



TECHNICAL DOCUMENT

TR35 Suspended Ceilings

Industry specific solutions

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Introduction

Welcome and thank you for taking an interest in the TR35 suspended ceiling system.

TR35 suspended ceiling panel grid is a diverse system that assembles together using different arrays and integrated components to accommodate industry specific applications. TR35 is designed for use in challenging environments with harsh conditions.

A big part of what Arcoplast has to offer, is our collaboration on multiple levels with architects, engineers, designers and site managers. Arcoplast brings to the table an extensive library of laboratory tests, technical data, and shop drawings. Our documentation, subject matter expertise and training programs are based on 50 years of boots on the ground experience.

If you have a project you would like to discuss, please call or send us an email.
We look forward to hearing from you.

Thank you
Regards the Arcoplast team

Acknowledgements

Information reprinted, with permission, from ASTM C635-04 Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings. Copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. A copy of the complete standard may be obtained from ASTM International, www.astm.org.

TR35 Overview

TR35 is an FRP system made up of Rails, Clamps and Clips. The science and terminology for TR35 is specific to the TR35 system. TR35 is not a conventional metal suspended ceiling system. The TR35 grid components and assembly process, result in a final outcome significantly superior to conventional metal grid systems.

TR35 Attributes

FRP (Pultruded fiberglass thermoset polyester resin) is a high endurance long lasting composite material that does not blister, delaminate or shed. FRP is impervious to humidity and moisture, is chemical resistant, non metallic and noncorrosive.

The TR35 System requires no rejuvenating maintenance programs, is easy to install resulting in a modern, highly robust, aesthetically pleasing suspended ceiling.

Green Footprint

- ✓ Acryloyl :  The Living Building Challenge. Declare label compliant.
- ✓ FDA No. 21 CFR 177.2600.
- ✓ TR35  Logistical, economic environmental footprint.

Industrial applied application

- ✓ Food and Beverage industries
- ✓ Pharmaceutical and Health care industries
- ✓ Vivarium, development & research industries
- ✓ Electronics and aeronautical industries
- ✓ Marine and Water Treatment facilities

This Technical Document is a comprehensive analysis of the TR35 system, developed specifically for Architects, Engineers, Designers, Contractors and Project Managers.

Note : As compliance specifications change, prior commencing a project always consult local authorities for the latest compliance specifications and building codes.

TR35 : Terminology

Junctions

Intersecting rails clamped together form junctions.

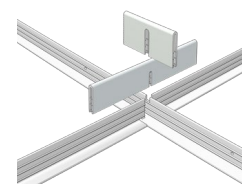
Cross Junction (modified).

Offset Junction (modified).

Splice end- Junction.

Splice Junction.

T- Junction.



(modified*)

Clamp cut to fit MEP fixtures, plant equipment or ceiling panels.

Factory cut to specification or cut on-site as required.



Modules

Spacing of hanger wires, span of Mainrail, width of Rail lane, determines the load and duty of the grid. There are Light, Medium and Heavy Duty grids.

Panel bay

Describes the area of the grid that houses a "ceiling panel."

MEP Bay

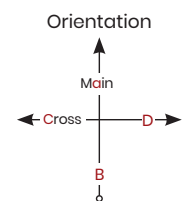
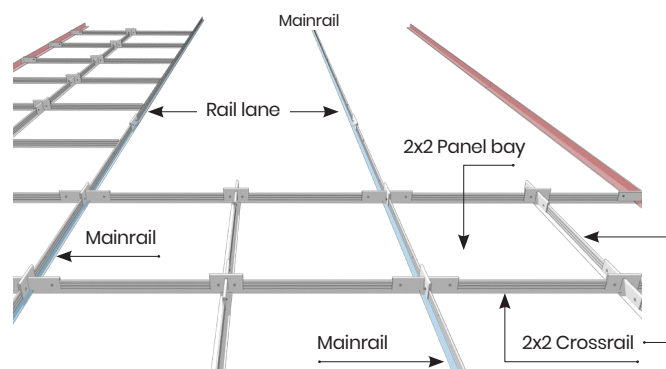
Describes the area of the grid that houses a MEP device, or plant equipment.

Rail lane

Pair of Mainrails running parallel from wall to wall.

Run

A Main or Cross Rail running continuously from wall to opposite wall.



Seismic-step

Seismic Cat C, D, E, F : Main & Cross Rails ride on the wallrail ledge to allow for seismic movement, up to **3/4 Inch** | **19mm**.

Lockrail

Main or Cross Rail, Lockriveted into a clamp to prevent slip movement.

Sliprail

Main or Cross Rail capable of slip movement in seismic episode.

Slip Lockrail

Main or Cross Rail where one end is locked and the other end is free to move.

Slip movement

Controlled linear movement of Main & Cross Rails, during an earthquake.

Flush to flush

Multiple Rails and or components, intersecting and aligning flush.

In line

Flush linear alignment of connecting Rails or components etc.

Terminus

Latin God of boundaries : the point at which something ends or finishes.

Useful term to describe the end of a clamp or rail... etc.

Perfect-step

Recess step to align flush to flush, Main & Cross Rails.

Miter cut

Cut at 45° angle.

Square cut

Cut square at 90° angle.

Modern white

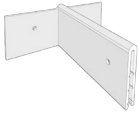
Clean white with a hint of aqua cyan. In good even light, appears bright white.

TR35 : Components

FRP

Pultruded fiberglass thermoset polyester resin.

Clamps



Components necessary to assemble the TR35 Grid.

Interlock clamp (modified*).

Overlock clamp

Offset clamp (modified*).

Splice clamp : 3x purposes : 1/Terminate Rail into Wallrail. 2/Splice Mainrails together.
3/Terminate Crossrail into Crossrails.

T-Clamp : Always fastened to the Wall.

*(**modified**) Clamps cut to fit MEP fixtures, plant equipment or ceiling panels.

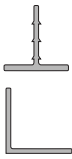
Panel clip



6x variations of Panel clips. Panel clips improve the performance of a ceiling panel, by securing the panel to the grid. **Clips** : Are never fastened or screwed.

Ceiling Panel latch Secure and latch in place, removable ceiling panels.

Rails



FRP : All rails are made of Pultruded fiberglass thermoset polyester resin.

Mainrail Made using the : T profile.

Crossrail Made using the : T profile.

Wallrail Made using the : 90° Angle profile.

Fasteners



Hanger wires

Strand wire G12 : Galvanized, Stainless, Monel.

Lockrivet

Rivet & Back washer, used to lock rails and clamps together.

Note :

When using a Lockrivet allow for : **1/8 inch** | **3mm** clearance.



Screws

Screws used as per specification.

Gaskets



Aqua-fin

Water & air leakage gasket seal.

Bubble-seal

Air & water leakage gasket seal.

TR35 Caulking

Caulking used to form an air & water seal.

Foam-gasket

Effective sound and vibration gasket.

Closure & Rail Gasket Foam and Rail Gasket for seismic Cat C, D, E, F.

Closure Gasket Foam Gasket for seismic Cat C, D, E, F.

Panels



Two different types of ceiling panel.

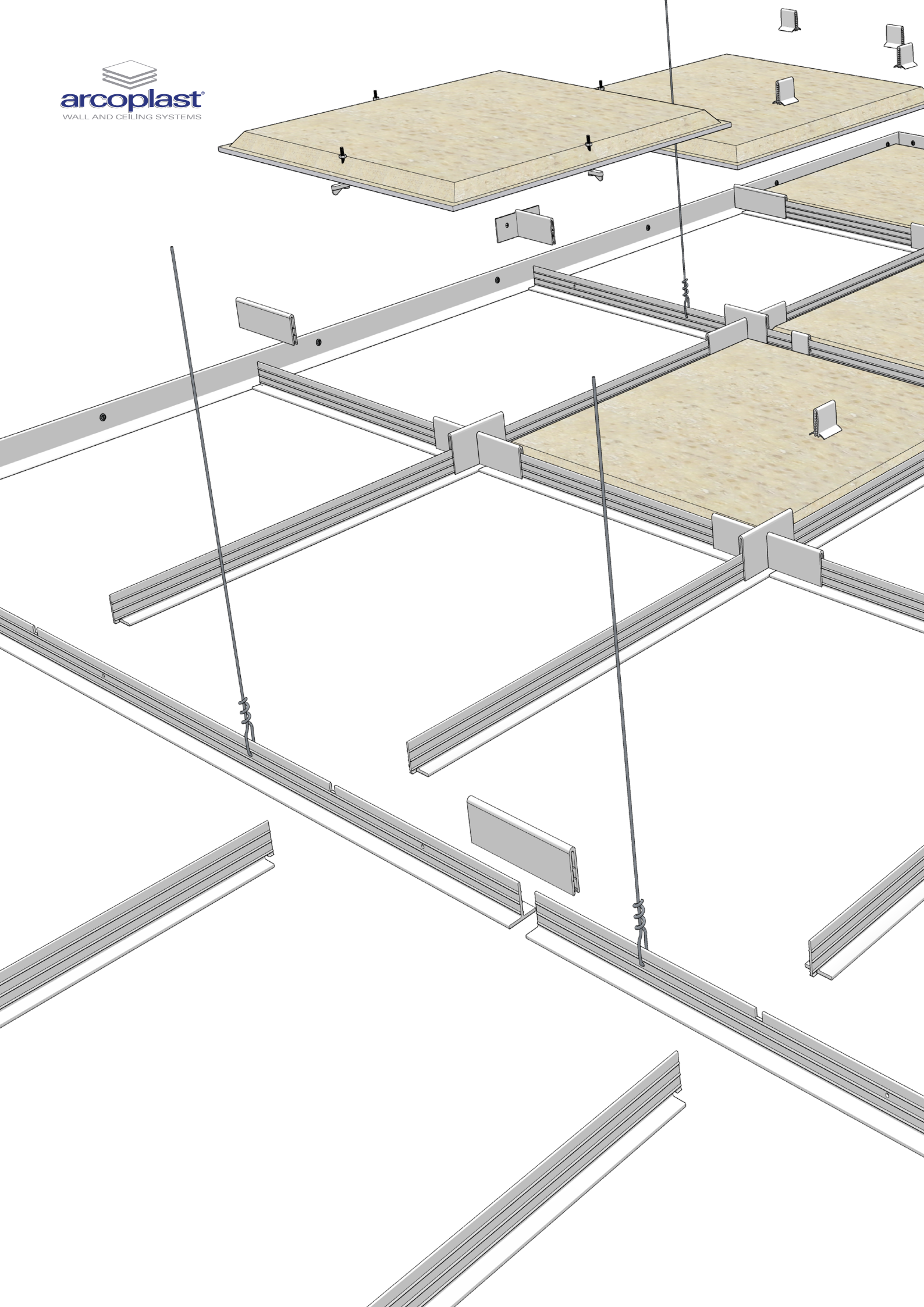
Acryloyl : Solid core Acryloyl ceiling panel, available with Square or Tegular edge.



i-Panel : Closed edge GFRP insulated ceiling panel, available in different R Ratings.

ArcoZap

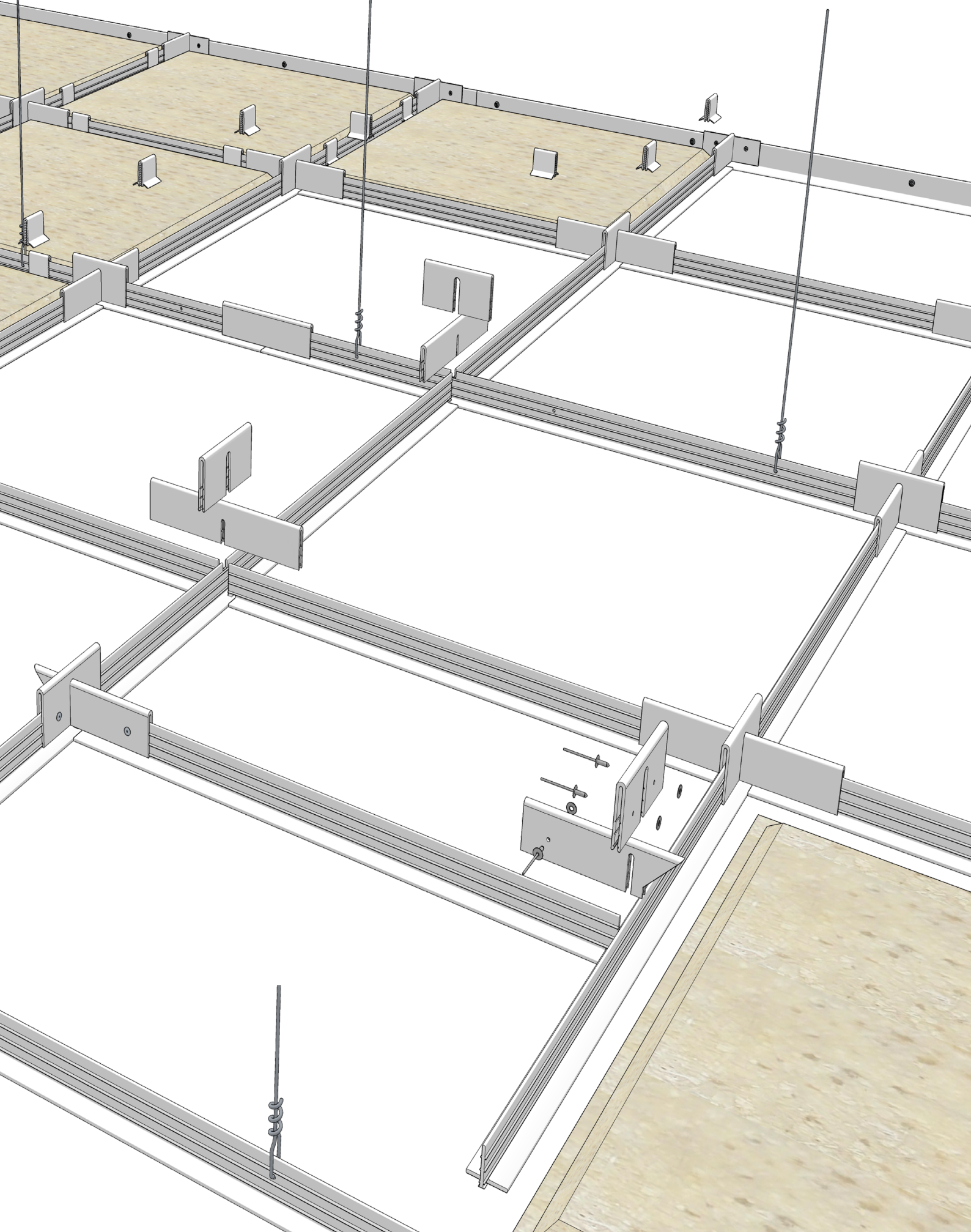
Spray on clear acrylic sealant, used to prevent end cut capillary absorption.



