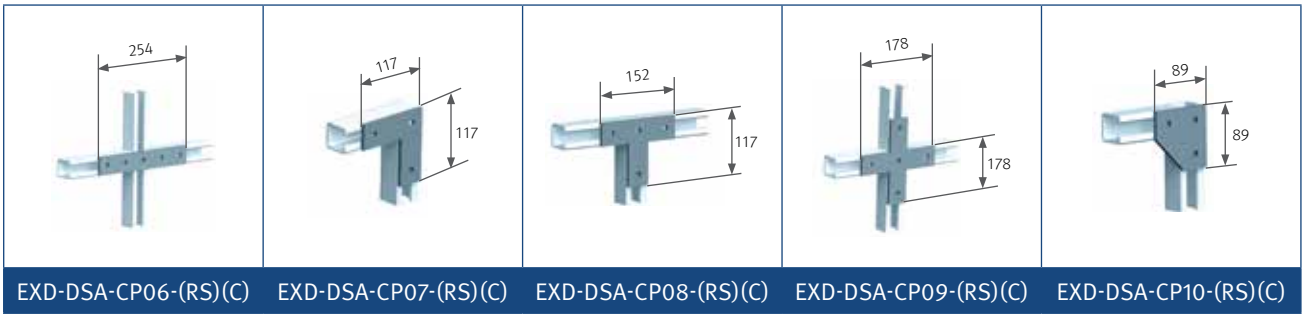
| Resin (RS) | Colour (C) | Length (L) |
|---|---|---|
| I-Series® Isopthalic(I) | Light Grey (LG) | 3m (1) |
| V-Series® Vinyl Ester(V) | Dark Grey (DG) | |
| P-Series® Phenolic(P) | Custom Colour (CC) | 6m (2) |

## EXduro™ Strut Accessories

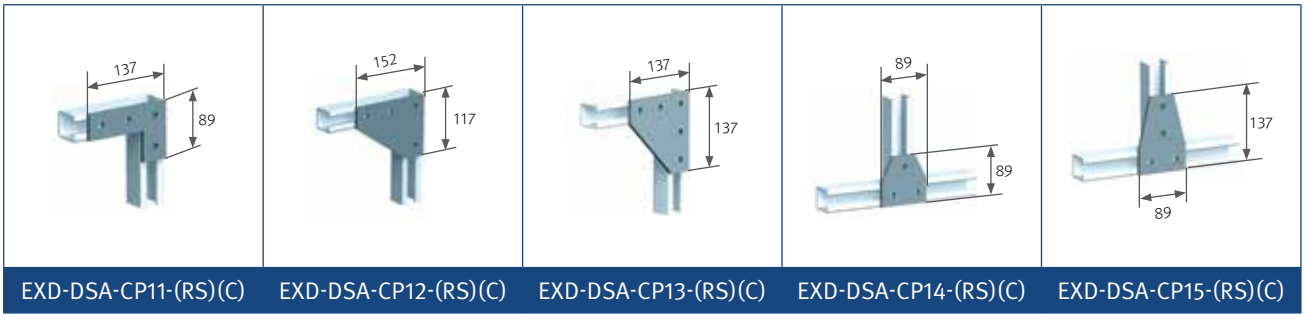
### Connector Plates



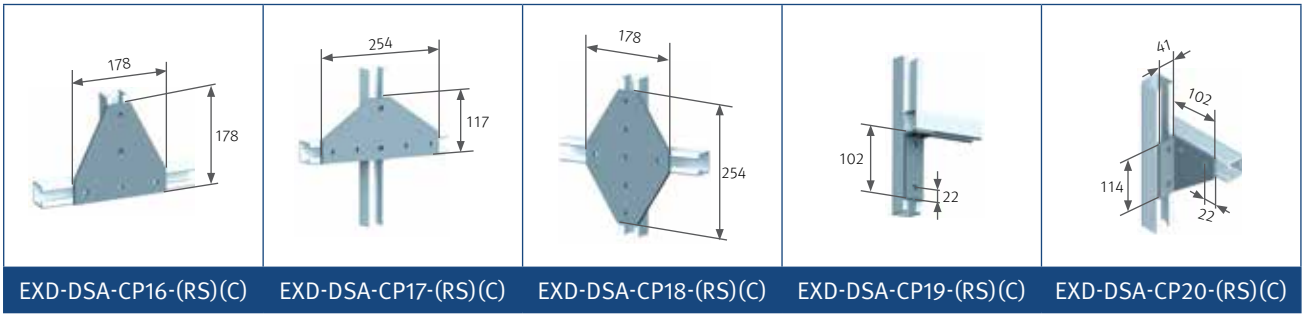

EXD-DSA-CP01-(RS)(C) | EXD-DSA-CP02-(RS)(C) | EXD-DSA-CP03-(RS)(C) | EXD-DSA-CP04-(RS)(C) | EXD-DSA-CP05-(RS)(C)



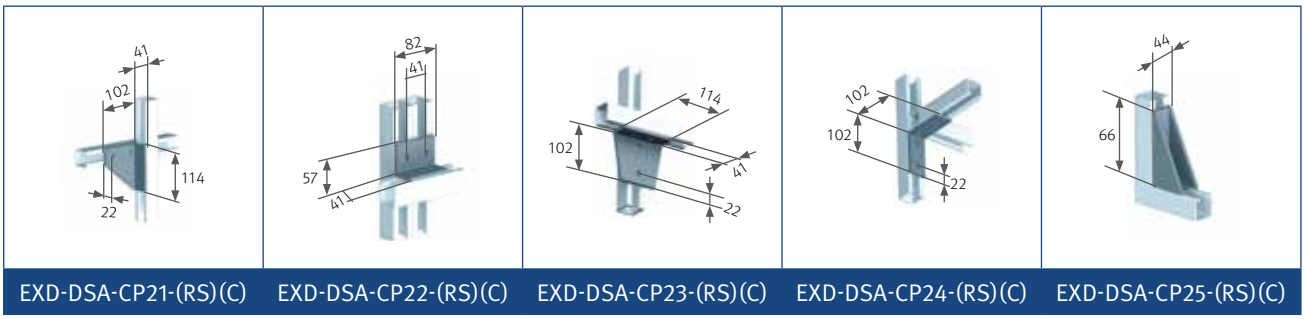

EXD-DSA-CP06-(RS)(C) | EXD-DSA-CP07-(RS)(C) | EXD-DSA-CP08-(RS)(C) | EXD-DSA-CP09-(RS)(C) | EXD-DSA-CP10-(RS)(C)




EXD-DSA-CP11-(RS)(C) | EXD-DSA-CP12-(RS)(C) | EXD-DSA-CP13-(RS)(C) | EXD-DSA-CP14-(RS)(C) | EXD-DSA-CP15-(RS)(C)



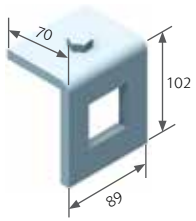

EXD-DSA-CP16-(RS)(C) | EXD-DSA-CP17-(RS)(C) | EXD-DSA-CP18-(RS)(C) | EXD-DSA-CP19-(RS)(C) | EXD-DSA-CP20-(RS)(C)




EXD-DSA-CP21-(RS)(C) | EXD-DSA-CP22-(RS)(C) | EXD-DSA-CP23-(RS)(C) | EXD-DSA-CP24-(RS)(C) | EXD-DSA-CP25-(RS)(C)

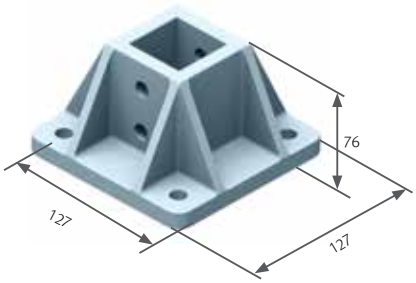
## EXduro™ Strut Window Clamp

EXD-DSA-WC*



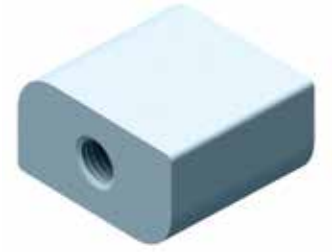

## EXduro™ Strut Single Post Base

EXD-DSA-BS41*




## EXduro™ Strut FRP/GRP Channel Nut

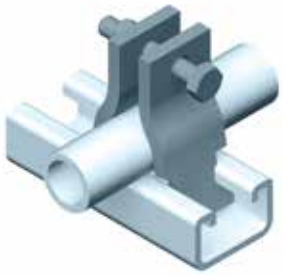
EXD-DSA-CN(D)*



| Rod size (D) |
|---|
| M6 (06) |
| M8 (08) |
| M10 (10) |
| M12 (12) |

## Non-Metallic Universal Pipe Clamp

EXD-DSA-PC(D)*



| Pipe size (D) |
|---|
| 12.7mm (012) |
| 19.0mm (019) |
| 25.4mm (025) |
| 31.7mm (032) |
| 38.1mm (038) |
| 50.8mm (051) |
| 63.5mm (064) |
| 76.2mm (076) |
| 88.9mm (089) |
| 101.6mm (102) |

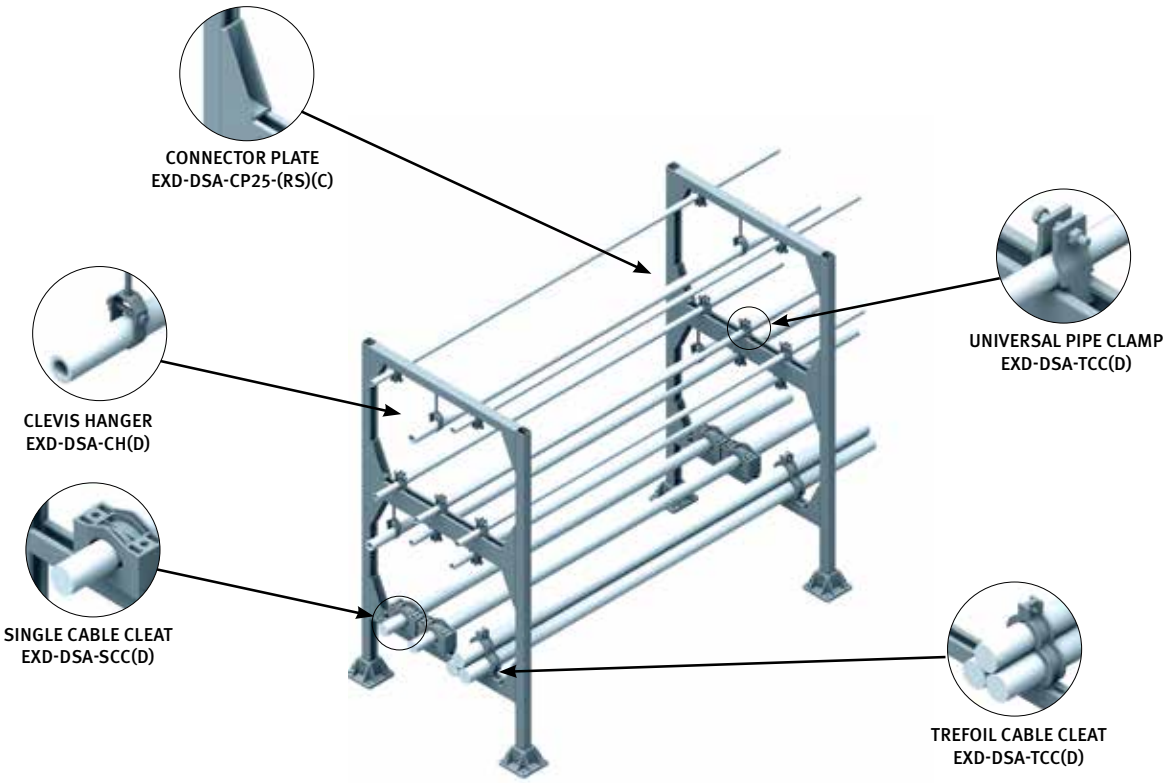
## EXduro™ Strut Cable Cleat

EXD-DSA-SCC(D)*

## EXduro™ Strut Cable Clamp

EXD-DSA-TCC(D)*

* Please be advised that the marked products are not commonly stocked. Please contact us for the confirmation of lead times.




# Specification - EXduro™ Strut

## 1.0 Scope

1.1 This specification covers the requirements for EXduro™ Strut non-metallic Channel Framing Systems & Accessories

## 2.0 Standards

2.1 All channel shall have a flame spread rating of 15 or less, and the Smoke Developed Index shall have a density of 550 or less when tested in accordance with the provisions of ASTM E-84.

2.2 All channel shall have a surfacing veil over the entire surface in addition to a UV inhibitor in the resin system to protect against degradation from ultra-violet light.