TR35 FRP System

Pultruded fiberglass thermoset polyester resin

P 9



TR35 T profile

Composition FRP : Pultruded fiberglass thermoset polyester resin

Only Main and Cross Rails use the T profile

Panel face color : Modern white

TR35 : Thermal expansion

Average results	°F 3.70E-06	°C 6.70E-06
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TEST : ASTM D696-16 : Coefficient Of Linear Thermal expansion -30°C to +30°C

Compliance

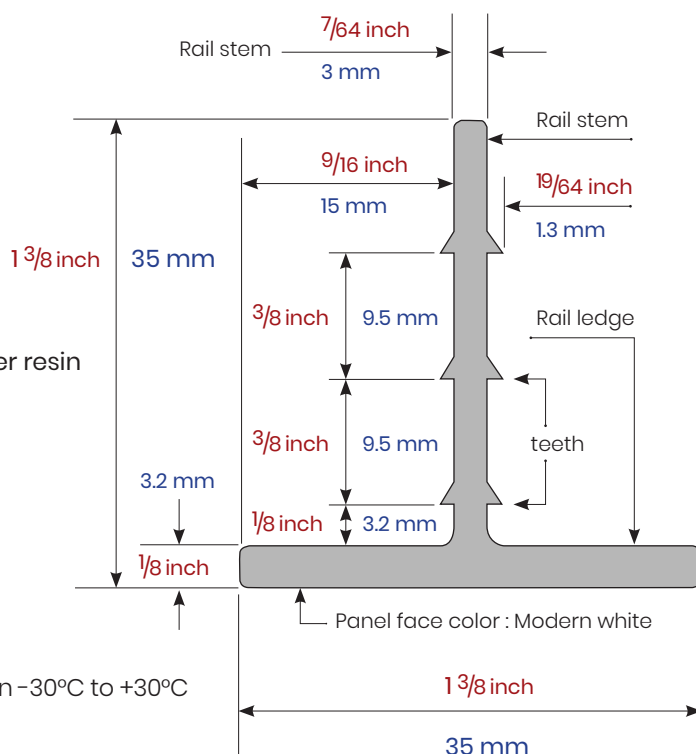
Compliance	Code	Country and region
Building codes USA	Class A	Interior wall and ceiling system USA Code ✓
Compliance	Building Code ADIBC	2013 Abu Dhabi International Building Code ✓
Compliance	Building Code IBC	2012, 2009, and 2006 International Building Code ✓
Compliance	Incidental Food Contact	Canada Agriculture ✓
Compliance	Incidental Food Contact	USDA Registered Establishment ✓
Compliance Seismic	Report # ESR-1722	ICC-ES Evaluation Report ✓

Mechanical & Physical properties

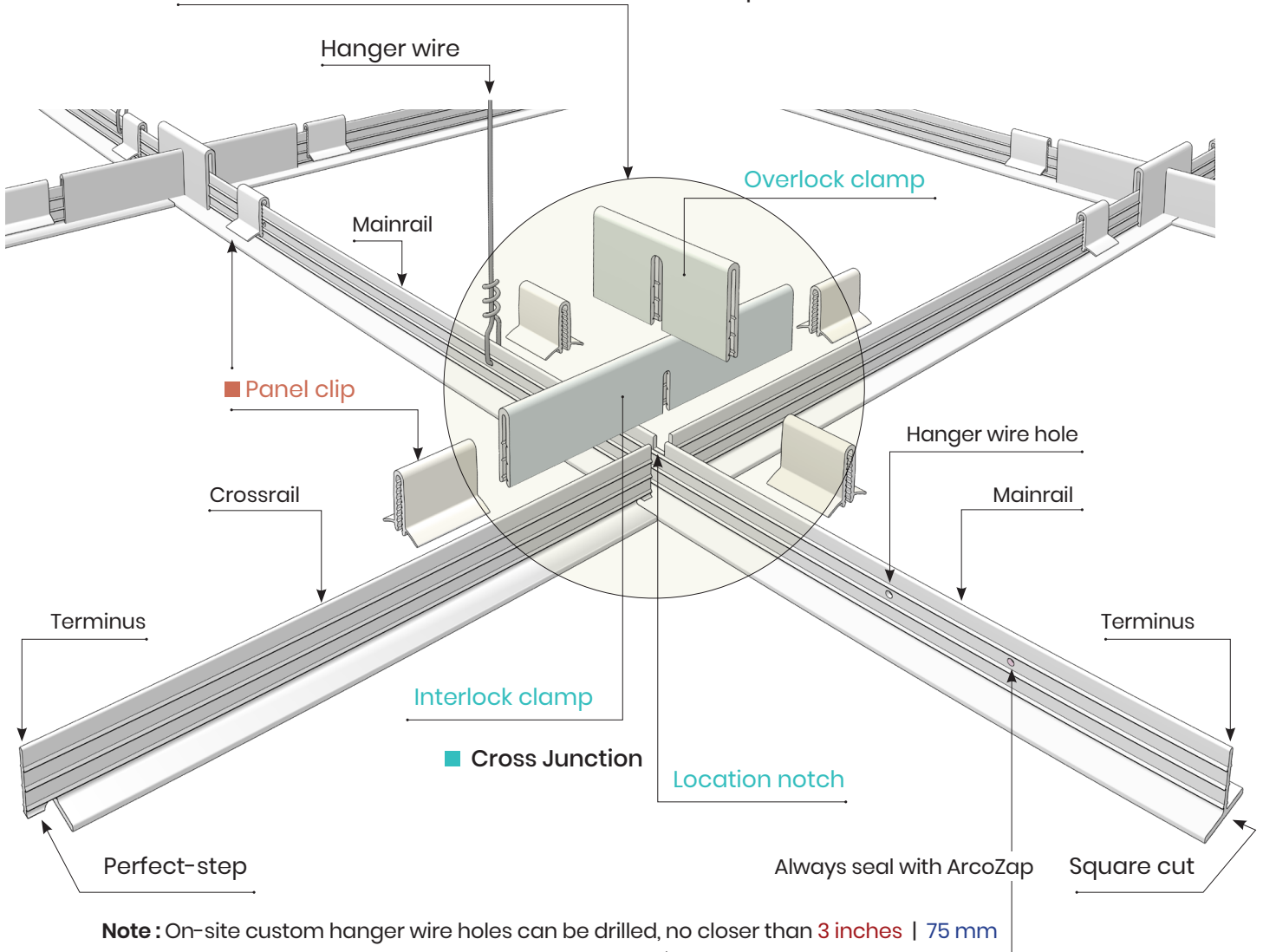
TR35	Properties and tests : Pultruded fiberglass thermoset polyester resin T-rail				
Chemical Neutral	Yes	When using Arcoplast Acryloyl panel system			
Color Fast	Yes	Staining : Prolonged use in a commercial kitchen, may result in discoloration from cooking smoke			
Designed Accordance	ASCE : 7	Section 13.5.6	Referenced by 2012, 2009 and 2006 IBC Section 1613.		
Design Seismic Cat : C	ASCE : 7	Section 11A	A quality assurance plan must be submitted to the code official		
* Flame Spread	Class A (1)	Flame Spread of 5 per UL No 723		USDA & Agriculture Canada compliant	
Smoke Spread	ASTM : E84	Smoke Development index of 65			
Magnetic	Non Ferrous	Metal components : Aluminum, stainless steel rivets		Ferrous Rivets	Steel
*Heat	Never install in an area where the heat source is over 130°F (55°C)				

TR35 : Mechanical and physical tests

Hardness, strength tests	Test	Test description
Barcol hardness	ASTM D 2583	Barcol indentation hardness test ✓
Flexural Strength	ASTM D 790	Flexural Properties of unreinforced & reinforced plastics & electrical Insulating materials ✓
Mainrail - 3 point bend	ASTM D 648	Deflection temperature of plastics under flexural load in the edgewise position ✓
Tensile Strength	ASTM D 638-03	Tensile Properties of Plastics ✓
Deflection Tests	Test	Test description
Compressive Strength	D 695	Compressive Properties of Rigid Plastics ✓
Load Span Rating	ASTM C635	Equating to an ASTM C635 value of 9 Lbs per lineal foot ✓



TR35 Rail : Cross Junction : Interlock and Overlock Clamp



■ **Cross junction :** Intersecting rails clamped together using an Interlock and Overlock clamp.

■ **Note :** There are several configurations of Cross Junctions for Seismic Categories C,D,E,F. Ref pages 32-41.

■ **Panel clips :** Secure panels into place. Prevents panel flutter and increases gasket seal performance.

Rails : Main, Cross & Wall Rails are made of FRP : Fiberglass Reinforced Pultruded thermoset polyester resin.

Perfect-step : Only Crossrails have a perfect-step. The perfect-step enables Crossrails to align flush to flush with intersecting Mainrails and or Crossrails.

Flush to flush : Flush alignment of intersecting rails etc.

Square cut : 90° square cut. Note : When trimming a rail, always seal the cut with Arcozap.

ArcoZap : Clear spray, acrylic sealant, applied to end-cuts to prevent capillary absorption.

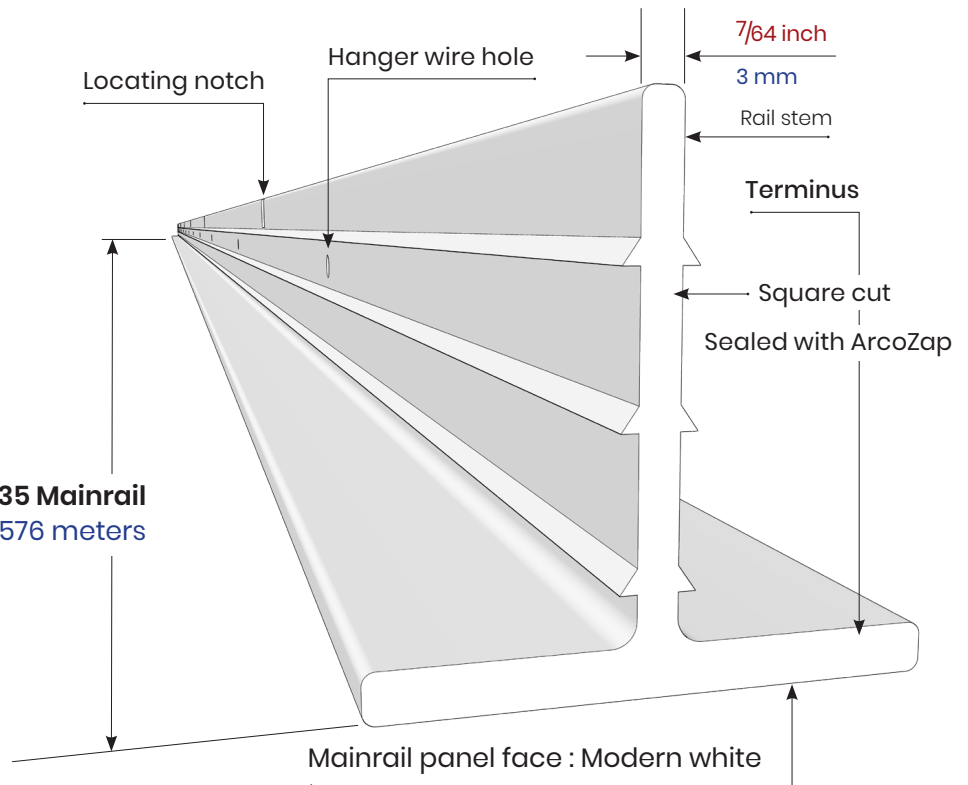


Mainrail

TR35 Mainrail | M-Rail

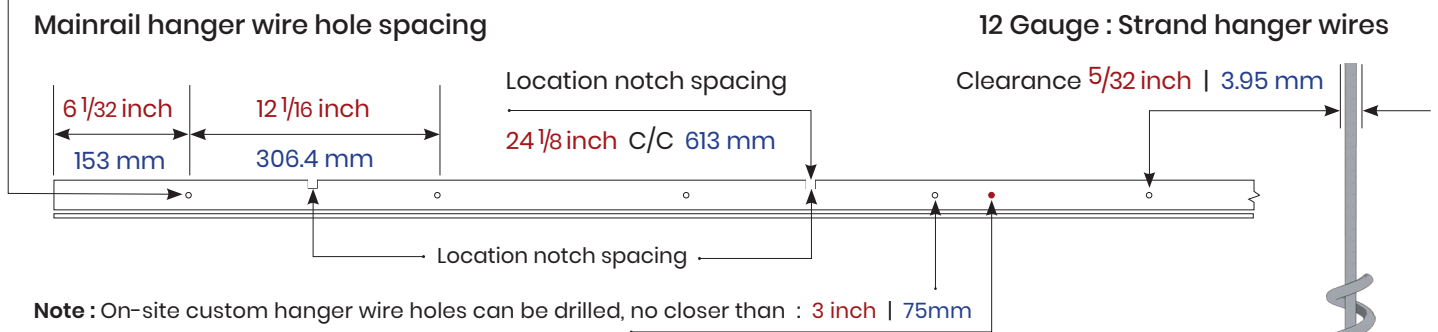
TR35 Mainrail
Nominal length : 12 feet / 3.6576 meters

Panel face color : Modern white



Mainrail maximum true length	12 feet 3/4 inch	3677 mm
Mainrail maximum span, unsupported	4 feet 1/4 inch	1226 mm
Mainrail location notch spacing every	24 1/8 inch	613 mm
Mainrail hanger wire hole spacing *	12 1/16 inch	306.4 mm
Average Maximum load	89 lbf	40.37 Kgf

* The first hanger wire hole at each end of the Mainrail is set at : 6 1/32 inches | 153 mm



Note : On-site custom hanger wire holes can be drilled, no closer than : 3 inch | 75mm

TR35 : Duty | Compliant with ASTM C-635 2006 International Building Code® (IBC) Seismic Design

T-Rail : Hanger wire spacing	Imperial	Metric
T-Rail : Light duty	4 feet	1200 mm
T-Rail : Intermediate duty	3 feet	900 mm
T-Rail : Heavy duty	2 feet	600 mm

12G Load tensil strength hanger wire	Application / Environment	Imperial	Metric
12G Galvanized hanger wire	Non corrosive environment	375 lbf	170 Kgf
12G Stainless Steel no : 304 hanger wire	High chemical, corrosive environment	825 lbf	374.2 Kgf
12G Monel (Nickle, copper, ion) hanger wire	Electronic, suitable for chlorine /chloride	600 lbf	272.1 Kgf
TR 7400 hanger bracket G.1 mm	Non corrosive environment	100 lbf	45.35 Kgf

Note : The TR35 grid C/C is laid out differently to a conventional metal grid system.

TR35 fits standard size ceiling panels, but the Panel bays are larger. This difference is due to the TR35 Rail and Clamp assembly being made of thicker material than a conventional metal grid assembly.

P 13

Example : 23¾ x 23¾ inch | 603 x 603 mm ceiling panel housed in a 2x2 ft TR35 Panel bay.

TR35 Panel bay

C/C : 24⅛ x 24⅛ inch | 612 x 612 mm

Metal grid system

C/C : 24 x 24 inch | 609.6 x 609.6 mm

TR35 2x2 ft ceiling panel, the difference of width and length : ⅛ inch | 3 mm

Panel bay	Incremental Factor table*
1x4 ft	⅛ x ¼ inch 1.6 x 6 mm
2x2 ft	⅛ x ⅛ inch 3 x 3 mm
2x4 ft	⅛ x ¼ inch 3 x 6 mm
4x4 ft	¼ x ¼ inch 6 x 6 mm

Panel bay with standard 23¾ x 23¾ inch 603 x 603 mm ceiling panel

TR35 Panel bay C/C

Metal grid C/C

Incremental Factor : Width and length for every 1 ft = ⅛ inch | 1.6 mm.

Conclusion : When designing the layout and calculating dimensions of a TR35 grid, both the width and length for every Panel bay is larger by an incremental factor, relevant to the panel size. Please ref to the table.*

Please note : When designing a TR35 grid, use true dimensions. Page 52-55

Panel bays and MEP Bays : Panel bays house ceiling panels. MEP Bays house devices such as Mechanical, Electrical, Plumbing devices.

Caution : When selecting drop in fixtures and fixtures with access doors and opening panels, it is important to factor in the correct clearance and opening dimensions.

a b

MEP Bay clearance : Drop in fixtures

x y

MEP Bay opening : Fixtures with hinged doors or access panels

a b	Clearance dimensions	
1 x 4 ft	11 ¾ x 47 ¾ inch	298 x 1212 mm
2 x 2 ft	23 ¾ x 23 ¾ inch	603 x 603 mm
2 x 4 ft	23 ¾ x 47 ¾ inch	603 x 1212 mm
4 x 4 ft	47 ¾ x 47 ¾ inch	1212 x 1212 mm

x y	Opening dimensions	
1 x 4 ft	10 ⅞ x 46 ⅞ inch	270 x 1191 mm
2 x 2 ft	22 ¾ x 22 ¾ inch	577 x 577 mm
2 x 4 ft	22 ¾ x 46 ⅞ inch	577 x 1191 mm
4 x 4 ft	46 ⅞ x 46 ⅞ inch	1191 x 1191 mm

Note : Prior installation verify with local authorities, hanger wires & brackets are correct for the working environment

Crossrail

TR35 Crossrail | C-Rail

TR35 Crossrail

Nominal length : 4 foot | 1200 mm

Panel face color : Modern white

Crossrail panel face : Modern white

4ft Crossrail Locating notch : $24\frac{1}{8}$ inch C/C 613 mm

$25\frac{3}{32}$ inch

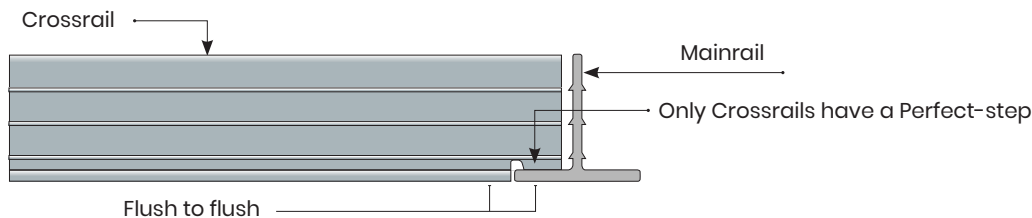
Perfect-step
10.5 mm

ASTM D696-16 : Coefficient Of Linear Thermal expansion between -30°C and +30°C with a Vitreous Silica Dilatometer.

Average results	°F 3.70E-06	°C 6.70E-06
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Alignment of Main and Cross Rails

To ensure rails and panels are flush and seat correctly, Crossrails are manufactured with what is called a Perfect-step. The Perfect-step ensures intersecting Cross and Mainrails align flush to flush.

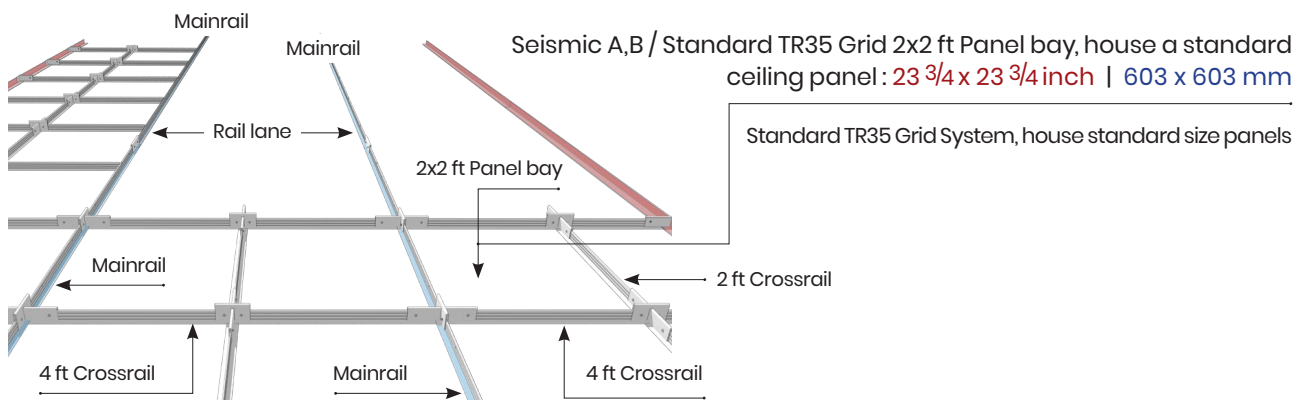


Rail lanes and Panel bays

Pairs of Mainrails running from wall to wall are called Rail lanes. Crossrails clamped between Rail lanes form Panel bays or MEP Bays. Panel bays house ceiling panels, MEP Bays house MEP devices.

Nominal dimensions 2x2 ft

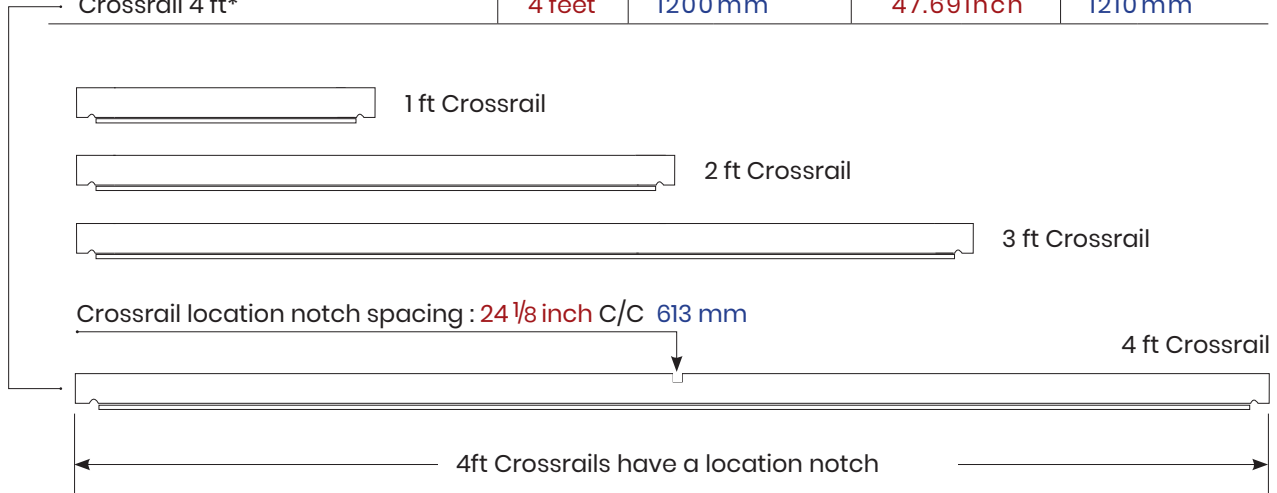
True dimensions : TR35 Panel bay C/C $24\frac{1}{8}$ x $24\frac{1}{8}$ inch | 612 x 612 mm



Note : TR35 layout is different compared to a conventional metal grid system. TR35 dimensions across the grid have an increased incremental factor relevant to the size of the ceiling panel. Incremental Factor : Width and length for every 1 ft = $\frac{1}{16}$ inch | 1.6 mm

Standard Crossrail dimensions

Crossrail Lengths	Nominal Dimensions		True Dimensions	
Crossrail 1 ft	1 foot	300 mm	11.49 inch	291 mm
Crossrail 2 ft	2 feet	600 mm	22.75 inch	577 mm
Crossrail 3 ft	3 feet	900 mm	35.61 inch	906 mm
Crossrail 4 ft*	4 feet	1200 mm	47.69 inch	1210 mm



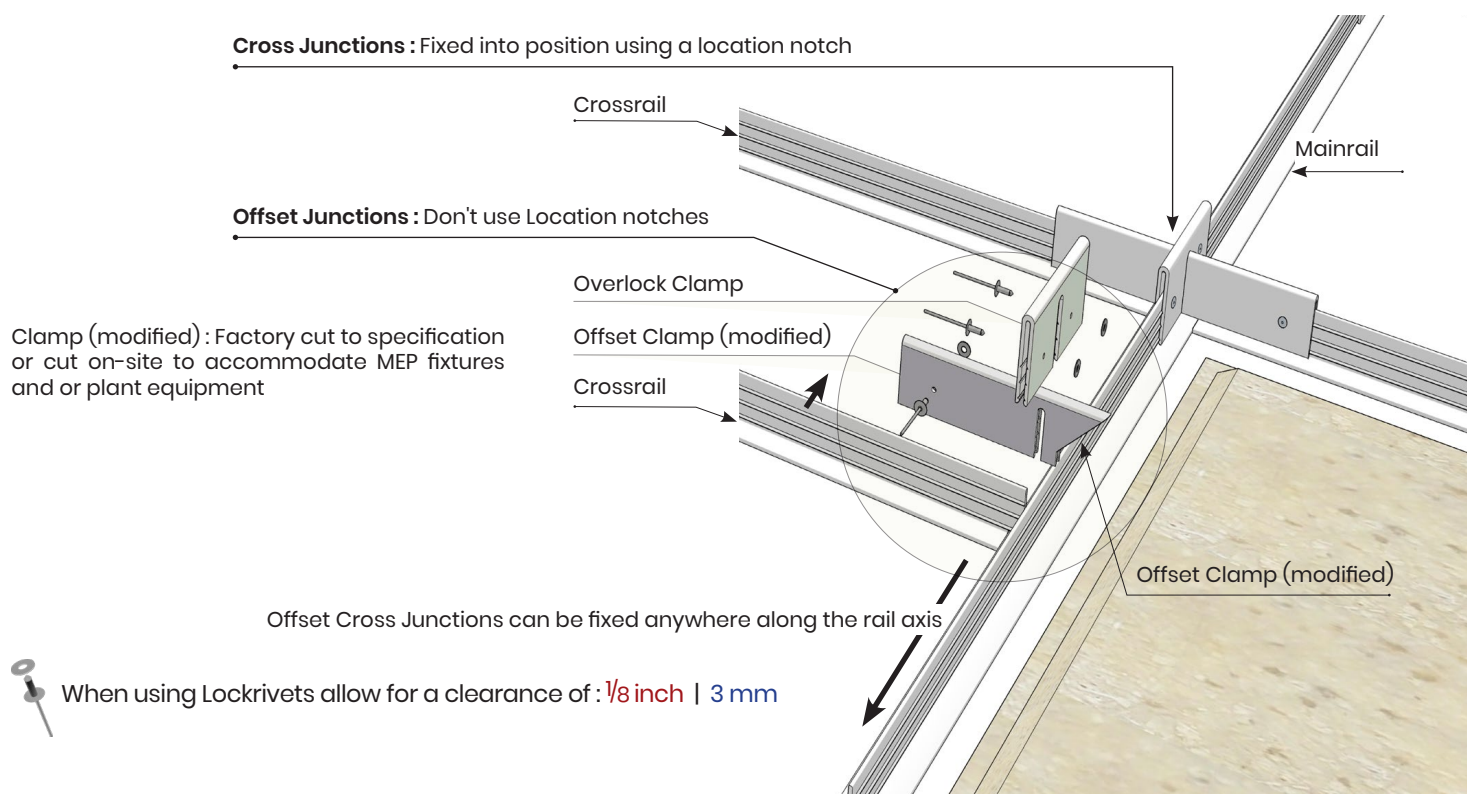
Custom lengths **5 - 8 foot** | **1524 - 2438 mm** : Contact Arcoplast for all Crossrail, custom panel combinations.

Cross Junctions for regular panel sizes

Cross Junctions are made up of an Interlock and an Overlock clamp. Mainrails and the 4 ft Crossrail have location notches. Location notches locate the Cross Junction into the correct grid position to house regular size ceiling panels and to prevent any linear movement.

Offset Cross Junctions for irregular panel sizes

Offset Cross Junctions are assembled using an Offset and an Overlock clamp. With no fixed increments, the Offset Cross Junction can be located anywhere along a Main or Cross Rail axis, to house irregular panel sizes or irregular MEP devices. The Offset Junction is Lockriveted into the grid to prevent any linear movement.