## 3.0 Materials

3.1 All channel shall be manufactured by the pultrusion process, and contain a minimum of 50% glass by weight.

## 4.0 Non-Metallic Pipe Clamps

4.1 All pipe clamps shall be manufactured by the injection molding process with an impact modified, 30% glass filled thermoplastic polyester resin.

4.2 All pipe clamps interlock with the channel framing described above.

4.3 All pipe clamps shall be designed for rigid PVC coated steel, Schedule 40 and 80 PVC, and filament wound fiberglass pipe or conduit. Clamps shall be adjustable to accommodate a 19mm minimum deviation in O.D. size.

## 5.0 Fasteners

5.1 All fasteners shall be injected molded glass reinforced nylon, 316 stainless steel, or pultruded Vinyl Ester rod with ground threads and compression molded Vinyl Ester nuts.

## 6.0 Acceptable Manufacturer

6.1 The fibreglass cable management system component shall be manufactured by Treadwell Group Pty Ltd of Australia.

# EXsemble® Rods, Bolts and Nuts

EXsemble® fibreglass bolts and nuts are designed for use requiring mechanical fasteners in corrosive, nonconductive, and/ or transparent to both radio frequency and electromagnetic waves.

EXsemble® bolts are manufactured from pultruded vinylester rods. The hex shaped nut is thermoplastic. Both are easily assembled with a standard six point socket wrench.

Available for delivery are bolts and hex nuts in a variety of diameters. The bolt length of 101.6mm is standard but custom lengths and partial length threading options are available on request. Brown is the standard colour. The bolts and nuts have UV inhibitors to provide resistance to ultraviolet degradation and corrosion.

Typical applications include:

- Water and wastewater applications
- Chemical process equipment
- Air and water pollution equipment
- Marine applications
- Cellular antenna mounts and screens

## Threaded Rods

| Product No. | Colour | Size | Weight(g/m) | Standard Length |
|---|---|---|---|---|
| EXS-R08-V | Grey | M8 | 85 | 1.2m or 2.4m |
| EXS-R10-V | Grey | M10 | 135 | 1.2m or 2.4m |
| EXS-R12-V | Grey | M12 | 190 | 1.2m or 2.4m |
| EXS-R16-V | Grey | M16 | 350 | 1.2m or 2.4m |
| EXS-R20-V | Grey | M20 | 550 | 1.2m or 2.4m |
| EXS-R24-V | Grey | M24 | 780 | 1.2m or 2.4m |

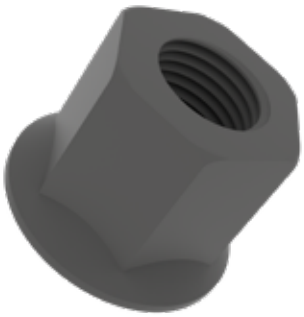
**Notes:** 1. Please contact us for other sizes or special requirements. 2. Vinyl Ester is standard. Epoxy is an option.

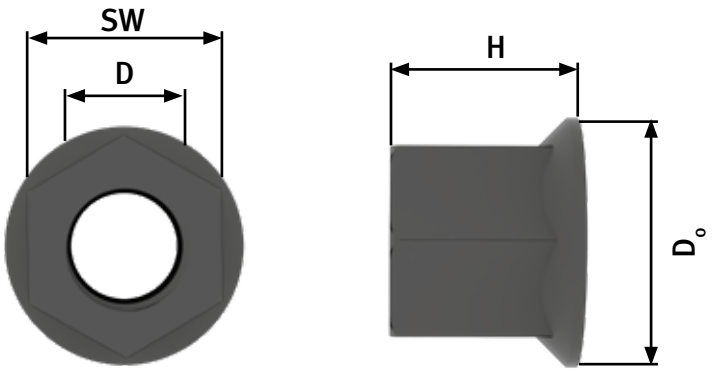
## Technical Data-M10

| No. | Item | Standard | Unit | Values |
|---|---|---|---|---|
| 1 | Ultimate Tensile Strength | ASTM D638 | Mpa | 1100 |
| 2 | Ultimate Thread Shear (using double fibreglass nut) | | KN | 7.95 |
| 3 | Ultimate Bending Strength | ASTM D790 | Mpa | 850 |
| 4 | Transverse Shear (on threaded rod - double shear) | ASTM B565 | KN | 48.5 |
| 5 | Ultimate Torque Strength (fibreglass nut with motor oil) | | N.M | 28 |
| 6 | Water Absorption Rate | ASTM D570 | % | ≤0.05 |
| 7 | Thermal Bending Strength | ASTM D790 | Mpa | ≥285 |
| 8 | Dye Penetration | ASTM D5117 | min | ≥ 15 |
| 9 | Volume Resistance (140°C,96h) | ASTM D257 | Ω.m | ≥ $10^{10}$ |
| 10 | Water Diffusion Test (0.1%NaCl,100h,12kv,1min) | IEC | mA | ‹0.03 |
| 11 | Lighting Impulse Withstand Voltage(100kv) | ASTM D149 | times | ≥5 |
| 12 | D.C. Breakdown Voltage | ASTM D149 | KV | ≥50 |
| 13 | Max recommended operation temp-based on 50% retention of ultimate threaded shear strength | | °C | 110 |
| 14 | Flammability | ASTM D635 | Self-Extinguishing | |

**Notes:** Tested fibreglass nut which are vinyl ester material and hex flange type, and the height of nut is critical factor. Above tested data only are based on the laboratory condition, you have to consider safety factors when you applied.

## Hex Flange Nut

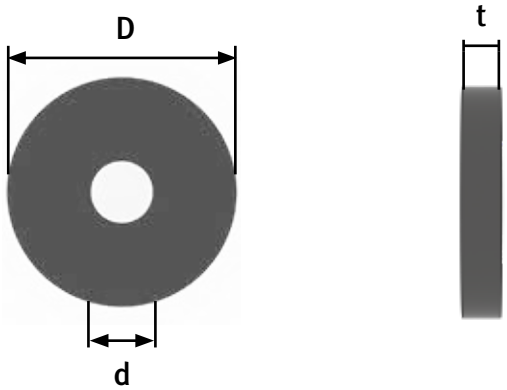





| | | Specifications | | | |
|---|---|---|---|---|---|
| Product No. | Colour | D | SW | H | $D_o$ |
| EXS-N08-V | Grey | M8 | 14mm | 12mm | 18mm |
| EXS-N10-V | Grey | M10 | 16mm | 15mm | 21mm |
| EXS-N12-V | Grey | M12 | 18mm | 18mm | 24mm |
| EXS-N16-V | Grey | M16 | 24mm | 24mm | 32mm |
| EXS-N20-V | Grey | M20 | 30mm | 30mm | 40mm |
| EXS-N24-V | Grey | M24 | 36mm | 36mm | 48mm |

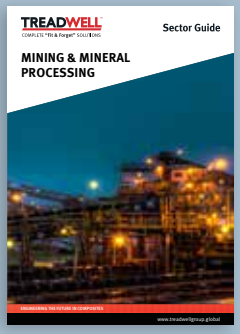
**Notes:** 1. Please contact us for other sizes or special requirements. 2. Vinyl Ester is standard. Epoxy is an option.

## Extra Large Flate Washer



# Hex Flange Nut

| | | Specifications | |
|---|---|---|---|
| Product No. | d | D | t |
| EXS-W10R-V | 11mm | 34mm | 3mm |
| EXS-W12R-V | 14mm | 51mm | 3mm |
| EXS-W16R-V | 18mm | 56mm | 3mm |
| EXS-W20R-V | 20mm | 72mm | 6mm |
| EXS-W24R-V | 26mm | 85mm | 6mm |

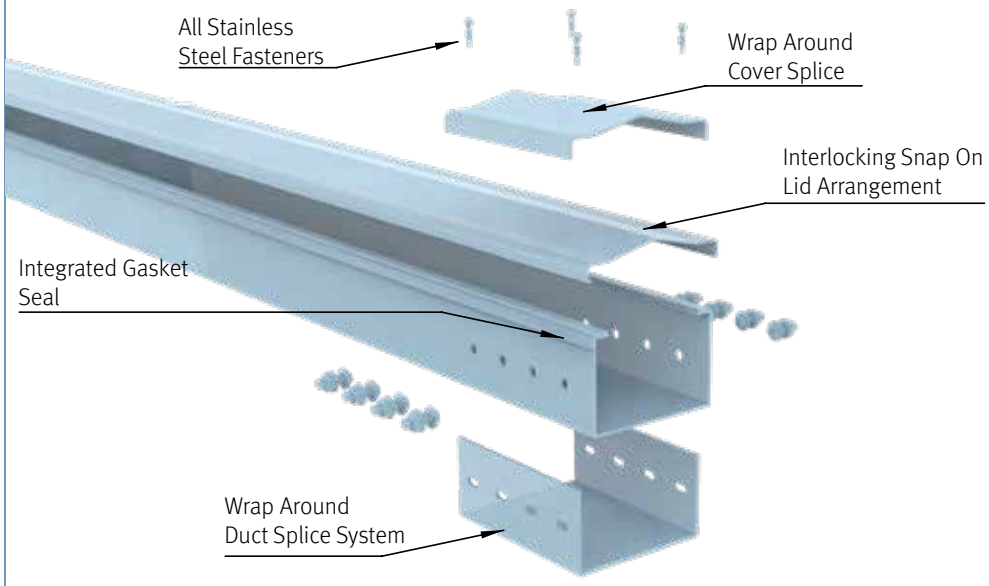



**View our Mining & Mineral Processing Sector Guide for application examples.**

## EXduro™ FRP Cable Duct

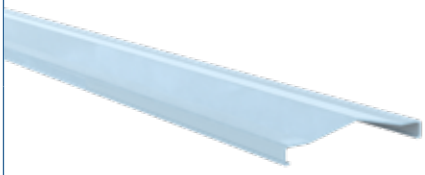
Treadwell's EXduro™ FRP Cable Ducting System protects cables from dust, oil, dirt, water and unauthorised tampering. Ideal for data control, communications and power cables, this cable ducting system is typically used in applications where corrosion, exposure to extreme weather and conductivity present challenges. Manufactured using a pultrusion process, these FRP ducts are constructed from premium resins that provide protection from corrosion, and have naturally low electrical conductivity.

### Product Overview




### Closed Duct

### Peaked Cover

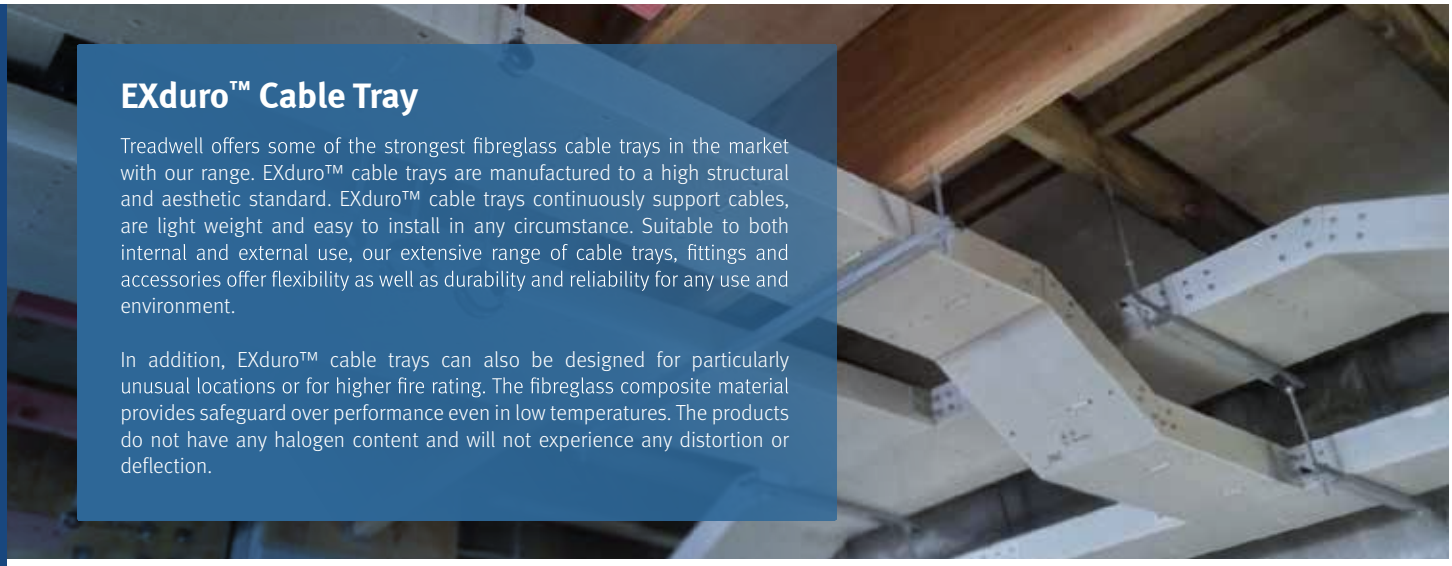


### Configurations

| Width | Height |
|---|---|
| 150mm | 150mm |
| 300mm | 150mm |
| 600mm | 150mm |

### Features and Benefits

- Peaked cover ensures no moisture pools on top of the duct system.
- Fully watertight design, great for outdoor and other harsh environments.
- Snap on interlocking peaked lid ensures minimal risk of tampering.
- Gasket seal between duct and lid provides great protection for cables.
- Wrap around splices for both duct and lid increase protection of cables from the elements.
- Able to be fitted with lanyard to ensure lid remains connected when removed.