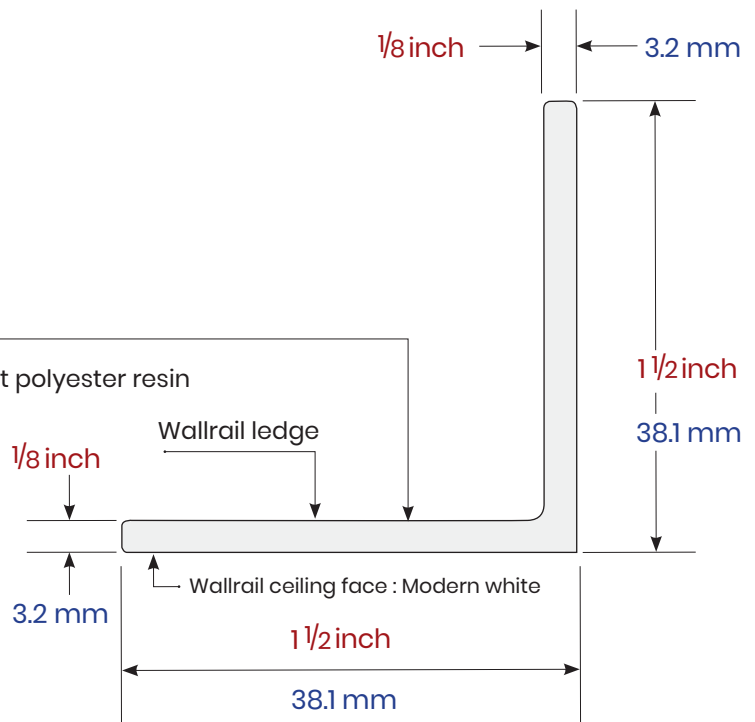


Wallrail

TR35 Wallrail | W-Rail

Composition FRP : Pultruded fiberglass thermoset polyester resin

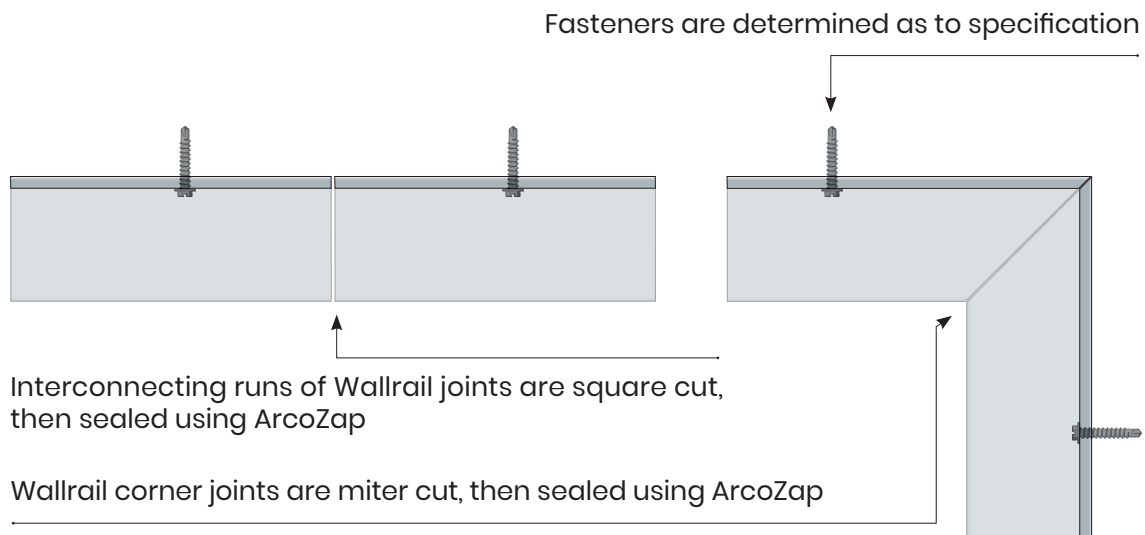
Panel face color : Modern white



TR35 Wallrail standard length	12 feet	3657 mm
Recommended fastening span C/C	16 inch	406 mm

ASTM D696-16 : Coefficient Of Linear Thermal expansion between -30°C and +30°C with a Vitreous Silica Dilatometer.

Average results	°F 3.70E-06	°C 6.70E-06
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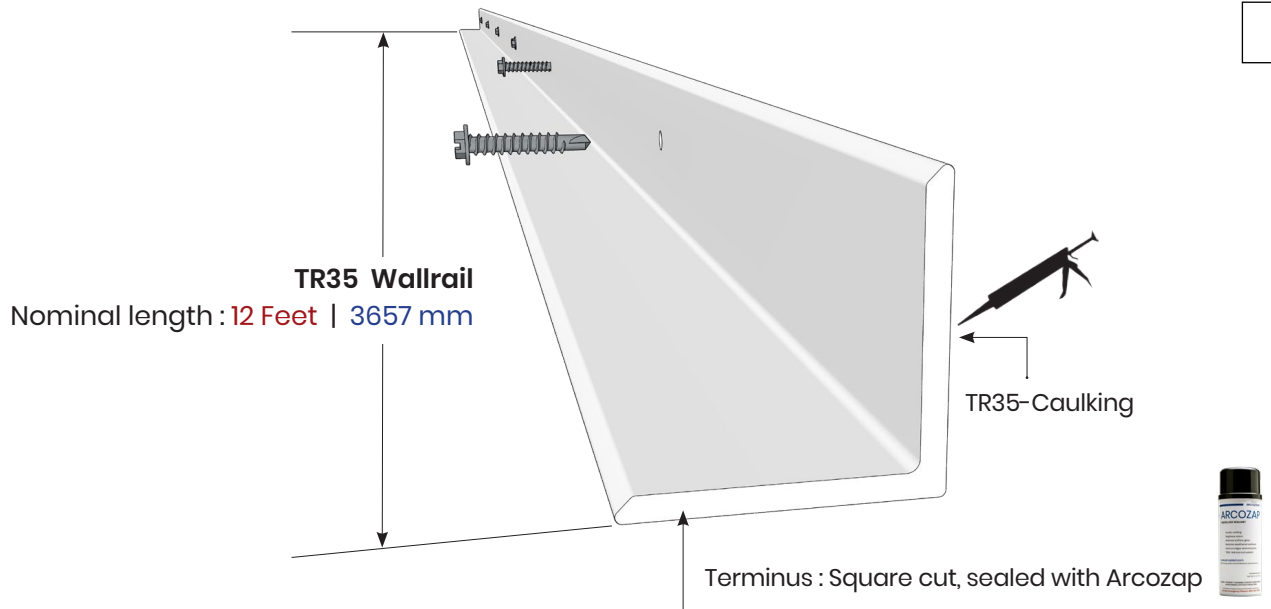


Terminus : Wallrails are factory supplied square cut.

On-site Wallrails are cut or trimmed as required using a miter saw with a diamond blade or a hack saw with a metal cutting blade.



On-site : All rails that are end cut must be sealed with ArcoZap. ArcoZap is a spray on clear sealant that prevents capillary absorption.



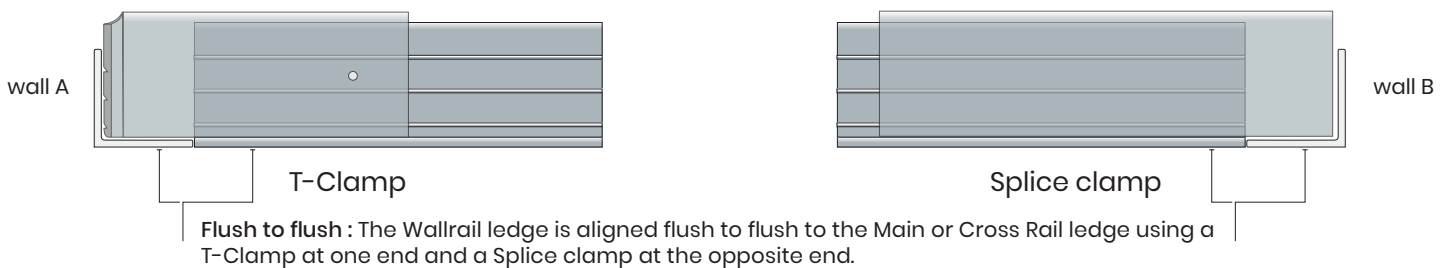
Wallrail attachment : Fasteners are used to secure the Wallrail as per specification. T-Clamps are always fastened to the wall. Splice clamps are never fastened to the Wallrail.

Wallrail seal : When fixing the Wallrail into place, it is necessary to run a bead of TR35 caulking between the wall and Wallrail to ensure a water, gas, moisture, air tight seal.

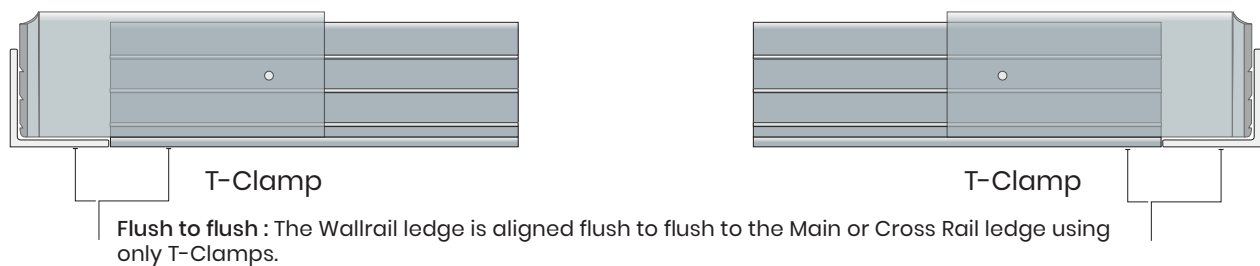
Lockrivets : Rivets with backing washers increase rigidity, assembly strength and duty as per requirement for seismic Category : C, D, E, F. Please refer to pages 32-41



T - Splice Junction : Array :: T-Clamp opposite Splice clamp

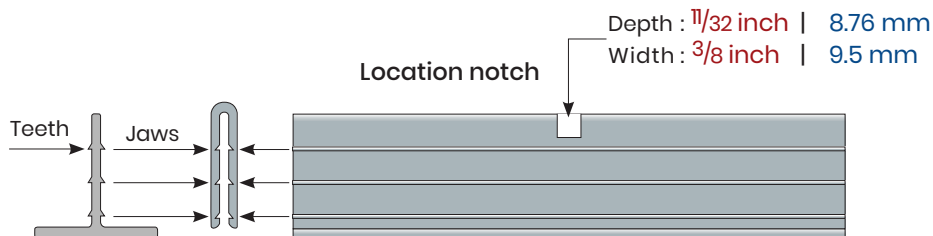


T-T Junction : Array :: T-Clamp opposite T-Clamp



Clamps & Junctions

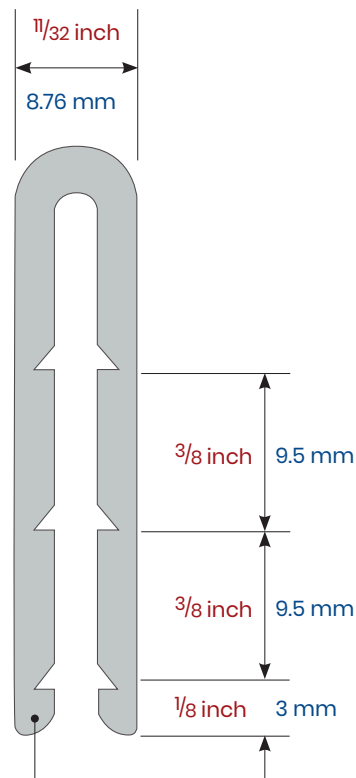
Composition material : Extruded, Grade 1, type 2 virgin PVC, UL 94V-O



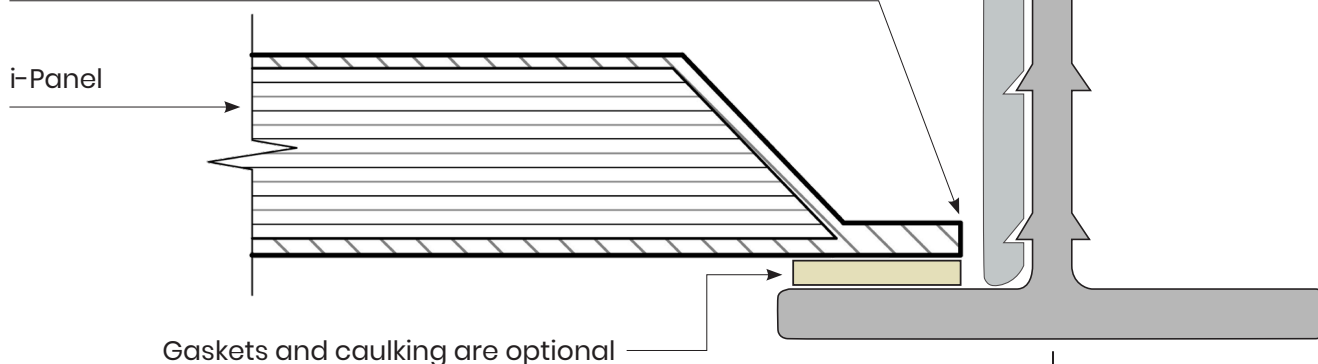
Clamps use 3 pairs of jaws to lock into the teeth of the Rail
Clamps locked to Rails are easily unclamped using a thin plastic card

Clamp	Terminus	
Interlock clamp	Square cut	Modified cut
Overlock clamp	Square cut	-
Offset clamp	Square cut	Modified cut
Splice clamp	Square cut	-
T-Clamp	Square cut	-

Clamp end cut

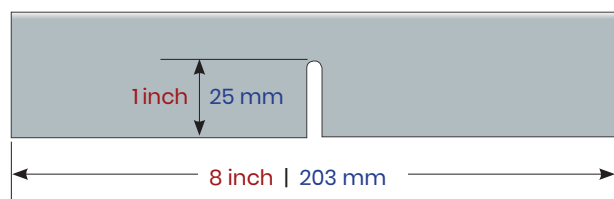


Gasket and caulking seals are positioned to run along side the clamp

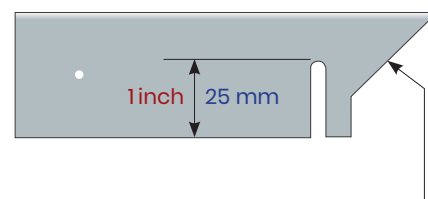


Junctions	Clamps	Location notch
Cross Junction	Interlock and Overlock	Yes
Offset Cross Junction	Offset and Overlock	No
Splice end- Junction	Splice clamp	-
Splice Junction	Splice clamp	-
T-Junction	T-Clamp	-

Interlock clamp

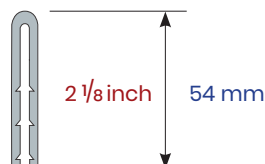
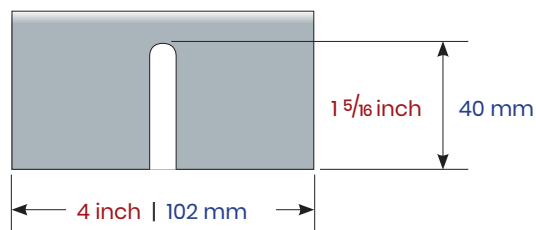


Interlock modified clamp



Modified cut : Cut on-site or factory cut to specification

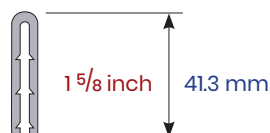
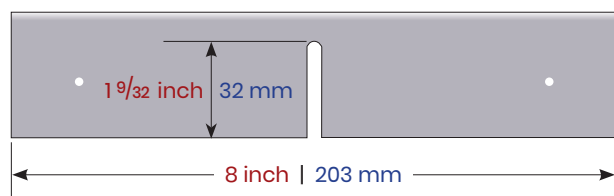
Overlock clamp



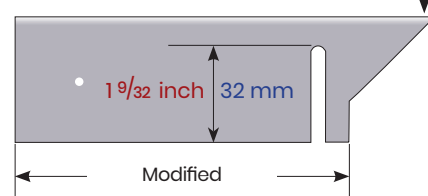
Modified on-site
Clamps can be cut to fit
around any ceiling panel,
plant equipment or MEP
fixture.

Factory modified
Cut to Specification to fit
Arcoplast ceiling panels of
various thicknesses.

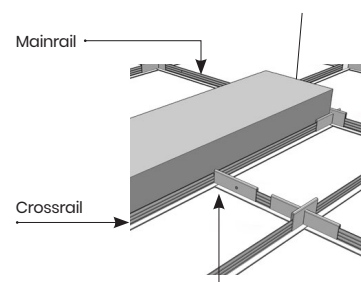
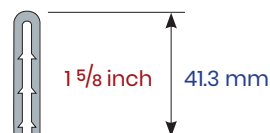
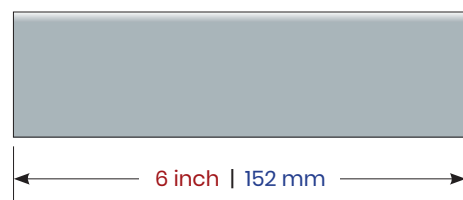
Offset clamp



Offset Modified clamp



Splice clamp



The intersecting Crossrail is square cut and Splice clamped

Splice junction : Mainrails spliced together, form runs from wall to opposite wall

Splice end-Junction : Main or Cross Rail termination into a Wallrail

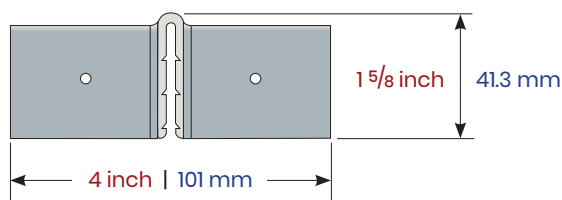
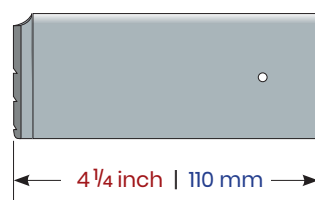
The Splice clamp aligns flush to flush, Crossrails terminating into Crossrails without the need of a perfect step

Splice clamp (Splice clamps are used in 3 types of Junctions)**Test****Result Average load****Description :** Clamp system pull apart test with lockrivets*

ASTM D953-10

646 lbf 293.02 Kgf

T-Clamp

**T-Clamp****Test****Result Average load****Description :** Clamp system pull apart test with lockrivets*

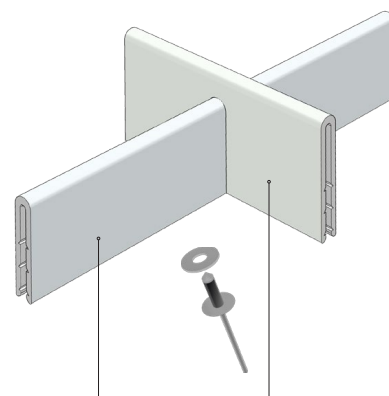
ASTM D953-10

872.5 lbf 395.75 Kgf

*Lockrivet : Rivets & back washer assembly

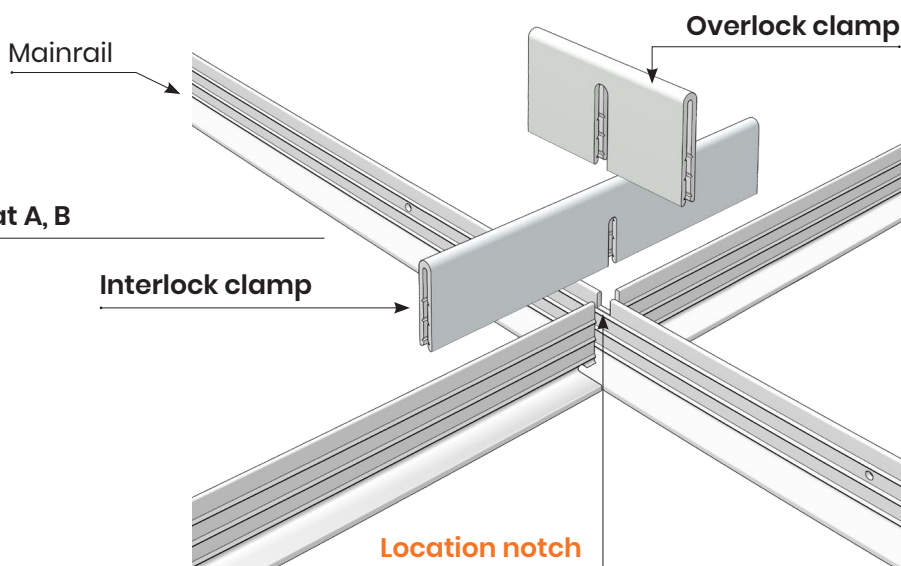
Cross junction

Use of Lockrivets is determined by application and seismic compliance



Lockrivets : **R13A** Aluminum rivet & back washer | **R13S** Stainless rivet & back washer | **R13Z** Zinc plated steel rivet & back washer

Cross junction seismic Cat A, B



The **Location notch** locates the Cross Junction into the correct grid position and prevents any linear movement. The Overlock clamp locks the Interlock clamp and rails together.

Interlock clamp



Overlock clamp



Interlock, Overlock clamp junction strength	Test	Result Average load	
Description : Clamp system pull apart test with rivets	ASTM D953-10	575 lbf	260.9 Kg
Minimum requirement for metal intersection strength	IBC Category C1	60 lb	27.21 Kg
	IBC Category D, E, F 2	180 lb	81.65 Kg
	UBC 25-2	180 lb	81.65 Kg

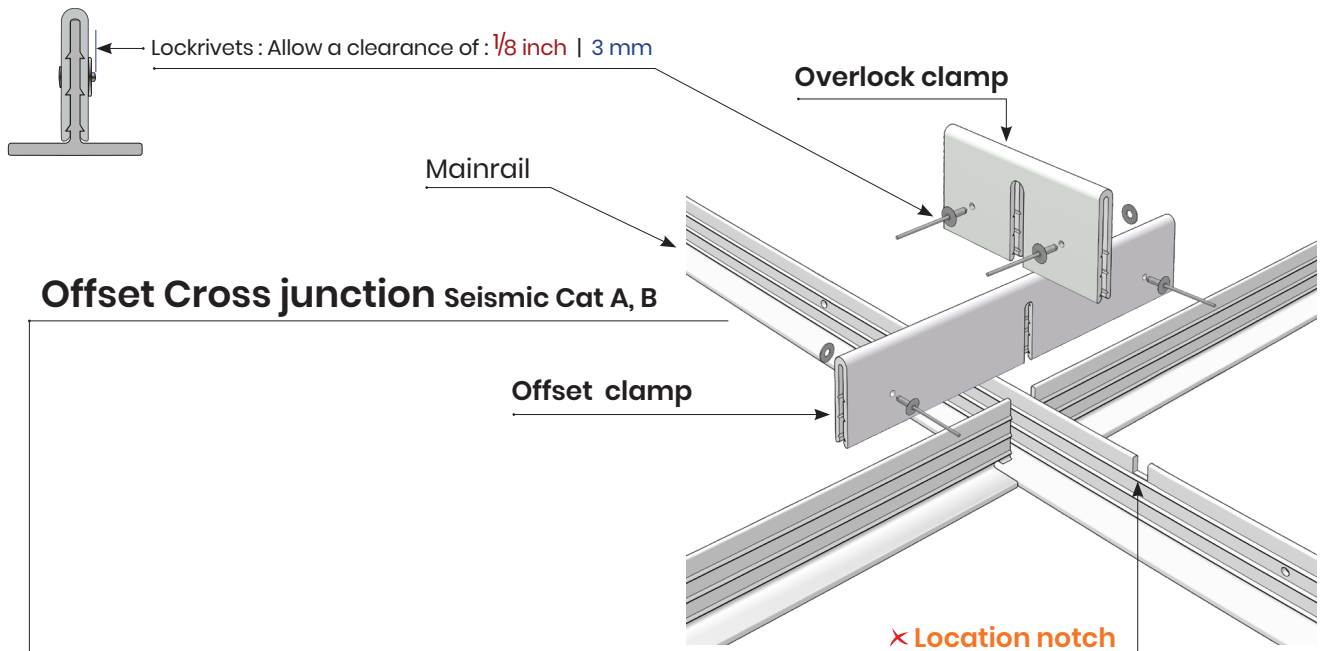
TR35 – Cross Junction : R13Z riveted & no rivets, Load Bearing test : ASTM C635 – E3090/3090M

Span inches	48 inch	42 inch	36 inch	30 inch	24 inch
Deflection (L/360) inches	0.133	0.177	0.100	0.083	0.067
Lockriveted : Rivet & back washer	4.0 lbf	3.8 lbf	4.3 lbf	5.2 lbf	7.0 lbf
Lockriveted : Rivet & back washer : Equivalent Load lbf	4.0 lbf	4.4 lbf	5.8 lbf	8.3 lbf	14.1 lbf
No Rivets	4.0 lbf	4.1 lbf	4.3 lbf	4.3 lbf	4.0 lbf
No Rivets : Equivalent Load lbf	4.0 lbf	4.7 lbf	5.8 lbf	6.9 lbf	8.0 lbf

Offset junctions

Offset Cross Junctions are assembled with Lockrivets (R13A, R13S, R13Z)

Lockrivets significantly increase strength, rigidity and duty of the TR35 grid assembly

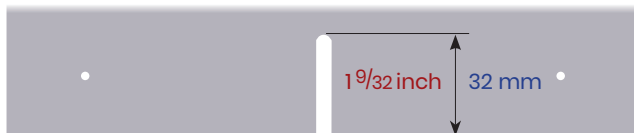


Offset Cross junction Seismic Cat A, B

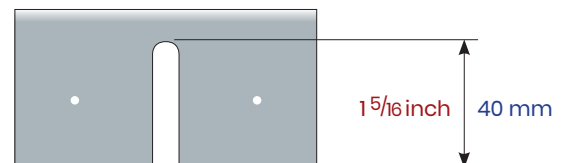
× Location notch is not required for Offset Cross Junctions.

With no fixed increments, the Offset Cross Junction can be located anywhere along a Main or Crossrail axis. Offset Cross Junctions are assembled using an Offset and an Overlock clamp. Lockrivets secure the clamps to the intersecting rails.

Offset clamp



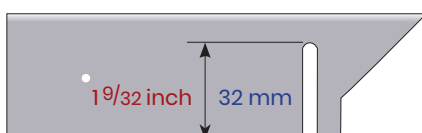
Overlock clamp



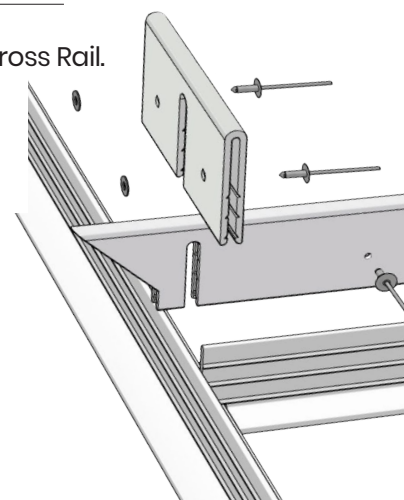
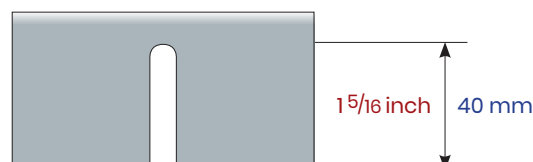
Modified junction Seismic Cat A, B

Offset modified Junctions are used when a Crossrail terminates into a Main or Cross Rail. Offset clamps are modified on-site or factory modified as to specification. Offset and Overlock clamps are Lockriveted : R13A, R13S, R13Z.