## EXduro™ Cable Tray

Treadwell offers some of the strongest fibreglass cable trays in the market with our range. EXduro™ cable trays are manufactured to a high structural and aesthetic standard. EXduro™ cable trays continuously support cables, are light weight and easy to install in any circumstance. Suitable to both internal and external use, our extensive range of cable trays, fittings and accessories offer flexibility as well as durability and reliability for any use and environment.

In addition, EXduro™ cable trays can also be designed for particularly unusual locations or for higher fire rating. The fibreglass composite material provides safeguard over performance even in low temperatures. The products do not have any halogen content and will not experience any distortion or deflection.

| Slotted Bottom Tray | | Solid Bottom Tray |
|---|---|---|
|  |  |  |

| F-EXD-CT-(BT)(H)(W)-(RS)(C)-(L) | | | | | |
|---|---|---|---|---|---|
| **Bottom Type (BT)** | **Tray Height (H)** | **Tray Width (W)** | **Resin (RS)** | **Colour (C)** | **Length (L)** |
| Solid Bottom (SD)<br>Slotted Bottom (SL) | 25mm (025)<br>30mm (030)<br>50mm (050)<br>75mm (075)<br>100mm (100)<br>150mm (150) | 50mm (050)<br>75mm (075)<br>100mm (100)<br>150mm (150)<br>200mm (200)<br>300mm (300)<br>450mm (450)<br>600mm (600) | Standard Polyester (SI)<br>Standard Vinylester (SV)<br>Conductive Polyester (CI)<br>Conductive Vinylester (CV)<br>Halogen free Polyester (HI)<br>Halogen free Vinylester (HV)<br>Halogen free Low Smoke Plus (HF) | Light Grey (LG)<br>Custom Colour (CU) | 3m (1)<br>6m (2) |

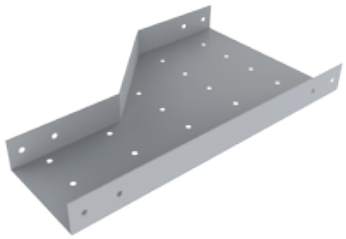
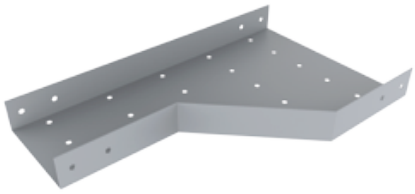
## Channel-Type Tray Fitting

| F-EXD-CTF-(FT)-(BT)(H)(W)(R)-(RS)(C) | | | | | | |
|---|---|---|---|---|---|---|
| **Fitting Type (FT)** | **Bottom Type (BT)** | **Tray Height (H)** | **Tray Width (W)** | **Radius (R)** | **Resin (RS)** | **Colour (C)** |
| Horizontal Bend (HB)<br>Horizontal Tee (HT)<br>Horizontal Cross (HX)<br>Vertical Inside Bend (VI)<br>Vertical Outside Bend (VO)<br>Vertical Tee Down (VD)<br>Vertical Tee Up (VU) | Solid Bottom (SD)<br>Slotted Bottom (SL) | 25mm (025)<br>30mm (030)<br>50mm (050)<br>75mm (075)<br>100mm (100)<br>150mm (150) | 50mm (050)<br>75mm (075)<br>100mm (100)<br>150mm (150)<br>200mm (200)<br>300mm (300)<br>450mm (450)<br>600mm (600) | 300mm (300)<br>450mm (450)<br>600mm (600)<br>900mm (900)<br>No Radius (000) | Standard Polyester (SI)<br>Standard Vinylester (SV)<br>Conductive Polyester (CI)<br>Conductive Vinylester (CV)<br>Halogen free Polyester (HI)<br>Halogen free Vinylester (HV)<br>Halogen free Low Smoke Plus (HF) | Light Grey (LG)<br>Custom Colour (CU) |

Please refer to EXduro™ product guide for more information.

| 90° Vertical Inside Mitered | 90° Vertical Outside Mitered | 90° Horizontal Bend Mitered | Horizontal Tee & Horizontal Cross | |
|---|---|---|---|---|
| Code | Code | Code | Code | Code |
| F-EXD-CTF-VI-(BT)(H)(W)(R)-(RS)(C) | F-EXD-CTF-VO-(BT)(H)(W)(R)-(RS)(C) | F-EXD-CTF-HB-(BT)(H)(W)(R)-(RS)(C) | F-EXD-CTF-HT-(BT)(H)(W)(R)-(RS)(C) | F-EXD-CTF-HX-(BT)(H)(W)(R)-(RS)(C) |
|  |  |  |  |  |

## Cable Tray Reducers

| Left Hand Cable Tray Reducer | Right Hand Cable Tray Reducer |
|---|---|
|  |  |

| F-EXD-CTR-(FT)(BT)(H)(W1)(W2)-(RS)(C) | | | | | | |
|---|---|---|---|---|---|---|
| Fitting Type (FT) | Bottom Type (BT) | Tray Height (H) | Larger Width (W1) | Smaller Width (W2) | Resin (RS) | Colour (C) |
| Right Reducer (R)<br>Left Reducer (L)<br>Straight Reducer (S) | Solid Bottom (SD)<br>Slotted Bottom (SL) | 25mm (025)<br>30mm (030)<br>50mm (050)<br>75mm (075)<br>100mm (100)<br>150mm (150) | 75mm (075)<br>100mm (100)<br>150mm (150)<br>200mm (200)<br>300mm(300)<br>450mm (450)<br>600mm (600) | 50mm (050)<br>75mm (075)<br>100mm (100)<br>150mm (150)<br>200mm (200)<br>300mm (300)<br>450mm (450) | Standard Polyester (SI)<br>Standard Vinylester (SV)<br>Conductive Polyester (CI)<br>Conductive Vinylester (CV)<br>Halogen free Polyester (HI)<br>Halogen free Vinylester (HV)<br>Halogen free Low Smoke Plus (HF) | Light Grey (LG)<br>Custom Colour (CU) |

## Splice Plate Part Numbers

| F-EXD-CTP-(FT)-(H)(O)-(RS)(C) | | | | |
|---|---|---|---|---|
| Fitting Type (BT) | Width (W) | Angle (o) | Resin (RS) | Colour (C) |
| Vertical Plate (VP)<br>Horizontal Plate (HP)<br>Straight Plate (SP)<br>Expansion Plate (EP) | 50mm (050)<br>75mm (075)<br>100mm (100)<br>150mm (150)<br>200mm (200)<br>300mm (300) | 22.5° (22)<br>30-30° (30)<br>45° (45)<br>90° (90)<br>No Angle (00) | Standard Polyester (SI)<br>Standard Vinylester (SV) | Light Grey (LG)<br>Custom Colour (CU) |

Please refer to EXduro™ product guide for more information.

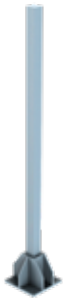
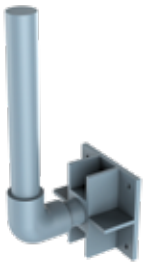
## Instrumentation & Push Button Stands

EXduro™ Instrumentation & Push Button Stands have great resilience and exceptional durability due to their all fibreglass reinforced plastic (FRP) construction. As a result, these stands cost substantially less in the long run than metallic stands with a high grade paint coat or even stainless steel instrument stands.

Furthermore, these products are all lightweight in comparison with galvanised and other metallic stands available on the market. Installation is also made easy by, not only the lightweight properties of the products, but also the fact the system can be easily adjusted and reconfigured if required on site i.e. no hot works for cutting of metal or welding is required, therefore eliminating the need for such permits.

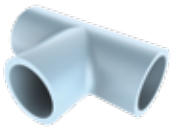
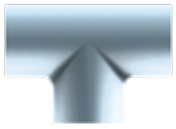
These stands can also be customised to achieve any type of configuration – whether your requirement is for a double or a single post, large mounting panel type design or even various mounting and weight requirements – Treadwell can do it with our EXduro™ Instrumentation & Push Button Stand Systems.

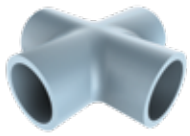
Made from FRP, these products will not rust or rot when exposed to chemicals and environments that would typically cause traditional products to start oxidising very quickly. Last but not least, the product is compatible with metallic and concrete structures without the requirement for insulation and is sturdy enough for any heavy industrial application. Consider the EXduro™ Instrumentation & Push Button Stand system if you are serious about capitalising on real design life cost advantages.

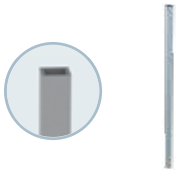
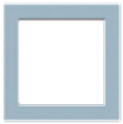
| Floor Mount Single | Column or Wall Mount | Floor Mount, Multiple Instrument |
|---|---|---|
| EXD-SD-01-(RS)(C) | EXD-SD-02-(RS)(C) | EXD-SD-03-(RS)(C) |
|  |  |  |
| **Floor Mount Double** | **Floor Mount Triple** | **Push Button Station** |
| EXD-SD-04-(RS)(C) | EXD-SD-05-(RS)(C) | EXD-SD-06-(RS)(C) |
|  |  |  |

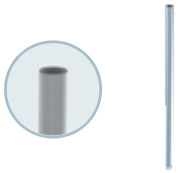
**Dimensions can be customised to suit.**

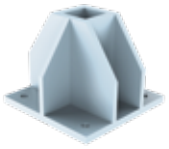
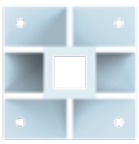
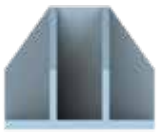
| 90° Corner Connection Joint | 3D | PLAN | ELEVATION |
|---|---|---|---|
| EXD-SD-CCJ-(RS)(C) |  |  |  |

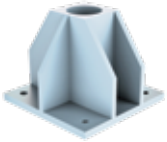
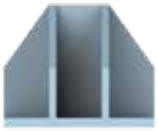
| Tee Connection Joint | 3D | PLAN | ELEVATION |
|---|---|---|---|
| EXD-SD-TCJ-(RS)(C) |  |  |  |

| Cross Connection Joint | 3D | PLAN | ELEVATION |
|---|---|---|---|
| EXD-SD-XCJ-(RS)(C) |  |  |  |

| Square Tube | 3D | PLAN | ELEVATION |
|---|---|---|---|
| EXD-SD-ST-(RS)(C)-(L) |  |  |  |

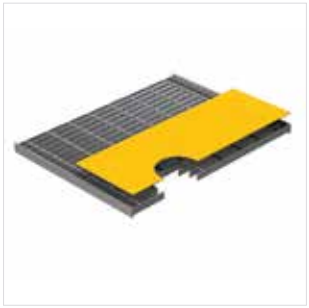
| Round Tube | 3D | PLAN | ELEVATION |
|---|---|---|---|
| EXD-SD-RT-(RS)(C)-(L) |  |  |  |

| Square Base | 3D | PLAN | ELEVATION |
|---|---|---|---|
| EXD-SD-SB-(RS)(C) |  |  |  |

| Round Base | 3D | PLAN | ELEVATION |
|---|---|---|---|
| EXD-SD-RB-(RS)(C) |  |  |  |

TREADWELL

# Contents





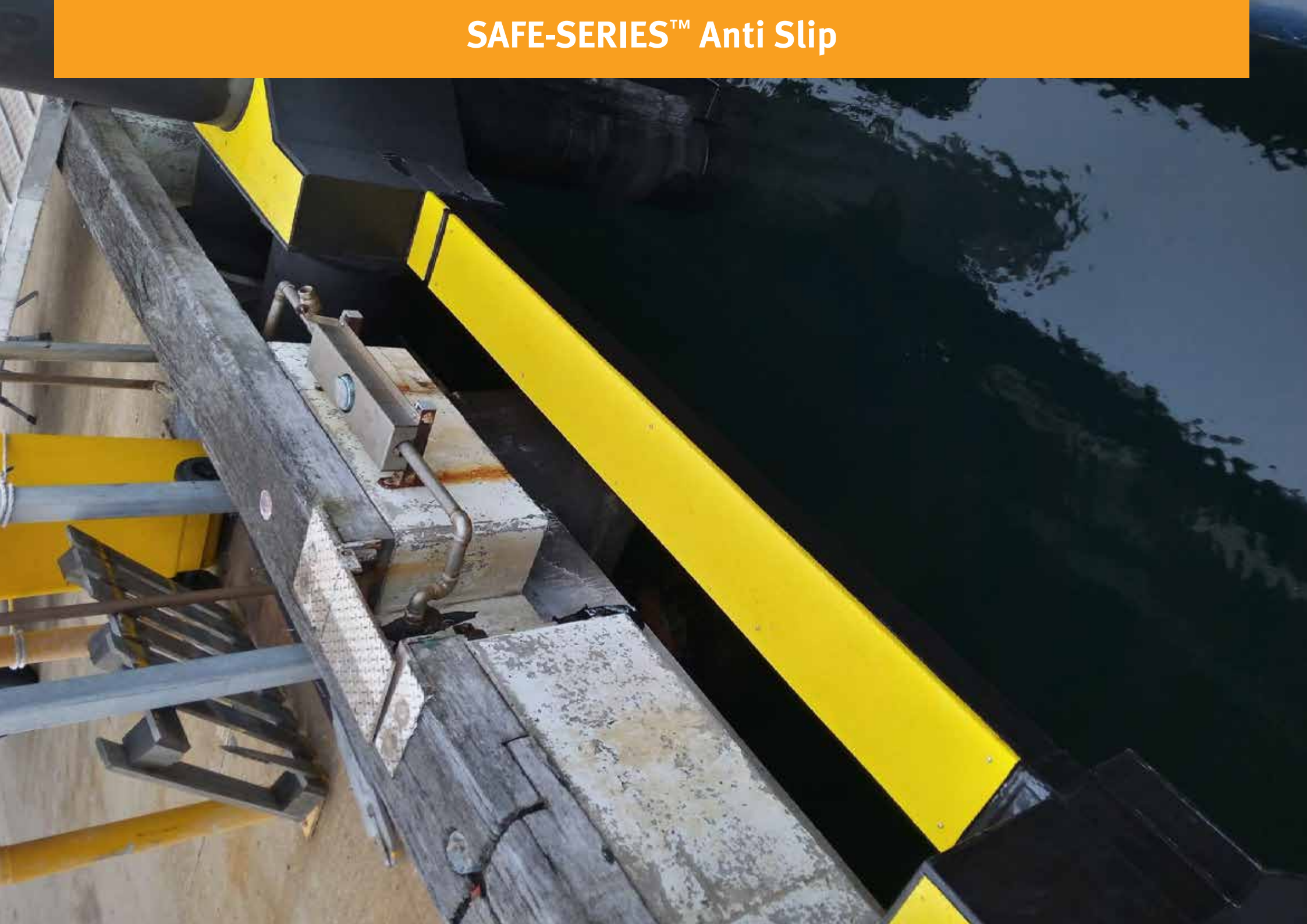
### Quality Policy

Quality is at the forefront of Treadwell's working practices. With over 15 years of manufacturing to the highest quality standards, Treadwell Group prides itself on its implementation of strict quality control measures, and strives to supply products that surpass customers' expectations. The company works on a policy of continuous improvement.

### Environmental Policy

Treadwell Group is conscious of the impact it has on the environment and its associated responsibilities. The company is committed to ensuring its operations satisfy both legal obligations and moral duties. Treadwell Group has been committed to sustainability for many years and is not just responding to current trends.

# SAFE-SERIES™ Anti Slip



# StairSAFE™ ®

StairSAFE® conforms to AS/NZS 4586

StairSAFE® conforms to BS 7976-2202 +AI:2013

StairSAFE® conforms to BS 8300:2009 +AI:2010

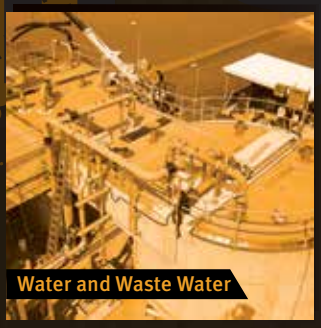
## EASY INSTALLATION

Heavy-duty industrial fixings for all applications. Surface for rungs normally applied by using a polyurethane adhesive glue system.

## SAFETY

Heavy-duty grit layer provides an ideal anti-slip surface; likewise, safety yellow offers enhanced visibility.


Industrial


Water and Waste Water


Maritime and Shipping


Oil and Gas

## OPTIONAL DEPTH AND LENGTH

Available in four standard depths, 50mm. 75mm, 100mm and 300mm. Custom depths are also available up to 300mm, Available in any length up to 3,250mm.

## ZERO TRIP RISK

Smooth bullnose, sloped on an 85° inclined plane ensures no trip risk is posed.

## CHEMICAL RESISTANT

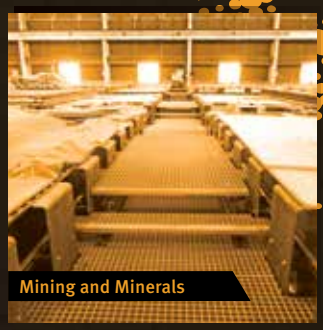
Designed to handle most chemicals. Please refer to our Chemical Resistance Guide,
CALL 1800 246 800 OR EMAIL
sales@treadwellgroup.com.au
for further details.

## ROBUST CONSTRUCTION

Specially formulated resin systems and metallic available on request.


Utilities and Rail


Chemical Processing


Mining and Minerals


Food and Beverage

TREADWELL

# Anti-Slip Stair Nosing

**Long wearing, anti-corrosive, non-slip nosing designed to re-profile the leading edge of any step; perfect for corrosive applications**

## FEATURES

- Robust fibreglass FRP construction designed to withstand the harshest of conditions.
- Impregnated heavy duty grit surface provides a guarantee against delamination - a common problem with insecure metal backed alternatives.
- Remarkable resistance to chemicals makes StairSAFE® ideal for corrosive environments.
- Impregnated fire retardant additives ensure excellent fire and heat resistance - product conforms to ASTM E84.
- With a product that lasts up to five* times as long as metallic alternatives, StairSAFE® FRP nosing not only saves you in initial product cost but also in reduced installation time and cost.

## SPECIFICATIONS

| | |
|---|---|
| Length | StairSAFE® is available in any length up to 3250mm. |
| Colour | Standard colour, Safety Yellow, greatly enhances visibility - other colours are also available on request. |
| Applications | Shipping, Marine, Refining Chemical Industries, plus many more. |
| Depth | Standard depth: 50mm, 70mm, 75mm and 100mm. StairSAFE® is also available in any depth up to 300mm. |

## Types

SAF-SSW
**StairSAFE®** Wide
100mm Deep

SAF-SSR
**StairSAFE®** Regular
75mm Deep

SAF-SSN
**StairSAFE®** Narrow
50mm Deep

SAF-SSC
**StairSAFE®** Custom
Up to 300mm Depth

SAF-SSP
**StairSAFE®** Public Area
70mm Depth

**Note: 70mm SAF-SSP is fully designed to comply with Australian Standard AS1428.1-2009.**

*** Statistics based on in-situ tests carried out on StairSAFE® FRP nosing products in an ammonia production facility - Australia.**

## PRODUCT RATING

| | |
|---|---|
| Grip | ● ● ● ● ● |
| Safety | ● ● ● ● ● |
| Chemical Resistance | ● ● ● ● ● |

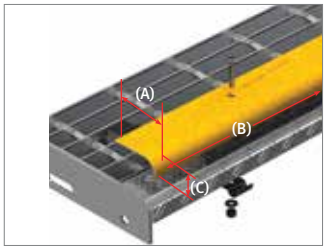
# StairSAFE®

## Anti-Slip Stair Nosing

**Unique profiling, designed to enhance anti-slip, aesthetics and awareness.**

## EASY STEP BY STEP PRODUCT ORDERING

| | | CODE | DESCRIPTION |
|---|---|---|---|
| Step 1 | Select the required product | SAF-SSN | StairSAFE® Narrow Nosing (A=50mm) |
| | | SAF-SSP | StairSAFE® Public Area Nosing (A=70mm) |
| | | SAF-SSR | StairSAFE® Regular Nosing (A=75mm) |
| | | SAF-SSW | StairSAFE® Wide Nosing (A=100mm) |
| | | SAF-SSC | StairSAFE® Custom FRP Nosing (A=upto 300mm) |
| *Note: Part 1 and Part 2 of the code are separated by a dash (-).* | | | |
| Step 2 | Select the required substrate | F | Fibreglass |
| | | A | Aluminium |
| | | S | Stainless Steel |
| | | G | Galvanised |
| Step 3 | Select your surface colour | Y | Safety Yellow (standard) |
| | | W | White |
| | | B | Black Grey |
| | | C | Custom |
| Step 4 | Nominate your anti-slip grade | G2 | Commercial Grade |
| | | G3 | Industrial Grade (standard) |
| | | G4 | Marine Grade |
| Step 5 | Nominate the required length (B) in mm – available up to 3250mm in the description. If SAF-SSC has been selected as the product please ensure (A) is also specified, within the description. | | |
| Step 6 | Nominate any fixing points required, i.e. drilled holes. Specify desired location for ease of installation. Remember to order your correct fixing, **or CALL 1800 246 800 OR EMAIL sales@treadwellgroup.com.au** for technical advice from our sales team. | | |
| Step 7 | Remember to order your correct fixing, **CALL 1800 246 800 OR EMAIL sales@treadwellgroup.com.au** for technical advice from our sales team. | | |
| Step 8 | Specify your required quantity. If you have an unusual or unique application, our nationwide area representatives are happy to visit your site, simply **CALL 1800 246 800 OR EMAIL sales@treadwellgroup.com.au.** | | |




Example: SAF-SSW-FYG3, SAFE-SERIES™ StairSAFE® Wide Fibreglass Stair Nosing (100mm), Safety Yellow Industrial Grade (Grit) Anti-Slip Surface, 900mm length.
Note: All nosing to be drilled to suit Stainless Steel Clip Set, 100mm in from either end.

TREADWELL

# Anti-Slip Rung Covers & Cappings


## SQUARE CAPPINGS

- Abrasive grit surface eliminates the possibility of slips from access ladders - a possibility that is present only too often, and can have serious ramifications.
- Surface, whilst ideal for the negation of slip issues, has been developed so as not to damage bare hands. Perfect for every application.
- Chemicals, severe weather and corrosive mixtures will not adversely affect RungSAFE® performance or longevity.
- Accurate pre-drilling of fixing holes is available with all RungSAFE® rung covers and cappings making installation even easier for you.

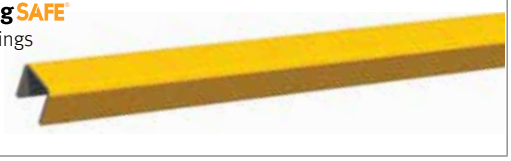
## SPECIFICATIONS

| | |
|---|---|
| Substrate | RungSAFE® rung covers are available in both FRP and metallic substrates, galvanised stainless steel or aluminium. |
| Colour | Standard Safety Yellow colour ensures excellent visual highlighting. Enquire about custom colours which are also available. |
| Length | RungSAFE® is available in lengths up to 500mm long in metallic substrate or 3250mm long in FRP substrate. |
| Applications | Wine Production, Shipping, Truck Body Building, Water Treatment, Marine, Chemical and many more. |

## TYPES

SAF-RCO RungSAFE®
FRP Rung Covers

SAF-RCA RungSAFE®
FRP Rung Cappings



## PRODUCT RATING

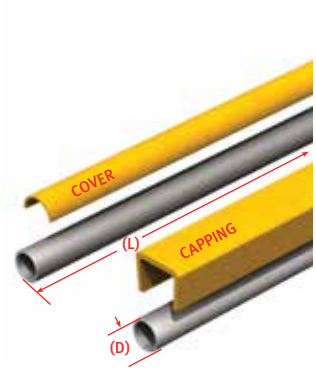
| | |
|---|---|
| Grip | ● ● ● ● ● |
| Safety | ● ● ● ● ● |
| Wear | ● ● ● ◐ ○ |

# RungSAFE®

## Anti-Slip Rung Covers & Cappings

## EASY STEP BY STEP PRODUCT ORDERING

| | | | | |
|---|---|---|---|---|
| Step 1 | Select the required product | CODE | DESCRIPTION | |
| | | SAF-RCO | RungSAFE® Cover | |
| | | SAF-RCA | RungSAFE® Capping | |
| | | | **Cover DIAMETER** | **Capping SIZE** |
| Step 2 | Please nominate your required dimensions | 20<br>25<br>30<br>38<br>43 | 20.0mm<br>25.0mm<br>30.0mm<br>38.0mm<br>42.5mm | 20.0mm x 20.0mm<br>25.0mm x 25.0mm<br>30.0mm x 30.0mm<br>38.0mm x 38.0mm<br>42.5mm x 42.5mm |
| *Note: Part 2 and Part 3 of the code are separated by a dash (-)* | | | | |
| Step 3 | Select the required substrate | F<br>A<br>S<br>G | Fibreglass<br>Aluminium<br>Stainless Steel<br>Galvanised | |
| Step 4 | Select your surface colour | Y<br>C | Safety Yellow (standard)<br>Custom | |
| Step 5 | Nominate your anti-slip grade | G2<br>G3<br>G4 | Commercial Grade<br>Industrial Grade (standard)<br>Marine Grade | |
| Step 6 | Nominate any fixing points required, e.g. drilled holes. Specify desired location for ease of installation. Remember to order your correct fixing, or **CALL 1800 246 800 OR EMAIL sales@treadwellgroup.com.au** for technical advice from our sales team. | | | |
| Step 7 | Remember to order your correct fixing, **CALL 1800 246 800 OR EMAIL sales@treadwellgroup.com.au** for technical advice from our sales team. | | | |
| Step 8 | Specify your required quantity. Please remember that if you have a unique application our nationwide area representatives are happy to visit your site, just **CALL 1800 246 800 OR EMAIL sales@treadwellgroup.com.au** | | | |




Example: SAF-RCO25-FYG3, SAFE-SERIES™ RungSAFE® Fibreglass Rung Cover 25mm Diameter, Safety Yellow Industrial Grade (Grit) Anti-Slip Surface, 500mm length.