Offset Modified clamp

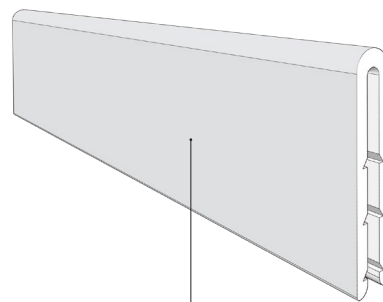


Overlock clamp



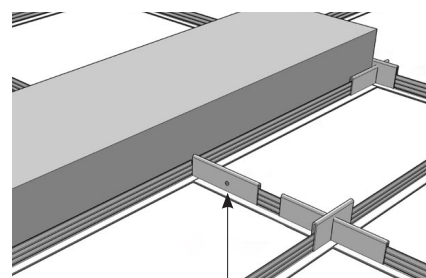
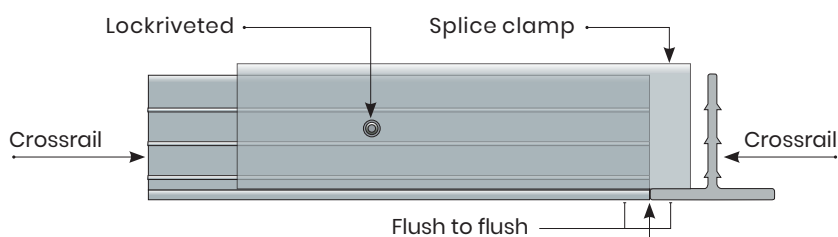
Splice Junctions

Splice clamps have 3 functions



Splice end-Junction : Crossrail – Crossrail Termination seismic Cat : A, B

Splice clamp : Crossrail terminating into Crossrail



On-site, the Perfect-step is trimmed down to a square cut. The Splice clamp aligns the intersecting Crossrails, a lockrivet secures the Splice end-junction into the gird.

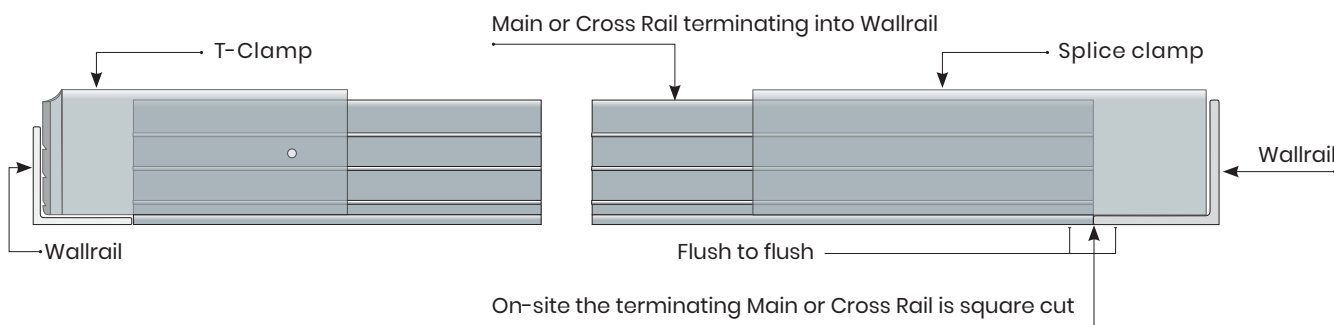
Splice end-Junction : Main or Crossrail Termination seismic Cat : A, B

Splice clamp : Main and Cross Rails terminating into Wallrails

On-site, Main and Cross Rails terminating into Wallrails are square cut to size as per room dimensions.

Main and Cross Rail termination into Wallrail. T-Clamp opposite Splice clamp

T-Clamp terminates one end of the Rail run, Splice clamp terminates the opposite end of the run.



Splice Junction : seismic Categories A, B

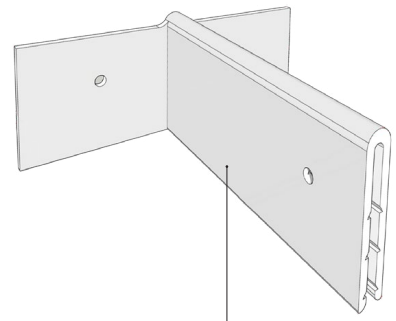
Splice clamp : Mainrail run from wall to wall

Lockrivets are optional in most Seismic Cat A, B applications



T-Junctions

TR35 T-Clamp



Lockrivets : Rivet & back washer

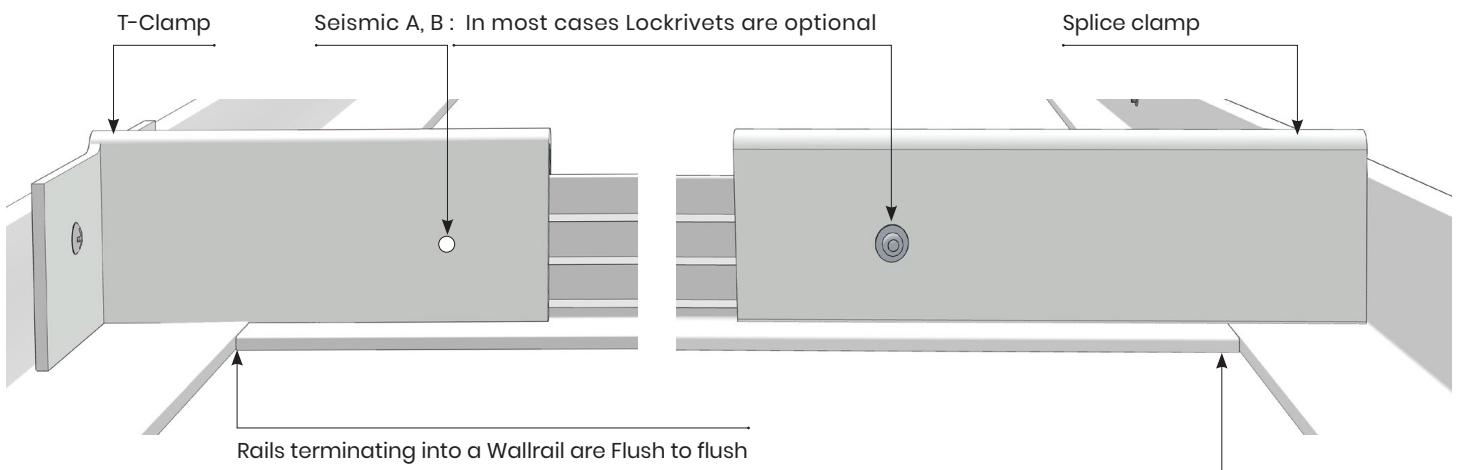
Use of Lockrivets, confirm with local jurisdiction for compliance

T-Clamps are always fastened to the Wallrail

T-Clamps eliminate the need for spacer bars, enabling unrestricted access into the interstitial space

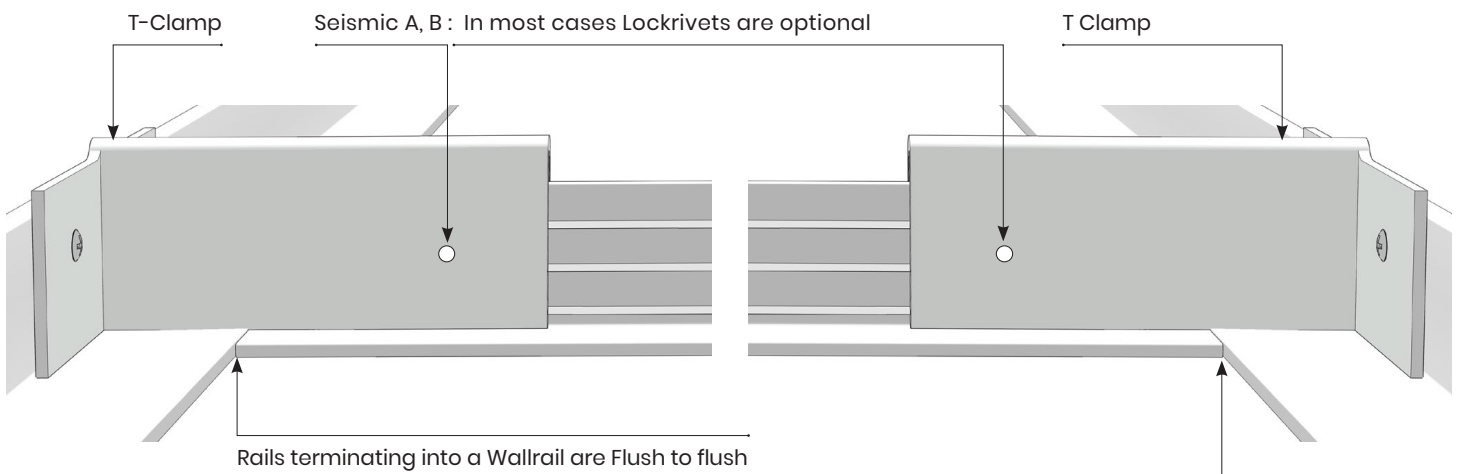
T-Splice end-Junction : Seismic Cat : A, B

T-Clamp opposite Splice clamp



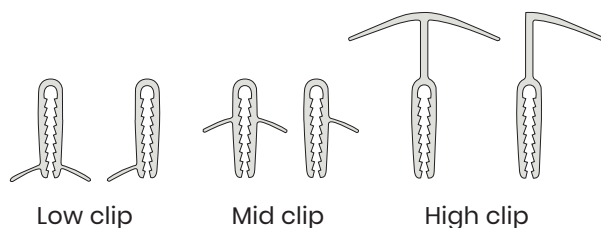
T-T Junction : Seismic Cat : A, B

T-Clamp opposite T-Clamp



Panel clips

Abbreviation : PC



Panel clips : : Extruded, Grade 1, type 2 virgin PVC, UL 94V-O

Panel clips, lock and secure the ceiling panels into the TR35 grid. Panel clips used with gasket sealed panels, have an increased performance of deflection and significantly reduced air leakage.

TR35 Caulking does not require the use of panel clips.