TREADWELL

# Anti-Slip Deck Plating

**The ultimate solution for slippery ramps, decks, catwalks and landings**

## FEATURES

- DeckSAFE® is designed to reduce the risk of slips, trips and falls especially in areas where the presence of liquids pose a safety concern.
- Optional (Marine) heavy duty abrasive grit eliminates tripping hazards in oily and wet conditions.
- DeckSAFE® can markedly enhance the safety rating of almost any application where employed.
- The enhancement of employee awareness can be taken one step further with integrated signage, meaning any symbol, letter or word can be added at your request.
- DeckSAFE® provides total peace of mind, for work health safety concerns.

## SPECIFICATIONS

| | |
|---|---|
| Colour | Standard colours available - Safety Yellow and Grey. Custom colours are available on request. |
| Thickness | 3.2mm is the standard thickness for Fibreglass Deck Plating.<br>Custom thickness is also available. |
| Grit | Available in Commercial, Industrial and Marine grade grit systems. |
| Applications | Mining, Chemical Industries, Refining, plus many more. |

## COLOUR OPTIONS


## PRODUCT RATING

| | |
|---|---|
| Grip | ● ● ● ● ● |
| Safety | ● ● ● ◐ ○ |
| Chemical Resistance | ● ● ● ● ● |

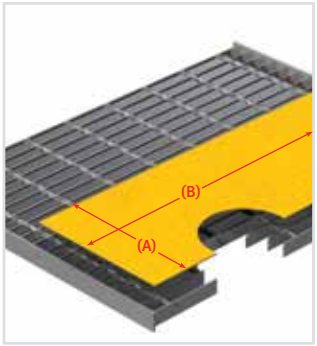
# DeckSAFE®

## Anti-Slip Deck Plating

### EASY STEP BY STEP PRODUCT ORDERING

| | | CODE | DESCRIPTION |
|---|---|---|---|
| Step 1 | Select the required product | SAF-DSS | DeckSAFE® Deck Plating Standard |
| | | SAF-DSC | DeckSAFE® Deck Plating Custom Thickness |
| *Note: Part 1 and Part 2 of the code are separated by a dash (-).* | | | |
| Step 2 | Select the required substrate | F | Fibreglass |
| | | A | Aluminium |
| | | S | Stainless Steel |
| | | G | Galvanised |
| Step 3 | Select your surface colour | Y | Safety Yellow (standard) |
| | | C | Custom Colour |
| Step 4 | Nominate your anti-slip grade | G2 | Commercial Grade |
| | | G3 | Industrial Grade (standard) |
| | | G4 | Marine Grade |
| Step 5 | Nominate required dimensions, (A x B) keeping in mind standard panels are available in 3000mm x 1200mm panels - sizes required larger than this will be supplied in several pieces. Should shapes be required, please provide Treadwell with a sketch, or feel free to contact us **CALL 1800 246 800 OR EMAIL sales@treadwellgroup.com.au.** | | |
| Step 6 | Nominate any fixing points required, e.g. drilled holes. Specify desired location for ease of installation. | | |
| Step 7 | Remember to order your correct fixing, **CALL 1800 246 800 OR EMAIL sales@treadwellgroup.com.au** for technical advice from our sales team. | | |
| Step 8 | Specify your required quantity. Remember if you have an unusual or unique application, our nationwide area representatives are happy to visit your site, just **CALL 1800 246 800 OR EMAIL sales@treadwellgroup.com.au.** | | |

Example: SAF-DSS-FYG3, SAFE-SERIES™ DeckSAFE® Fibreglass Deck Plating Standard, Safety Yellow Commercial Grade (Grit) Anti-Slip Surface, 1200mm x 3000mm.




TREADWELL

# Cable & Pipe Cover

**The FRP anti-slip solution for uncovered cables, pipes, conduit and wires.**

## FEATURES

- Creates a secure walkway over cables, pipes, conduits and wires..
- Offers a durable anti-slip surface for walking.
- Minimises risk of trips, slips and falls.
- Corrosion resistant.
- Interlocking cable protectors with PVC yellow top.

## SPECIFICATIONS

| | |
|---|---|
| Substrate | CableSAFE® is available in FRP substrates |
| Colour | Standard safety yellow ensures excellent visual highlighting. Ends can be customised as black or hazard |
| Length | CableSAFE® is available in lengths up to 3,250mm. |
| Applications | Wine Production, Shipping, Truck Body Building, Water Treatment, Marine, Chemical and many more. |

## PRODUCT RATING

| | |
|---|---|
| Grip | ●●●●● |
| Safety | ●●●●● |
| Wear | ●●●●◐ |

Speical order only.

## MECHANICAL FASTENERS

- Appropriate PPE - safety glasses, gloves, dust mask and hearing protection are suggested.
- Broom and dust pan or vacuum cleaner.
- Tape measure or ruler.
- Marking utensil (scriber or pin point permanent marker).
- Rag or cloth.
- Variable speed drill with the appropriate sized tungsten carbide drill bits, which are recommended for FRP (Fiberglass) substrate products.
- All fasteners (screws) should feature low profile heads, such as pan heads supplied by Treadwell.

## ADHESIVE

- Appropriate PPE - safety glasses, gloves, and dust masks are suggested.
- Broom and dust pan or vacuum cleaner.
- Tape measure or ruler.
- Light grade sandpaper (or similar).
- Denatured alcohol or acetone.
- Standard caulking gun used to apply adhesive.
- Paint scraper.
- Depending on the condition of the substrate (surface) a power washer, primer and grinder may be necessary.

## SURFACE PREPARATION

Prior to installing your SAFE-SERIES™ Anti-Slip products, surface preparation is necessary. The extent depends on the condition of the surface (substrate) you are covering, as well as the installation process you intend to use.

## MECHANICAL FASTENERS

In most cases, simply sweeping the surface and removing loose debris is sucient. Here are some exceptions:

- Raised/Uneven Surfaces
  Depending on the severity (more than 4mm, levelling compound may be needed. Uneven surfaces can make fastening difficult (adhesive impossible) and can cause damage to the product over time.

- Chipped Concrete
  (particularly on leading edge of steps) – old and damaged concrete that is chipping away requires levelling compound. SAFE-SERIES™ Anti-Slip products are not load-bearing and must be fully supported. Gaps under the cover or unsupported areas will result in damage to the (FRP) fiberglass cover.

- Steel
  Remove existing screw heads.

## APPLYING LADDER RUNG COVERS OVER CARBON STEEL

The following procedure should be carried out when LadderEX™ is installed:

| | |
|---|---|
| Step 1 | Thoroughly clean steel rungs to remove any dirt, oil, grease, etc. |
| Step 2 | Abrade to remove any rust. |
| Step 3 | Apply a metal primer followed by high quality industrial coating which does not contain silicone or Teflon. |
| Step 4 | When the topcoat is dry or cured, scuff lightly with sandpaper to remove gloss. |
| Step 5 | Adhesive such as SAFE-SERIES™ Polyurethane can now be applied. |

## Treadwell offers a range of ancillary product systems to complement the SAFE-SERIES™ range.

These adhesive sealent polyurethane product sealer kits are for ensuring that the integrity of grating that is trimmed is maintained and not impacted upon by the set-up of osmosis within the fibreglass part.

Contact Treadwell for more details and any unique application requirements, or should you require fabrication worksheets – free call 1800 246 800.

### High Performance MSP Sealant and Adhesive


**Polyurethane Adhesive Sealant, 290mL**

| | |
|---|---|
| Code | ADH-30610668W |
| UOM | Cartridge |

This is a high performance, universal sealant and adhesive based on MSP (modified Silyl-Polymer) technology. It cures with the air of atmospheric humidity to form a durable elastic rubber. It is moisture and mould resistant, remains permanently elastic, has high mechanical resistance, end strength and absorbs acoustic and mechanical vibrations.

### SAFE-SERIES™ FRP Sealer Kit

**EX-Series® Sealer Resin Kit, include 500mL resin with 15mL catalyst**

| | |
|---|---|
| Code | CPX-EX-SK-500 |
| UOM | Pail (+ Catalyst) |

EX-Series® Sealer Resin Kit, include 500ml resin with 15ml catalyst

Ideal for sealing exposed fibres after any field cutting. This kit includes resin (standard 500ml), catalyst (standard 15ml) and is available in vinylester.

### SAFE-SERIES™ Economy Clipset

| | |
|---|---|
| Code | SAF-ECG |
| Material | Galvanized Steel |
| Code | SAF-ECS |
| Material | Stainless Steel COMMONLY STOCKED |

### SAFE-SERIES™ Premium Clipset

| | |
|---|---|
| Code | SAF-PCG |
| Material | Galvanized Steel COMMONLY STOCKED |
| Code | SAF-PCS |
| Material | Stainless Steel COMMONLY STOCKED |

## Our Commitment to Testing

Slip resistance and resistance to delamination are paramount with underfoot anti-slip products.

With this in mind, Treadwell has subjected SAFE SERIES™ systems to stringent internationally accepted tests which have been carried out by NATA approved testing laboratories in Australia.

This test data allows plant operators and engineering personnel to review how the performance of our systems exceeds the high standards accepted.

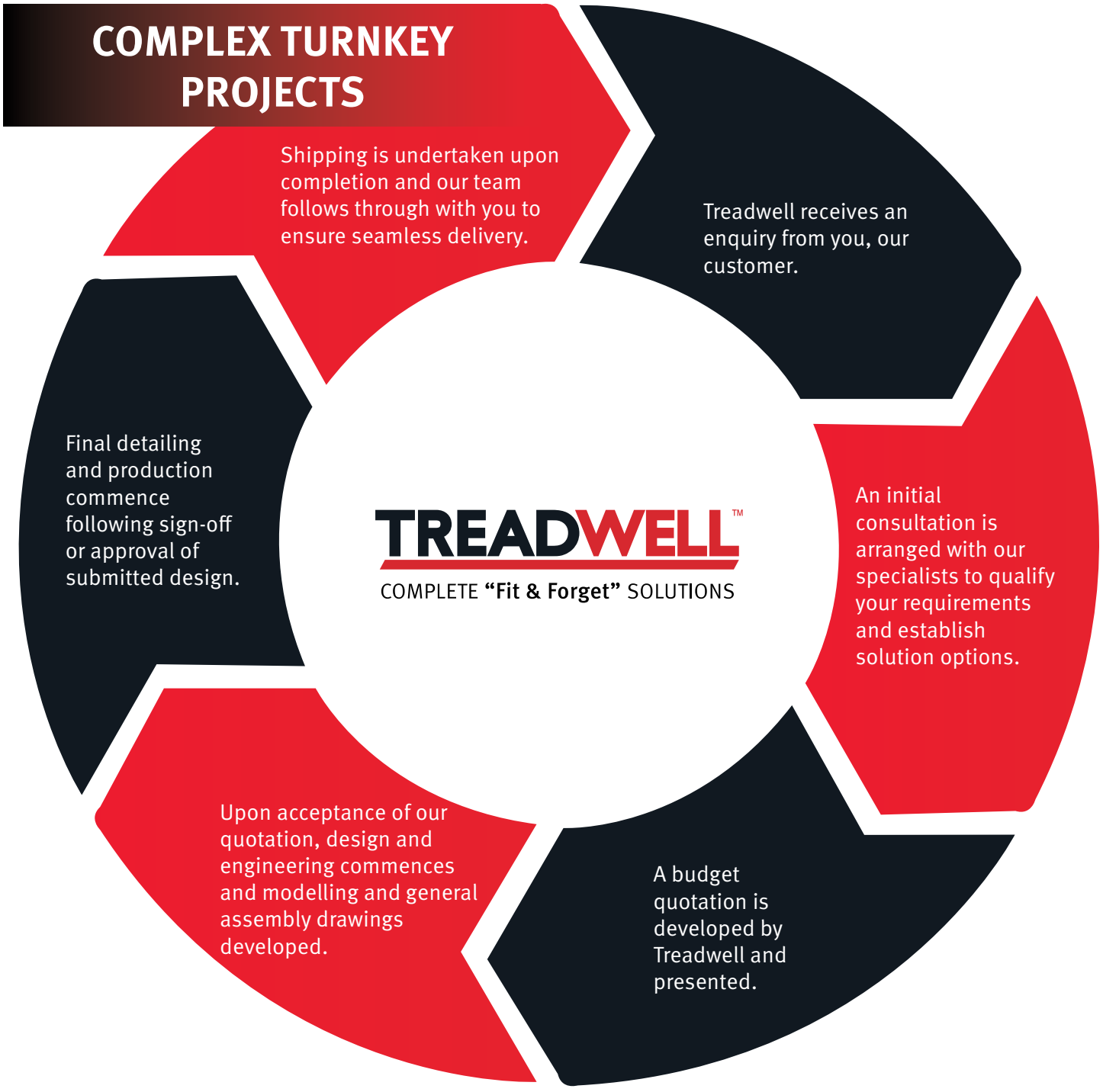
**StairSAFE® conforms to AS/NZS 4586**

**StairSAFE® conforms to BS 7976-2202 +AI:2013**

**StairSAFE® conforms to BS 8300:2009 +AI:2010**

NATA APPROVED

# Bespoke & Specialised Projects - Our Process Explained



# What You Get When You Work with Treadwell

## Specialised Online Tools

Conveniently located online, our selection tool allows users to fill in selection criteria based on each product brand we carry and will recommend a product suitable to your needs. Our product information has been imprinted on the tool to provide ease of outline and inspiration to architects, engineers, designers and other users. Users can also find all our product files in PDF, DWG, STEP etc. files to download for each of our products.

Visit our website at https://www.treadwellgroup.com.au/treadspec/ to try out these online specifier tools.

## Friendly & Professional Support

Whether you're looking to upgrade or completely revamp your rail infrastructure assets, we can help support your design services across all stages of your project lifecycle. Our qualified and experienced engineering team have provided turnkey as well as purely design-based projects. With a knowledgeable team, we are able to provide solutions to fit your requirements.

## State of the Art Fabrication Facilities

Treadwell has a LEAN manufacturing facility, approximately 4000m² under one roof. Our automated CNC equipment, including state-of-the-art 90,000 PSI waterjet cutting system and beam line ensure minimal material wastage, and as such, eliminates excessive costs. Our internal design engineering department is able to provide design expertise and sign off engineering in all states of Australia (RPEQ and NT certified), and an on-site Quality Assurance team to perform the necessary checks.

## Logistics


With our well-established partnerships with logistics partners across Oceania, complemented by our own fleet of trucks and trailers in Australia, we are able to deliver your projects across the region efficiently and effectively on time and in full.

**Australia Free Call - 1800 246 800**
**New Zealand Free Call - 0800 244 600**

TREADWELL™
COMPLETE **"Fit & Forget"** SOLUTIONS

Fixed Staircases | Fixed Access Platforms | Fixed Stepovers

EX-Series® composite solutions feature Treadwell's FRP grating, handrails, ladders and structural profiles. These access structures are easily installed in elevated, remote, indoor or outdoor locations, and feature corrosion resistant and low electrical properties.

Fixed Staircases – An FRP solution featuring a combination of ArchitEX™ Structural Profiles, EX-Series® grating and stair treads, and RailEX® handrails. Built to withstand corrosive indoor and outdoor environments.

Fixed Access Platforms – These can be customised to the span required for its purpose. Being naturally non-conductive, FRP is a cost-effective and long-lasting solution for electrically sensitive environments. This eliminates the need for earthing and bonding requirements, allowing for timely completion.

Fixed Stepovers – All GratEX® and MoultrEX® premium and standard stair tread options are moulded with the solid leading-edge nosing as a joint single stage component. This increases the rigour and sturdiness of the entire leading edge ensuring dependable performance

Structural Stair Systems | Customised Structures | Rail Platforms

in high traffic situations. All the treads with abrasive leading-edge nosing are manufactured to conform to AS 1657-2018.
Structural Stair Systems – Stair systems can be trial assembled in the Treadwell factory, before being partly dismantled and packed into modules. This allows for minimal downtime for the site, and quick installation.

Customised Structures – Treadwell's design and engineering team is able to design structures that are cyclone rated. Weight loading concerns on sensitive ground can also be addressed with FRP as FRP is lightweight with a high strength to weight ratio, compared to traditional materials.

Rail platforms- Treadwell's TreadSLAB® FRP panels are constructed with an anti-slip surface and corrosion resistant properties. This maintains optimal user safety. Panels can also be customised according to load requirements.

## Palisade Fencing

## Mesh Screening

Treadwell’s SecurEX® FRP Fencing System is suited for a wide range of applications including substations, switch yards, rail corridor, overhead support mast, chemical storage/process, ports and marine, airports, defence, mining and much more. SecurEX® is an excellent investment suited to a large range of sectors, spanning from industrial to architectural.

SecurEX® FRP Fencing System is non-conductive and non-corrosive, making it suitable in electrically sensitive environments. It is ideal around railway signalling equipment, and applications where power, magnetic fields and radio frequency (RF) transmission are critical considerations. With areas along the coast in mind, SecurEX® FRP Fencing System can be also applied in areas with high salt & moisture content.

Treadwell’s composite fencing solution is the perfect choice due to the adaptable designs. Easily bolted down or embedded, it can

be fabricated to suit any requirement. Based on the required quantities and specifications, the resin system is easily adapted to meet requirements. The ease of installation, along with incredibly low maintenance, makes SecurEX® FRP Fencing an ideal choice.
SecurEX® consists of our signature FRP panels and ArchitEX™ structural profiles. Constructed from premium resin systems, Treadwell's FRP fencing and screening.

This is the fencing and screening solution of choice in applications where conductivity and corrosion present challenges. SecurEX® is customisable with height, panel width and picket fencing or screen type as flexible options. SecurEX® FRP solution also offers the option of razor hoops and barbed wire for added security.

TREADWELL™
COMPLETE **“Fit & Forget”** SOLUTIONS

Boardwalks | Access Ramps | Staircases | Jetties

NatureTREAD™ is Treadwell’s answer to your Recreational Public Infrastructure project requirements. Over the years, our NatureTREAD™ brand has grown to include the complete range of EX-Series® FRP grating and ArchitEX™ FRP structural profiles. These products are offered with an extensive array of ancillary items and fixings.

Boardwalks – Designed to your specifications, built to last. Our boardwalks can be made flush against the natural floor a nature reserve, or elevated according to the surrounding environment. With no hot works or welding required, any variance on task is easily accommodated, without impacting the environment.

Access Ramps – Where it is difficult to use steps or gently sloped walkways to negotiate changes in level, ramps provide a better alternative for people using wheelchairs or other mobility aids. Ramps are also ideal for users carrying heavy water sports equipment.

Staircases – The preferred choice over traditional materials like wood or metal, FRP staircases are constructed with a built-in anti-slip surface, and are able to withstand exposure to the corrosive coastal environment. With its lightweight characteristics, heavy machinery is not required for installation. This ensures the protection of the natural environment.

Jetties – Jetties provide safe access between land and water vessels and boat launching facilities. Commonly constructed from traditional

Balustrade | Watercraft Access | Bridges | Shelters

materials like concrete or wood, there has been a shift towards FRP to meet the requirements of longer service life and minimal maintenance.

Balustrade – Balustrade are used to ensure the safety of the public as well as provide support to users. NatureTREAD™ balustrade systems are manufactured using the premium range of ArchitEX™ FRP Structural Profiles. These systems comprise of a range of materials including steel components such as grab rails.

Watercraft Access – Ideal where tidal influences are extreme and traditional floating systems are not feasible. These structures can be customised to suit the requirements of the infrastructure.

Bridges – Treadwell's NatureTREAD™ bridges have been installed in various environment conditions. They withstand climates from dry desert heat, to the constant humidity in nature reserves, and to the snow conditions in Tasmania. With a long service life, minimal maintenance costs and low installation costs all combine to provide a competitive long-term solution.

Shelters – Our premium resin systems offer exceptional resistance to acids, salts and alkalis. Our ArchitEX™ FRP Structural Profiles are able to withstand the corrosive marine environment and are also rot and termite proof.

## Odour Control Tank Covers

## Baffle Walls

Our EcoEX™ range of water and wastewater treatment plants FRP solutions are designed for use in environments where there is constant exposure to corrosive by the elements, chemicals, fumes, submersions, splashes or electrical dangers. In such demanding circumstances, EcoEX™ FRP solutions will outperform many of the traditional options.

EcoEX™ SureLine® FRP Odour Control Covers are an engineered solution designed for containing odours, particulate and corrosive gases over tanks and equipment.

SureLine® odour control cover systems is a lightweight custom extruded interlocking panel system that can be designed, engineered and fabricated to suit the specifics of your application. SureLine® can be designed as a load-bearing platform solution, enabling operators to safely reach covered areas. The SureLine® system can also be designed as a non-trafficable odour control cover system, meeting AS1170 requirements. SureLine® is a lighter solution to that of its stronger counterpart, SureLine® HD, and is ideal for lighter smaller span tanks. SureLine® odour control cover systems also offer a range of inspection hatches, maintenance hatches and full access hatches

Ducting Stacks

with safety grates installed. Covers can be manufactured in whole sections or available as an option in certain sizes to suit specific requirements. SureLine® covers may be designed to incorporate take off points and access where required. SureLine® covers are sealed systems designed to contain odours and/or operate in conjunction with scrubber systems that draw the trapped gases off and treat them to eliminate odour, offering a 99.9% capture rate.

Our offerings for SureLine® come in the form of:

- SureLine®
- SureLine® Medium Duty
- SureLine® Heavy Duty

TREADWELL

# Chemical Resistance Guide

Information contained in this guide is based on data collected from several years of actual industrial applications. Recommendations are based on conservative evaluations of the changes which occur in certain properties of replicate laminates after exposures of one year or longer, both in the laboratory and the field.

Temperatures are neither the minimum nor the maximum but represent standard test conditions (Room Temperature & 70˚C). The products may be suitable at higher temperatures but individual test data should be required to establish such suitability. Contact Treadwell for any special applications that you may have.

The recommendations ( • : resistant: – :not resistant) contained in this specification sheet are made without guarantee or representation as to results. We suggest that you evaluate these recommendations and suggestions in your own laboratory oractual field trial prior to use. Our responsibility for claims arising from breach of warranty, negligence, or otherwise is limited to the purchase price of the material.