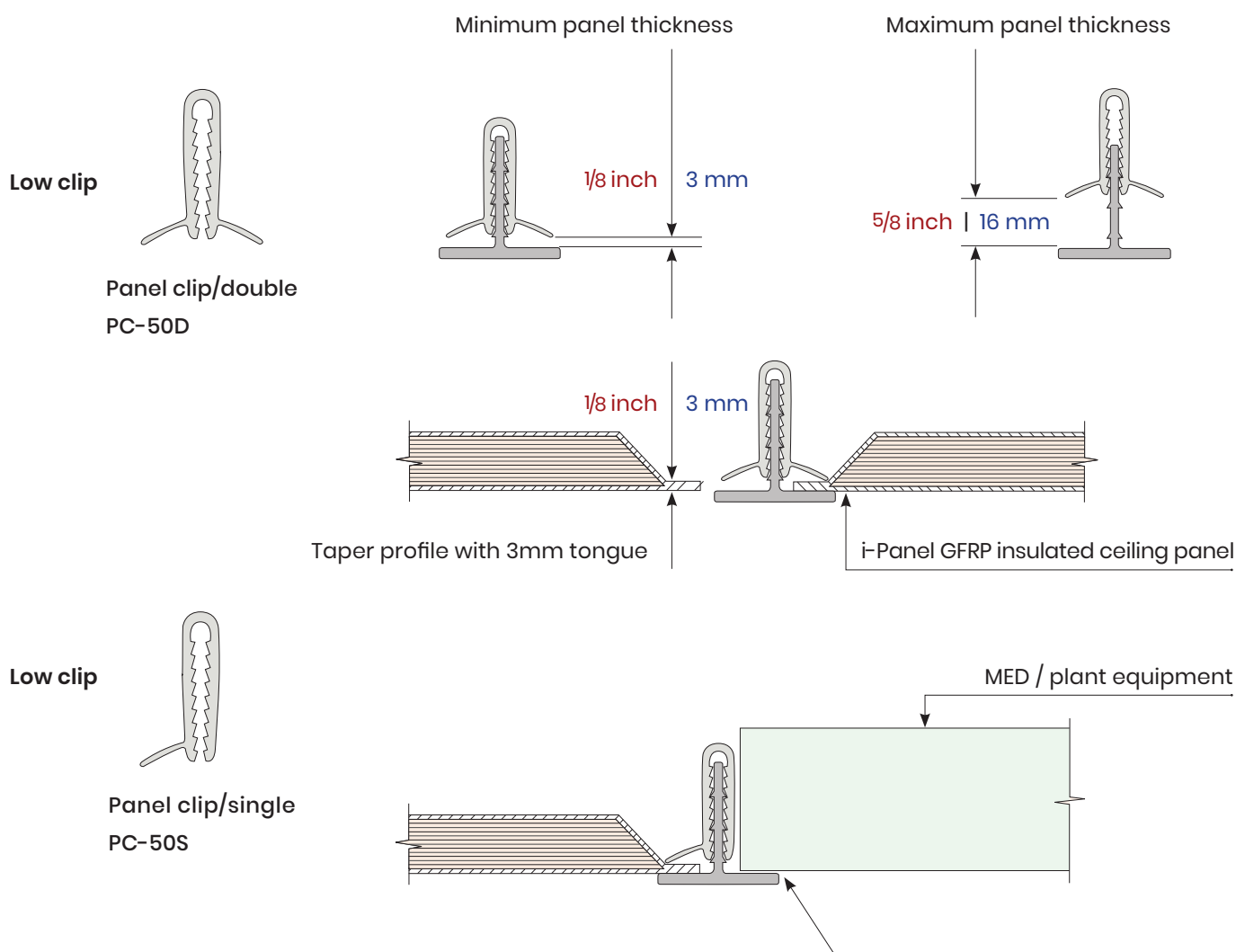
Lab Test | Pull Strength x1 Panel clip

Max Load : **16.6 lbs** | **7.52 Kg**

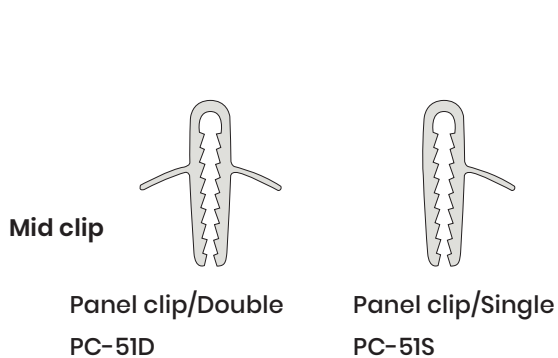
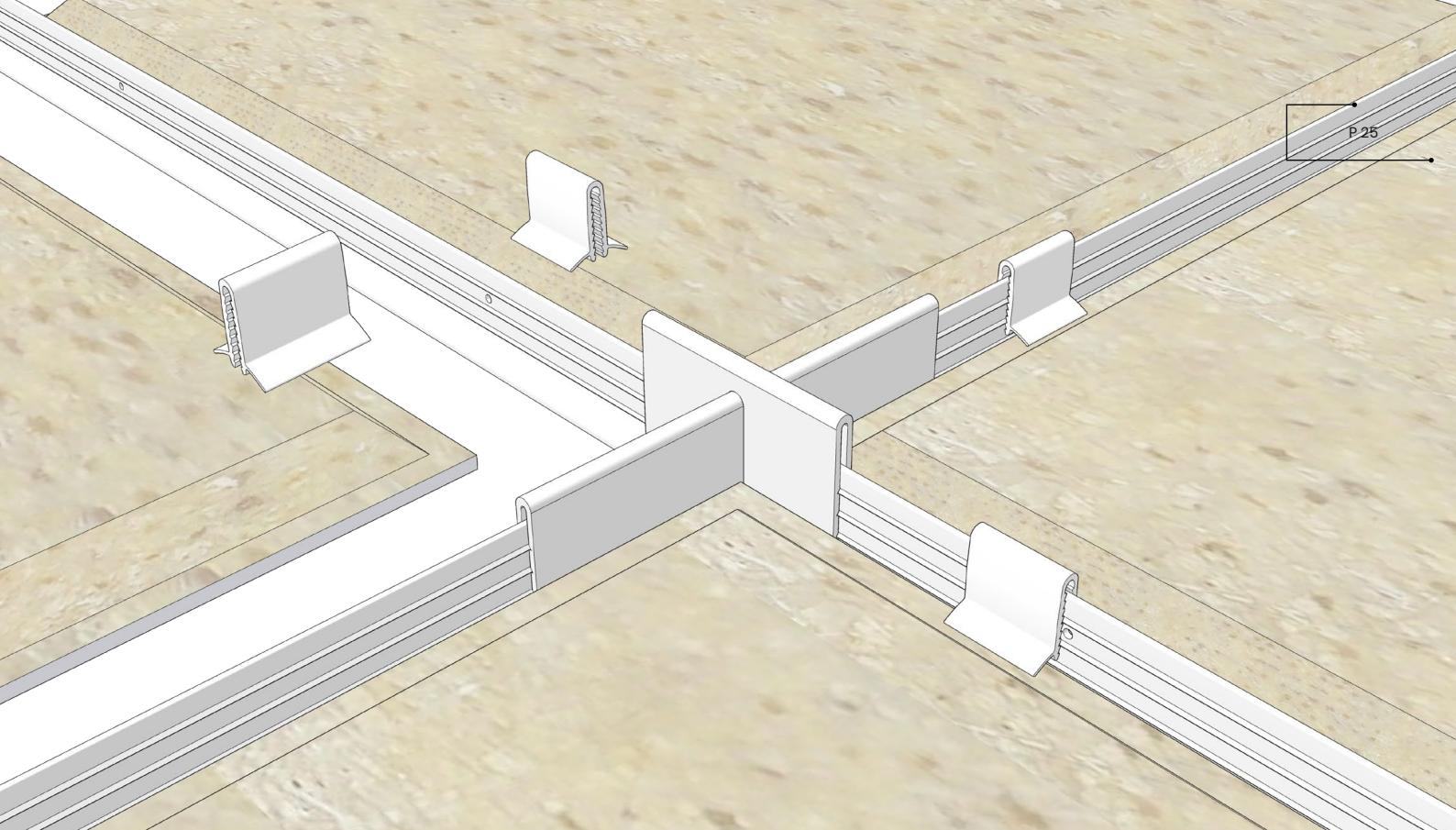
Panel Deflection Max load : **0.138 inch** | **3.51 mm**

Panel bay	Panel clips	Pull strength results	
2 x 2 ft	x4	66.4 Lbs	30.1 Kg
2 x 4 ft	x6	99.6 Lbs	45.2 Kg
4 x 4 ft	x8	132.8 Lbs	60.2 Kg

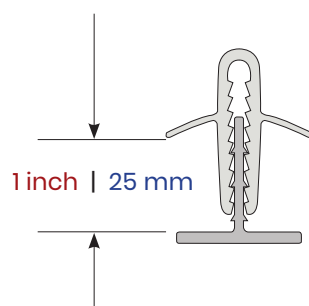
Pull Strength Test : Conducted using a single Panel clip loaded upwards from one side.
Information based on average of 5 test results



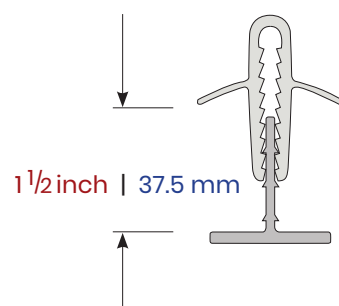
TR35 is not designed to support auxiliary devices heavier than the designated panel weight



Minimum panel thickness

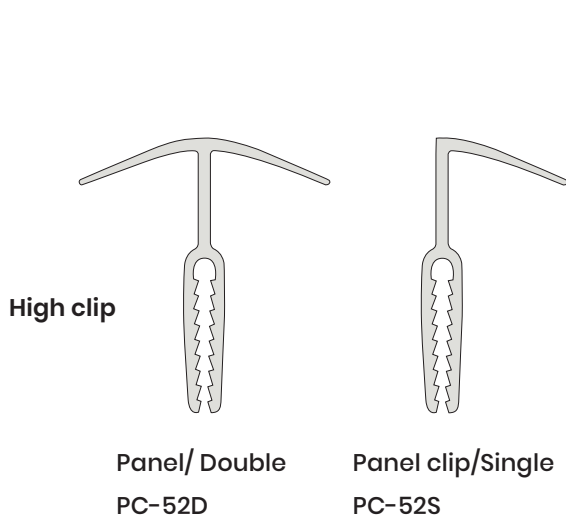


Max panel thickness

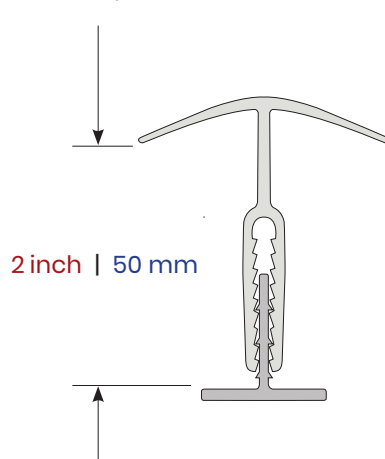


Panel clips are available in three sizes and two formats : Single and Double clips.

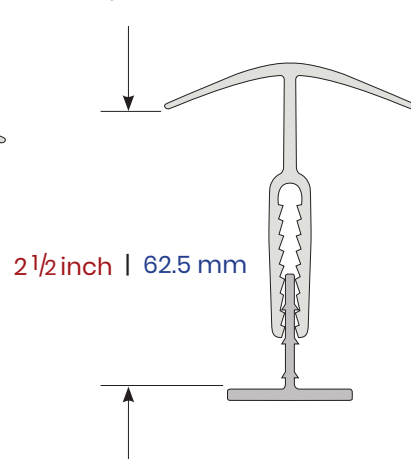
Note : Panel clips only secure to the Main and Cross Rails, not to Wallrails.



Minimum panel thickness

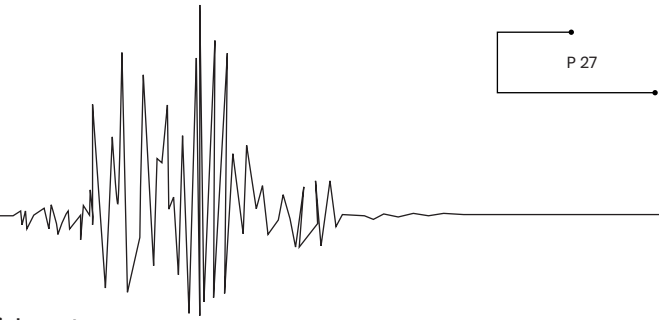


Max panel thickness



Installation of TR35-7400 brackets must be installed as described in the installation manual, any means of adaptation, incorrect installation or modification, voids warranty and may result in serious safety issues.

Seismic



SCOPE : TR35 pultruded fiberglass suspended ceiling grid system

Seismic compliance and specifications are unique to every country, state and region, based on national, regional and local building codes. It is beyond the scope of this document to present more than working examples, laboratory test data and reference material, as every build from design to construction has a regime of unique requirements specific to a buildings purpose and location.

- **C635-04** : Standard specification for the manufacture, performance, and testing of metal suspension systems for acoustical tile and lay-in panel ceilings.

Arcoplast commissioned an independent laboratory to carry out a series of tests using the C635-04 test model, as there are currently no seismic tests specific to Pultruded Fiberglass Suspended Ceiling Grid Systems. Arcoplast does not sight the test as the C635-04 test, as it is specific to metal T inverted grid systems. However the test laboratory simulated the C635-04 test model to establish a working comparison between the TR35 pultruded fiberglass suspended ceiling grid system and metal suspended ceiling systems.

The tests analyzed each of the TR35 components, testing for strength and working performance in seismic and non seismic zones, ascertaining side by side data based on the simulated C635-04 test model.

The ASTM Designation : C 635 – 04 document / page 1

12 Some suspension systems incorporate locking assembly details that enhance performance by providing some continuity or load transfer capability between adjacent sections of the ceiling grid. The test methods included in this specification do not provide the means for making a complete evaluation of continuous beam systems, nor for assessing the continuity contribution to overall system performance. However, the test methods can be used for evaluating primary structural members in conjunction with secondary members that Interlock, as well as with those of non-Interlocking type.

- **ASTM E580** : Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings. This standard governs the manufacturing and performance requirements for a lay-in suspended ceiling grid.

Arcoplast complies to the ASTM E580 protocols and build methods for : Seismic zones A, B, C.

► Useful References and information

For all USA and International Seismic Building Code Compliance it is essential to consult government departments and agencies that have jurisdiction. In the USA local jurisdiction has the final say for all code requirements.

ASTM E580 : Standard practice for installation of ceiling suspension systems for acoustical tile and lay-in panels in areas subject to earthquake ground motions

ASCE 7 Adopts : ASTM E580 for most of its seismic requirements for suspended ceilings

IBC Adopts : SCE 7 for nearly all seismic requirements

State Building Code : Local jurisdiction. City, County, Township, or State agencies such as (OSHPD)

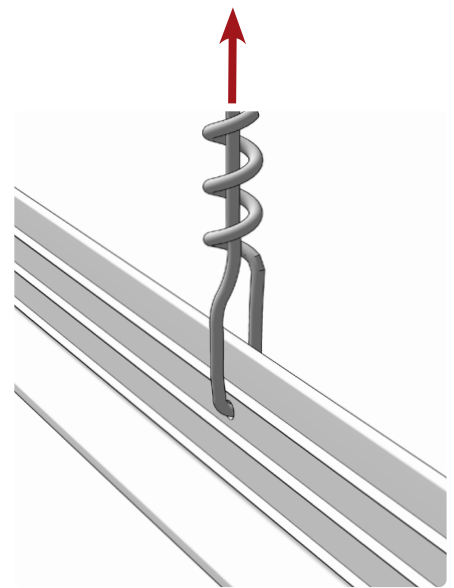
CISCA : Seismic Construction Handbook, is a valuable resource

Mainrails & Hangers

TR35 Mechanical physical properties

Subject	TR35 Mainrail : Hanger wire galvanized no 12 gauge**
Test	90° degree pull out test : Holes located 0.580 inch 14.73 mm down
Method	ASTM D953-10 : Modified samples tested in finished form
Failure mode	TR35 Mainrail

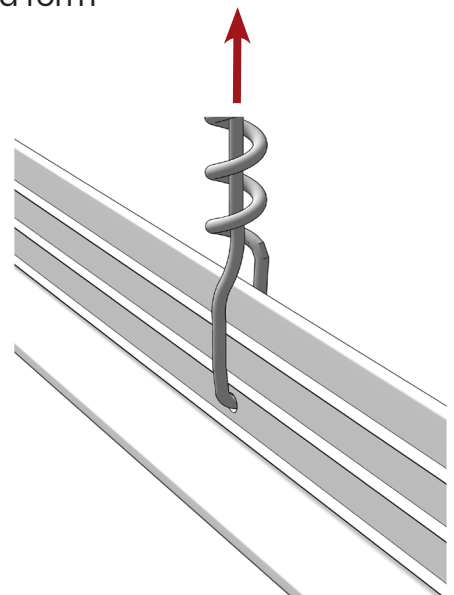
Descriptions	Measurements are averages	
	Imperial	Metric
Mainrail		
Thickness	0.095 inch	2.413 mm
Bearing hole diameter	0.150 inch	3.81 mm
Load at bearing strength 4% strain	19 lbf	8.69 Kg
Maximum load	436 lbf	197.77 Kg
Bearing strength	1366 psi	9418 Pa
Ultimate bearing strength	30600 psi	2.1098 Pa



TR35 Mechanical physical properties

Subject	TR35 Mainrail : Hanger wire galvanized no 12 gauge**
Test	90° degree pull out test. Holes located 0.900 inch 22.86 mm down
Method	ASTM D953-10 : Modified samples tested in finished form
Failure mode	TR35 Mainrail

Descriptions	Measurements are averages	
	Imperial	Metric
Mainrail		
Thickness	0.095 inch	2.413 mm
Bearing hole diameter	0.150 inch	3.81 mm
Load at bearing strength 4% strain	21 lbf	9.52 Kg
Maximum load	575 lbf	260.81 Kg
Bearing strength	1480 psi	1.0204 Pa
Ultimate bearing strength	40200 psi	2.77169 Pa



** International Building Code : 2012 Seismic Design Category C : 12 gauge vertical hanger wire minimal requirement : 0.0808 inch | 2.052 mm

Hanger wires & bracket



TR35 Mechanical physical properties

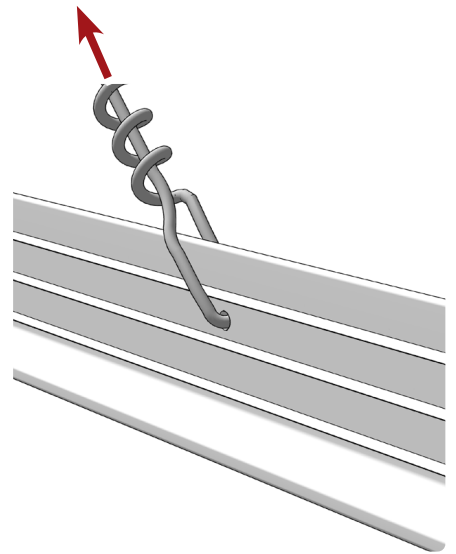
Subject **TR35 Mainrail** : Hanger wire galvanized no 12 gauge**