| Chemical | I-Series® | | V-Series® | |
|---|---|---|---|---|
| | Room Temp | 70°C | Room Temp | 70°C |
| Acetaldehyde | – | – | – | – |
| Acetic Acid 0-25% | • | • | • | • |
| Acetic Acid 25-50% | • | – | • | • |
| Acetic Anhydride | – | – | – | – |
| Acetone | – | – | – | – |
| Acrylonitrile | – | – | – | – |
| Alcohol, Butyl | – | – | • | – |
| Alcohol, Ethyl 10% | – | – | • | 66 |
| Alcohol, Ethyl 100% | – | – | • | – |
| Alcohol, Isopropyl 10% | – | – | • | 66 |
| Alcohol, Isopropyl 100% | – | – | • | – |
| Alcohol, Methyl 10% | – | – | • | 66 |
| Alcohol, Methyl 100% | – | – | – | – |
| Alcohol, Methyl Isobutyl | – | – | • | 66 |
| Alcohol, Secondary Butyl | – | – | • | 66 |
| Aluminium | • | • | • | • |
| Aluminium Chloride | • | • | • | • |
| Aluminium Hydroxide | • | – | • | 49 |
| Aluminium Nitrate | • | • | • | • |
| Aluminium Potassium Sulfate | • | • | • | • |
| Ammonia, Aqueous 0-10% | – | – | • | 38 |
| Ammonia, Gas | – | – | • | 38 |
| Ammonium Bicarbonate | • | – | • | 49 |
| Ammonium Bisulfite | – | – | • | 49 |
| Ammonium Carbonate | – | – | • | 49 |
| Ammonium Citrate | • | – | • | 49 |
| Ammonium Fluoride | – | – | • | 49 |
| Ammonium Hydroxide 5% | • | – | • | 49 |
| Ammonium Hydroxide 10% | • | – | • | 49 |
| Ammonium Hydroxide 20% | – | – | • | 49 |
| Ammonium Nitrate | • | • | • | 49 |
| Ammonium Persulfate | – | – | • | 49 |
| Ammonium Phosphate | – | – | • | 49 |
| Ammonium Sulfate | • | • | • | • |
| Arsenious Sulfate | • | – | • | • |
| O-Benzoyl Benzoic Acid | – | – | • | • |

| Chemical | I-Series® | | V-Series® | |
|---|---|---|---|---|
| | Room Temp | 70°C | Room Temp | 70°C |
| Barium Carbonate | • | – | • | • |
| Barium Chloride | • | – | • | • |
| Barium Hydroxide | – | – | • | 49 |
| Barium Sulfate | • | • | • | • |
| Barium Sulfide | – | – | • | • |
| Beer | • | – | • | 49 |
| Benzene | – | – | – | – |
| 5% Benzene in Kerosene | • | – | • | • |
| Benzene Sulfonic Acid | • | • | • | • |
| Benzoic Acid | • | – | • | • |
| Benzyl Alcohol | – | – | • | – |
| Benzyl Chloride | – | – | – | – |
| **Brass Plating Solution:** | | | | |
| – 3% Copper Cyanide | – | – | • | • |
| – 6% Sodium Cyanide | – | – | • | • |
| – 1% Zinc Cyanide | – | – | • | • |
| – 3% Sodium Carbonate | – | – | • | • |
| Butyl Acetate | – | – | – | – |
| Butyric Acid 0-50% | • | – | • | • |
| Butylene Glycol | • | • | • | • |
| Cadmium Chloride | • | – | • | • |
| **Cadmium Cyanide Plating Soln:** | | | | |
| – 3% Cadmium Oxide | – | – | • | 49 |
| – 6% Sodium Cyanide | – | – | • | 49 |
| – 1% Caustic Soda | – | – | • | 49 |
| Calcium Bisulfate | • | • | • | • |
| Calcium Carbonate | • | – | • | • |
| Calcium Chlorate | • | • | • | • |
| Calcium Chloride | • | • | • | • |
| Calcium Hydroxide | • | – | • | 49 |
| Calcium Hypochlorite | • | – | • | 49 |
| Calcium Nitrate | • | • | • | • |
| Calcium Sulfate | • | • | • | • |
| Calcium Sulfite | • | • | • | • |
| Caprylic Acid | • | – | • | • |
| Carbon Dioxide | • | • | • | • |

| Chemical | I-Series® | | V-Series® | |
|---|---|---|---|---|
| | Room Temp | 70°C | Room Temp | 70°C |
| Carbon Disulfide | – | – | – | – |
| Carbon Monoxide | • | • | • | • |
| Carbon Tetrachloride | – | – | • | 38 |
| Carbon Acid | • | – | • | • |
| Castor Oil | • | • | • | • |
| Carbon Methyl Cellulose | – | – | • | 49 |
| Chlorinated Wax | – | – | • | • |
| Chlorine Doixide/Air | • | – | • | • |
| Chlorine Dioxide, Wet Gas | – | – | • | • |
| Chlorine, Dry Gas | – | – | • | • |
| Chlorine, Wet Gas | – | – | • | • |
| Chlorine, Liquid | – | – | – | – |
| Chlorine, Water | – | – | • | • |
| Chloroacetic Acid 0-50% | – | – | • | 38 |
| Chlorobenzene | – | – | – | – |
| Chloroform | – | – | – | – |
| Chlorosulfonic Acid | – | – | – | – |
| Chromic Acid 20% | – | – | • | 49 |
| Chromic Acid 30% | – | – | – | – |
| Chromium Sulfate | • | • | • | • |
| Citric Acid | • | • | • | • |
| Coconut Oil | • | – | • | • |
| Copper Chloride | • | • | • | • |
| Copper Cyanide | – | – | • | • |
| Copper Fluoride | – | – | • | • |
| Copper Nitrate | • | • | • | • |
| **Copper Plating Solution:** | | | | |
| – Copper Cyanide | – | – | • | • |
| – 10.5% Copper | – | – | • | • |
| – 4% Copper Cyanide | – | – | • | • |
| – 6% Rochelle Salts | – | – | • | • |
| **Copper Brite Plating:** | | | | |
| – Caustic Cyanide | – | – | • | 38 |
| **Copper Plating Solution:** | | | | |
| – 45% Copper Fluorobrate | – | – | • | • |
| – 19% Copper Sulfate | – | – | • | • |
| – 8% Sulfuric Acid | – | – | • | • |
| **Copper Matte Dipping Bath:** | | | | |
| – 30% Ferric Chloride | – | – | • | • |
| – 19% Hydrochloric | – | – | • | • |
| **Copper Pickling Bath:** | | | | |
| – 10% Ferric Sulfate | – | – | • | • |
| – 10% Sulfuric Acid | – | – | • | • |
| Copper Sulfate | • | • | • | • |
| Corn Oil | • | – | • | • |
| Corn Starch-Slurry | • | – | • | • |

| Chemical | I-Series® | | V-Series® | |
|---|---|---|---|---|
| | Room Temp | 70°C | Room Temp | 70°C |
| Corn Sugar | • | – | • | • |
| Cottonseed Oil | • | – | • | • |
| Crude Oil, Sour | • | – | • | • |
| Crude Oil, Sweet | • | – | • | • |
| Cyclohexane | • | – | • | 49 |
| Detergents, Sulfonated | • | – | • | • |
| Di-Ammonium Phosphate | • | – | • | • |
| Dibromophenol | – | – | – | – |
| Dibutyl Ether | – | – | • | 49 |
| Dichloro Benzene | – | – | – | – |
| Dichloroethylene | – | – | – | – |
| Diesel Fuel | • | – | • | • |
| Diethylene Glycol | • | – | • | • |
| Dimenthyl Phthalate | – | – | • | • |
| Dioctyl Phthalate | – | – | • | • |
| Diprophylene Gylcol | • | – | • | • |
| Dodecyl Alcohol | – | – | • | • |
| Esters, Fatty Acids | • | • | • | • |
| Ethyl Acetate | – | – | – | – |
| Ethyl Benzene | – | – | – | – |
| Ethyl Ether | – | – | – | – |
| Ethylene Gylcol | • | • | • | • |
| Ethylene Dichloride | – | – | – | – |
| Fatty Acids | • | • | • | • |
| Ferric Chloride | • | • | • | • |
| Ferric Nitrate | • | • | • | • |
| Ferric Sulfate | • | • | • | • |
| Ferrous Chloride | • | • | • | • |
| Ferrous Nitrate | • | • | • | • |
| Ferrous Sulfate | • | • | • | • |
| 8-8-8 Fertiliser | • | – | • | 49 |
| **Fertiliser:** | | | | |
| – Urea Ammoium Nitrate | – | – | • | 49 |
| Fuel Gas | – | – | • | • |
| Fluoboric Acid | – | – | • | 49 |
| Fluosilicic Acid 0-20% | – | – | • | • |
| Formaldehyde | • | – | • | • |
| Formic Acid | • | – | • | • |
| Fuel Oil | • | – | • | • |
| Gas Natural | • | – | • | • |
| Gasoline, Auto | • | – | • | • |
| Gasoline, Aviation | • | – | • | • |
| Gasoline, Ethyl | • | – | • | • |
| Gluconic Acid | • | – | • | • |
| Gasoline, Sour | • | – | • | • |
| Glucose | • | • | • | • |

TREADWELL

# Chemical Resistance Guide

| Chemical | I-Series® | | V-Series® | |
|---|---|---|---|---|
| | Room Temp | 70°C | Room Temp | 70°C |
| Glycerine | • | • | • | • |
| Glycol, Ethylene | • | • | • | • |
| Glycol, Propylene | • | • | • | • |
| Glycolic Acid | • | – | • | • |
| **Gold Plating Solution:** | | | | |
| – 63% Potassium Ferrocyanide | – | – | • | • |
| – 2% Potassium Gold Cyanide | – | – | • | • |
| – 8% Sodium Cyanide | – | – | • | • |
| Heptane | • | – | • | • |
| Hexane | • | – | • | • |
| Hexylene Glycol | • | • | • | • |
| Hydraulic Fluid | • | – | • | • |
| Hydrobromic Acid 0-25% | • | – | • | • |
| Hydrochloric Acid 0-37% | • | – | • | • |
| Hydrocyanic Acid | • | – | • | • |
| Hydrofluoric Acid 10% | – | – | • | – |
| Hydrofluosilicic Acid, 10% | – | – | • | • |
| Hydrogen Bromide, Wet Gas | – | – | • | • |
| Hydrogen Chloride, Dry Gas | – | – | • | • |
| Hydrogen Chloride, Wet Gas | – | – | • | • |
| Hydrogen Peroxide | – | – | • | 49 |
| Hydrogen Sulfide, Dry | • | – | • | • |
| Hydrogen Sulfide, Aqueous | • | – | – | • |
| Hydrogen Fluoride, Vapour | – | – | • | • |
| Hydrosulfite Bleach | – | – | • | 49 |
| Hydrochlorus Acid 0-10% | – | – | – | – |
| **Iron Plating Solution:** | | | | |
| – 45% Fecl: 15% Cacl | – | – | • | • |
| – 20% Fecl: 11% (Nh4)2 So4 | – | – | • | • |
| **Iron And Steel Claeaning Bath:** | | | | |
| –9% Hydrochloric: 23% Sulfuric | – | – | • | • |
| Isopropyl Amine | – | – | • | 38 |
| Isopropyl Palmitate | • | • | • | • |
| Jet Fuel | • | – | • | • |
| Kerosene | • | – | • | • |
| Lactic Acid | • | – | • | • |
| Lauroryl Chloride | – | – | • | • |
| Lauric Acid | • | – | • | • |
| Lead Acetate | • | – | • | • |
| Lead Chloride | • | – | • | • |
| Lead Nitrate | • | – | • | • |
| **Lead Plating Solution:** | | | | |
| –.8% Fluoboric, 0.4% Boric Acid | – | – | • | • |
| Levulinic Acid | • | – | • | • |
| Linseed Oil | • | • | • | • |
| Lithium Bromide | • | • | • | • |
| Lithium Sulfate | • | • | • | • |
| Magnesium Bisulfite | • | – | • | • |
| Magnesium Carbonate | • | – | • | • |
| Magnesium Chloride | • | • | • | • |
| Magnesium Hydroxide | – | – | • | 60 |
| Magnesium Nitrate | • | – | • | • |
| Magnesium Sulfate | • | • | • | • |
| Maleic Acid | • | • | • | • |
| Mercuric Chloride | • | – | • | • |
| Mercurous Chloride | • | – | • | • |
| Methylene Chloride | – | – | – | – |
| Methyl Ethyl Ketone | – | – | – | – |
| Methyl Isobutyl Carbitol | – | – | – | – |
| Methanol (See Alcohol) | • | – | • | • |
| Methyl Isobutyl Ketone | – | – | – | – |
| Methyl Styrene | – | – | – | – |
| Mineral Oils | • | • | • | • |
| Molybdenum Disulfide | • | – | • | • |
| Monochloro Acetic Acid | – | – | – | – |
| Monoethyanolamine | – | – | – | – |
| Motor Oil | • | • | • | • |
| Myristic Acid | – | – | • | • |
| Naptha | • | • | • | • |
| Napthalene | • | – | • | • |
| Nickel Chloride | • | • | • | • |
| Nickel Nitrate | • | • | • | • |
| **Nickel Plating:** | | | | |
| – 8% Lead, 0.8% Flouboric Acid | – | – | • | • |
| – 0.4% Boric Acid | – | – | • | • |
| **Nickel Plating:** | | | | |
| – 11% Nickel Sulfate | • | – | • | • |
| – 2% Nickel Chloride | • | – | • | • |
| – 1% Boric Acid | • | – | • | • |
| **Nickel Plating**: | | | | |
| – 44% Nickel Sulfate | • | – | • | • |
| – 4% Ammonium Chloride | • | – | • | • |
| – 4% Boric Acid | • | – | • | • |
| Nickel Sulfate | • | • | • | • |
| Nitric Acid 0-5% | • | • | • | • |
| Nitric Acid 20% | – | – | • | 49 |
| Nitric Acid Fumes | – | – | – | – |
| Nibrobenzene | – | – | – | – |
| Octanoci Acid | • | – | • | • |
| Oil, Sour Crude | • | • | • | • |
| Oil, Sweet Crude | • | • | • | • |
| Oleic Acid | • | • | • | • |
| Oleum (Fuming Sulfuric) | – | – | – | – |
| Olive Oil | • | • | • | • |

| Chemical | I-Series® | | V-Series® | |
|---|---|---|---|---|
| | Room Temp | 70°C | Room Temp | 70°C |
| Oxalic Acid | • | • | • | • |
| **Peroxide Bleach:** | | | | |
| – 25% Peroxide 95% | • | • | • | • |
| – 0.025% Epsom Salts | • | • | • | • |
| – 5% Sodium Silicate 42.Be | • | • | • | • |
| – 1.4% Sulfuric Acid 66.Be | • | • | • | • |
| Phenol | — | — | — | — |
| Phenol Sulfonic Acid | — | — | — | — |
| Phosphoric Acid | • | • | • | • |
| Phosphoric Acid Fumes | • | • | • | • |
| Phosphorous Pentoxide | • | • | • | • |
| Phosphorous Trichloride | — | — | — | — |
| Phthalic Acid | • | • | • | • |
| Pickling Acids (Sulfuric & Hydrochloric) | • | • | • | • |
| Picric Acid, Alcoholic | — | — | — | — |
| Polyvinyl Acetate Latex | • | — | • | • |
| Polyvinyl Alcohol | • | — | • | 38 |
| Polyvinyl Chloride Latex W/35 (Parts Dop) | — | — | • | 49 |
| Potassium Aluminium Sulfate | • | • | • | • |
| Potassium Bicarbonate | • | — | • | 60 |
| Potassium Bromide | • | — | • | 38 |
| Potassium Carbonate | • | — | • | 60 |
| Potassium Chloride | • | • | • | • |
| Potassium Dichromate | • | — | • | 60 |
| Potassium Ferricyanide | • | • | • | • |
| Potassium Ferrocyanide | • | • | • | • |
| Potassium Hydroxide | — | — | • | 66 |
| Potassium Nitrate | • | • | • | • |
| Potassium Permanganate | • | — | • | 60 |
| Potassium Persulfate | • | — | • | • |
| Potassium Sulfate | • | • | • | • |
| Propionic Acid 1-50% | — | — | • | 49 |
| Propionic Acid 50-100% | — | — | — | — |
| Propylene Glycol | • | • | • | • |
| Pulp Paper Mill Effluent | • | — | • | • |
| Pyridine | — | — | — | — |
| Salicylic Acid | — | — | • | 60 |
| Sebacic Acid | — | — | • | • |
| Selenious Acid | — | — | • | • |
| Silver Nitrate | • | • | • | • |
| **Silver Plating Solution:** | | | | |
| – 44% Silver Cyanide | — | — | • | • |
| – 7% Potassium Cyanide | — | — | • | • |
| – 5% Sodium Cyanide | — | — | • | • |

| Chemical | I-Series® | | V-Series® | |
|---|---|---|---|---|
| | Room Temp | 70°C | Room Temp | 70°C |
| – 2% Potassium Carbonate | — | — | • | • |
| Soaps | • | — | • | • |
| Sodium Acetate | • | — | • | • |
| Sodium Benzoate | • | — | • | • |
| Sodium Bicarbonate | • | • | • | • |
| Sodium Bifluoride | • | — | • | 49 |
| Sodium Bisulfate | • | • | • | • |
| Sodium Bisulfite | • | • | • | • |
| Sodium Bromate | • | • | • | 60 |
| Sodium Bromide | • | • | • | • |
| Sodium Carbonate 0-25% | • | — | • | • |
| Sodium Chlorate | • | — | • | • |
| Sodium Chloride | • | • | • | • |
| Sodium Chlorite | • | — | • | • |
| Sodium Chromite | • | • | • | • |
| Sodium Cyanide | • | — | • | • |
| Sodium Dichromate | • | • | • | • |
| Sodium Di-Phosphate | • | • | • | • |
| Sodium Ferricyanide | • | • | • | • |
| Sodium Fluoride | • | — | • | 49 |
| Sodium Fluoro Silicate | — | — | • | 49 |
| Sodium Hexametaphosphates | — | — | • | 38 |
| Sodium Hydroxide 0-5% | — | — | • | 66 |
| Sodium Hydroxide 5-25% | — | — | • | 66 |
| Sodium Hydroxide 50% | — | — | • | 66 |
| Sodium Hydrosulfide | • | — | • | • |
| Sodium Hypochlorite | • | — | • | 66 |
| Sodium Lauryl Sulfate | • | • | • | • |
| Sodium Mono-Phosphate | • | • | • | • |
| Sodium Nitrate | • | • | • | • |
| Sodium Silicate | • | — | • | • |
| Sodium Sulfate | • | • | • | • |
| Sodium Sulfide | • | — | • | • |
| Sodium Sulfite | • | — | • | • |
| Sodium Tetra Borate | • | • | • | • |
| Sodium Thiocyanate | — | — | • | • |
| Sodium Thiosulfate | • | — | • | • |
| Sodium Tripolyphosphate | • | — | • | • |
| Sodium Xylene Sulfonate | • | — | • | • |
| Sodium Solutions | • | — | • | • |
| Sodium Crude Oil | • | • | • | • |
| Soya Oil | • | • | • | • |
| Stannic Chloride | • | • | • | • |
| Stannous Chloride | • | • | • | • |
| Stearic Acid | • | • | • | • |
| Styrene | — | — | — | — |

TREADWELL

# Chemical Resistance Guide

| Chemical | I-Series® | | V-Series® | |
|---|---|---|---|---|
| | Room Temp | 70°C | Room Temp | 70°C |
| Sugar, Beet And Cane Liquor | • | – | • | • |
| Sugar, Sucrose | • | • | • | • |
| Sulfamic Acid | • | – | • | • |
| Sulfanilic Acid | • | – | • | • |
| Sulfated Detergents | • | – | • | • |
| Sulfur Dioxide, Dry Or Wet | – | – | • | • |
| Sulfur Trioxide/Air | – | – | • | • |
| Sulfuric Acid 0-30% | • | • | • | • |
| Sulfuric Acid 30-50% | – | – | • | • |
| Sulfuric Acid 50-70% | – | – | • | 49 |
| Sulfurous Acid | – | – | • | 38 |
| Superphosphoric Acid (76% P2 05) | • | – | • | • |
| Tall Oil | • | – | • | 60 |
| Tannic Acid | • | – | • | 66 |
| Tartaric Acid | • | • | • | • |
| Thionyl Chloride | – | – | – | – |
| **Tin Plating:** | | | | |
| – 18% Stannous Fluorborate | – | – | • | • |
| – 7% Tin | – | – | • | • |
| – 9% Fluoroboric Acid | – | – | • | • |
| – 2% Boric Acid | – | – | • | • |
| Toluene | – | – | – | – |
| Toluene Sulfonic Acid | – | – | • | • |
| **Transformer Oils:** | | | | |
| – Mineral Oil Types | • | • | • | • |
| – Chloro-Phenyl Types) | • | • | • | • |
| Trichlor Acetic Acid | • | – | • | • |
| Trichlorethylene | – | – | – | – |

| Chemical | I-Series® | | V-Series® | |
|---|---|---|---|---|
| | Room Temp | 70°C | Room Temp | 70°C |
| Trichloropenol | – | – | – | – |
| Tricresyl Phosphate | – | – | • | 49 |
| Tridecylbenzene Sulfonate | • | – | • | • |
| Trisodium Phosphate | • | – | • | • |
| Turpentine | – | – | • | 38 |
| Urea | – | – | • | 38 |
| Vegetable Oils | • | • | • | • |
| Vinegar | • | • | • | • |
| Vinyl Acetate | – | – | – | – |
| **Water:** | | | | |
| – Deionised | – | – | – | – |
| – Demineralised | • | • | • | • |
| – Distilled | • | • | • | • |
| – Fresh | • | • | • | • |
| – Salt | • | • | • | • |
| – Sea | • | • | • | • |
| White Liquor (Pulp Mill) | • | – | • | • |
| Xylene | – | – | – | – |
| Zinc Chlorate | • | • | • | • |
| Zinc Nitrate | • | • | • | • |
| **Zinc Plating Solution:** | | | | |
| – 9% Zinc Cyanide | – | – | • | 49 |
| – 4% Sodium Cyanide | – | – | • | 49 |
| –9% Sodium Hydroxide | – | – | • | 49 |
| **Zinc Plating Solution:** | | | | |
| – (49% Zinc Fluoroborate | • | – | • | • |
| – 5% Ammonium Chloride | • | – | • | • |
| – 6% Ammonium Fluoroborate | • | – | • | • |
| Zinc Sulfate | • | • | • | • |

# Appendix 1: Electrical Properties

| Electrical Properties | ASTM | Units | Value | Units | Value |
|---|---|---|---|---|---|
| Arc Resistance, LW | D-495 | seconds | 120 | seconds | 120 |
| Dielectric Strength, LW | D-149 | kv./mm | 1.37 | kv./in. | 35 |
| Dielectric Strength, PF | D-149 | volts/mil. | 200 | volts/mil. | 200 |
| Dielectric Constant, PF | D-150 | @60hz | 5 | @6 0hz | 5 |

# MORE RESOURCES AVAILABLE ON OUR WEBSITE

## Product Guides


EX-Series® Grating Product Guide


RailEX® ROUND Product Guide


LadderEX® Product Guide


ArchitEX™ Structural Product Guide


ArchitEX™ Double Web Beam Product Guide


ArchitEX™ Interlocking Deck Product Guide


EcoEX™ Product Guide

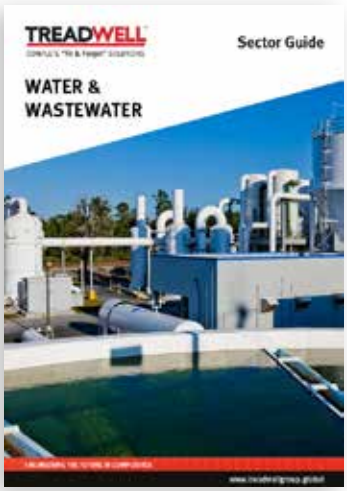

EXduro™ Product Guide


SecurEX® Product Guide

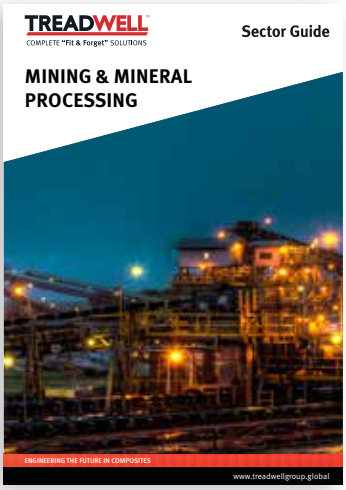
## Sector Guides


SAFE-SERIES™ Product Guide


Rail & Transport

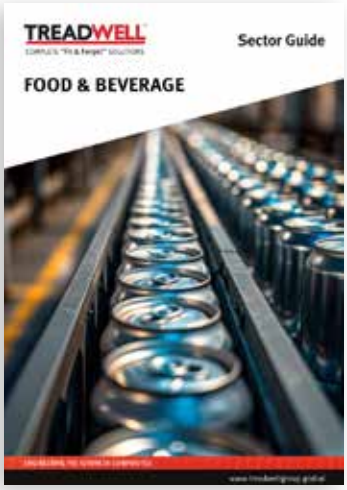



Water & Wastewater




Mining Industry


Oil & Gas




Food & Beverage

## Australia

### SOUTH AUSTRALIA

- **ADELAIDE (HEAD OFFICE & WAREHOUSE)**

  58 DEEDS ROAD
  NORTH PLYMTON, SA 5037

- **STRATHALBYN (FACTORY & WAREHOUSE)**

  22 DUNREATH ROAD
  STRATHALBYN, SA 5255

### VICTORIA

- **MELBOURNE (BRANCH OFFICE & WAREHOUSE)**

  37 MACAULAY STREET
  WILLIAMSTOWN, VIC 3016

### NEW SOUTH WALES

- **SYDNEY (SERVICED OFFICE)**

  SUITE 9, 35-36
  EAST ESPLANADE MANLY, NSW 2095

- **WAGGA (BRANCH OFFICE & WAREHOUSE)**

  13 CHESHIRE ST,
  WAGGA WAGGA, NSW 2650

### QUEENSLAND

- **BRISBANE (SERVICED OFFICE)**

  OFFICE 32, 59 ALBANY CREEK ROAD
  ASPLEY, QLD 4034

### WESTERN AUSTRALIA

- **PERTH (BRANCH OFFICE & WAREHOUSE)**

  UNIT 2, 4 ELMSFIELD ROAD
  MIDVALE, WA 6056

### TASMANIA

- **BURNIE (DISTRIBUTION CENTRE)**

  28-30 BRICKPORT ROAD
  COOEE, TAS 7320

## New Zealand

### NORTH ISLAND

- **PALMERSTON NORTH (OFFICE & WAREHOUSE)**

  36 RATANUI STREET AORANGI,
  FEIDLING 4775

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