Test **45° degree pull out test** : Holes located **0.580 inch** | **14.73 mm** down

Method **ASTM D953-10** : Modified samples tested in finished form

Failure mode **TR35 Mainrail**

Descriptions	Measurements are averages	
Mainrail	Imperial	Metric
Thickness	0.095 inch	2.413 mm
Bearing hole diameter	0.150 inch	3.81 mm
Load at bearing strength 4% strain	31 lbf	14.1 Kg
Maximum load	391 lbf	177.35 Kg
Bearing strength	2180 psi	1.503 Pa
Ultimate bearing strength	27400 psi	1.8892 Pa



TR35 LTGH Bracket mechanical properties

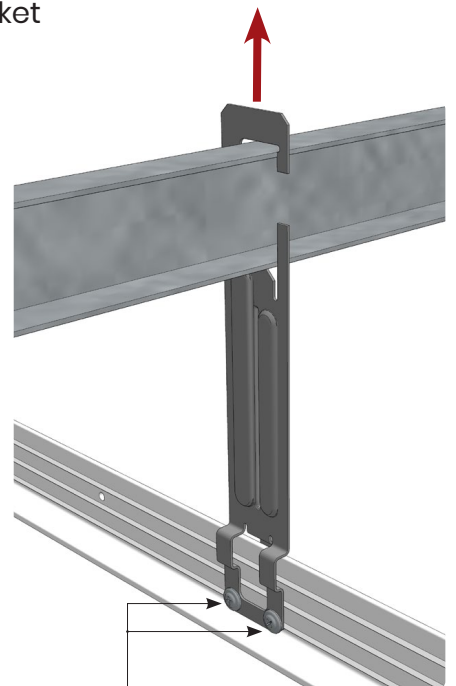
Subject **Mainrail** : TR-7400 Bracket assembly

Test **Holding strength test** completed on TR-7400 Bracket

Method **ASTM D638-14**

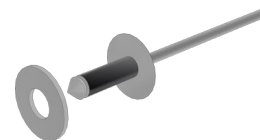
Failure mode **TR35 Mainrail flange fracture**

Descriptions	Measurements are averages	
TR-7400 Bracket	Imperial	Metric
Max load 1 x UTWH screw	466.4 lbf	211.55 Kgf
Peak load 1 x UTWH screw	380.48 lbf	172.58 Kgf
Max load 2 x UTWH screw	573.90 lbf	260.05 Kgf
Peak load 2 x UTWH screw	557.88 lbf	253.05 Kgf
Ultimate Static load limit	100.00 lb	45.35 Kg



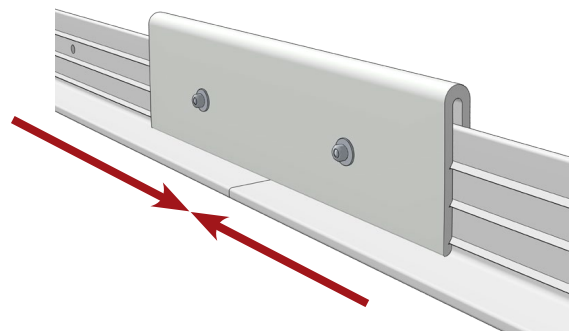
2x UTWH Self drilling screw #8

Seismic test results



TR35 Mechanical physical properties

Subject	Splice clamp : Extruded grade K type 2 virgin PVC, UL 94 V-O certified
Method	ASTM D695-15 : Modified samples tested in finished frame
Test	Compressive test
Failure mode	Material yield

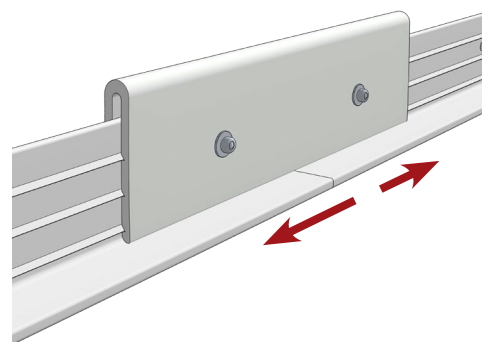


Specimen	Load at yield		Compressive extension at yield	
Average	3644 lbf	1652.89 Kg	0.054 inch	1.3716 mm

TR35 mechanical physical properties

Subject	Splice clamp : Extruded grade K type 2 virgin PVC, UL 94 V-O certified
Test	Pull apart test
Method	ASTM D953-10 : Modified samples tested in finished frame
Failure mode	PVC at rivet

Description	Measurements are averages	
Specimen number	Imperial	Metric
Thickness	0.095 inch	2.413 mm
Bearing hole diameter	0.150 inch	3.81 mm
Load at bearing strength 4% strain	37 lbf	16.78 Kg
Maximum load	646 lbf	293.02 Kg
Bearing strength	2580 psi	1.7788 Pa
Ultimate bearing strength	42600 psi	2.9371 Pa



International Building Code : IBC 2012 Seismic Design Category C : Minimal seismic strength requirement, Main and Cross Rail connection **60 lbf** (270 N)



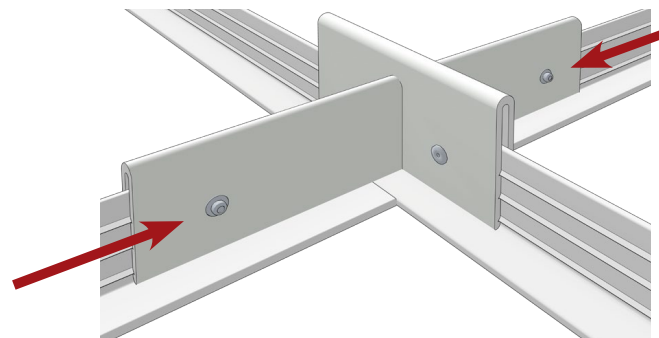
TR35 Mechanical physical properties

Subject **Inter & Overlock clamps** : Extruded grade K type 2 virgin PVC, UL 94 V-O certified

Method **ASTM D695-15** : Modified samples tested in finished frame

Test **Compressive test**

Failure mode **Material yield**



Specimen	Load at yield		Compressive extension at yield	
Average	1460 lbf	662.24 Kg	0.043 inch	1.0922 mm

TR35 Mechanical physical properties

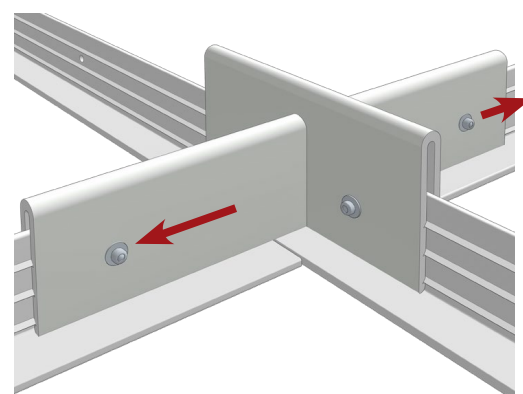
Subject **Inter & Overlock clamps** : Extruded grade K type 2 virgin PVC, UL 94 V-O certified

Test **Pull apart test**

Method **ASTM D953-10** : Modified samples tested in finished form

Failure mode **PVC at intersection**

Description	Measurements are averages	
Specimen number	Imperial	Metric
Thickness	0.095 inch	2.413 mm
Bearing hole diameter	0.150 inch	3.81 mm
Load at bearing strength 4% strain	20 lbf	9.071 Kg
Maximum load	575 lbf	260.9 Kg
Bearing strength	1500 psi	1.0342 Pa
Ultimate bearing strength	40200 psi	2.7716 Pa



International Building Code : IBC 2012 Seismic Design Category C : Minimal seismic strength requirement, Main and Cross Rail connection **60 lbf** (270 N)

Seismic Category C, D, E, F

Heavy Duty : Seismic Categories C, D, E, F

Seismic Cat C, D, E, F and the TR35 Heavy Duty Grid is made up of the same components, assembled differently. Most notably is the use of lockrivets, used to lock Rails and clamps into the grid so to strengthen and secure the grid.

Another aspect of interest is, the TR35 grid is assembled to allow for movement in the event of an earthquake. There are different arrays where the Main and Cross Rails are able to move. This is made possible by what is called the Seismic Step, fitted with a Closure gasket, working in conjunction with the working design of the clamps and junction assemblies.

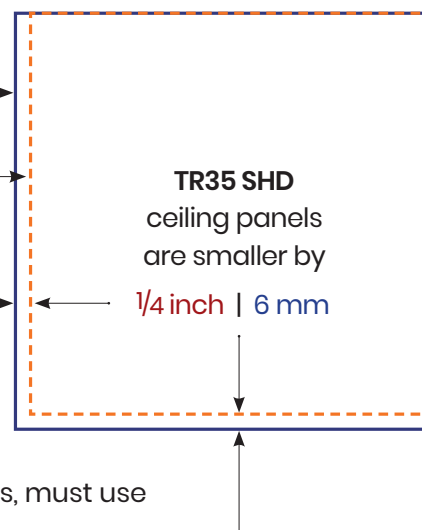
Lockrivets : It is important to note the lockrivet encroaches into the Panel or MEP Bay by $\frac{1}{8}$ inch | 3mm. For this reason the SHD panel system is used for Seismic Category C, D, E, F, and Heavy Duty grids, as the SHD panel system is slightly smaller than the standard panel sizes. Note : All SHD ceiling panels, length and width are smaller by a factor of $\frac{1}{4}$ inch | 6mm, the panel thickness remains the same.

Standard ceiling panel : Width $23\frac{3}{4}$ " x Length $23\frac{3}{4}$ "

TR35 SHD ceiling panel : Width $23\frac{1}{2}$ " x Length $23\frac{1}{2}$ "

All TR35 SHD ceiling panels are smaller by : $\frac{1}{4}$ inch | 6 mm

Page 40-41 : Full range of SHD ceiling panel dimensions



Conclusion : Lockriveted TR35 Grids fitted with Acryloyl or i-Panels, must use the TR35 SHD ceiling panel system.

SHD : Seismic Category C, D, E, F Heavy Duty ceiling panel system.

Ceiling panels reduced in size by : $\frac{1}{4}$ inch | 6 mm.

Lockrivets : Rivet with a back washer. Stainless steel, Aluminum and Zinc plated steel.

Lockrivet clearance : Allow a factor of $\frac{1}{8}$ inch | 3 mm.

Lockrail

Main or Cross Rail lockriveted to the grid to increase strength and prevent slip movement.

Sliprail

Main and Cross Rails capable of slip movement in a seismic episode.

Slip Lockrail

One end of a Cross or Main Rail is lockriveted to a clamp, preventing any slip movement, the opposite end of the Rail is clamped but not lockriveted, facilitating the Rail to slip.

Slip movement

The controlled movement of Main and Cross Rails in a seismic event. Slip movement up to $\frac{3}{4}$ inch | 19 mm.



Seismic Cross Junctions

Heavy Duty : Seismic A, B

All Clamps are lockriveted.
No Seismic-Step
No Closure gasket.
Standard gaskets and caulking
Uses the SHD ceiling panel system

Heavy Duty : Seismic C, D, E, F

Configured as Seismic C, D, E, F

Heavy Duty : Seismic Categories C, D, E, F

Cross Junctions are assembled the same way as the Seismic Cat A, B, Standard TR35 Grid assembly; except the Cross Junctions are lockriveted together to maintain the integrity of the grid assembly in the event of an earthquake.

The strength of the lockrivets under laboratory conditions were extensively tested, returning impressive results, note pages 28-31.

Mainrails, Crossrails and Wallrails are all compliant to Seismic Category C, D, E, F and are assembled the same way as the standard TR35 Grid, but with the use of lockrivets in various arrays.

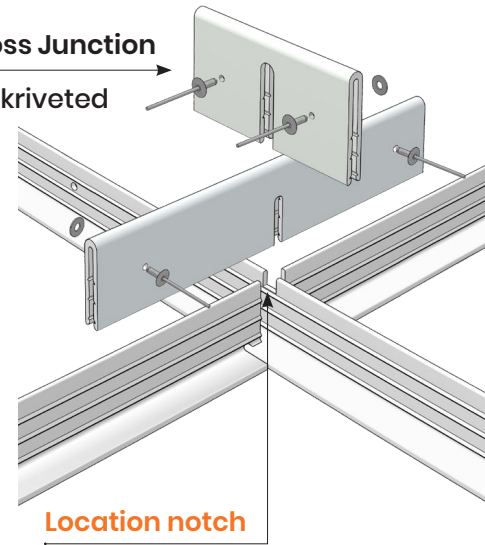
The Cross Junction, the Offset Junction and the Modified Offset Junction are assembled in the same way but are all Lockriveted. The drilling of rivet holes is done on-site. Arcoplast supply the Lockrivets with separate washers.

Note : This document does not go into the intricacies of complicated systems of hanger wires, trapezes and other mechanisms for supporting the grid from the building's numerous structures.

If you have any question regarding the assembly of the TR35 suspended ceiling grid system or you require more information please contact the Arcoplast technical team.

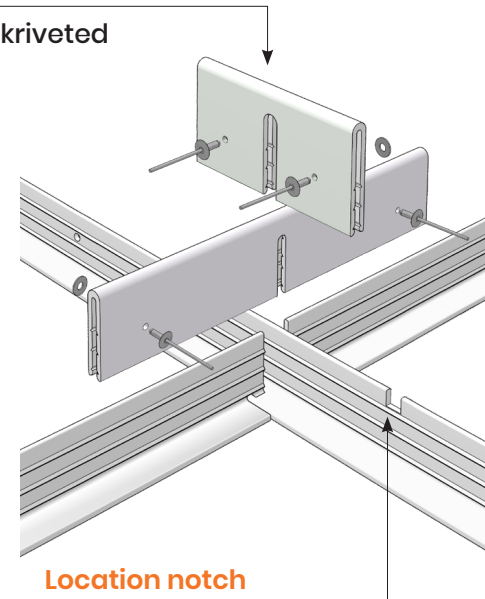
Cross Junction

Lockriveted

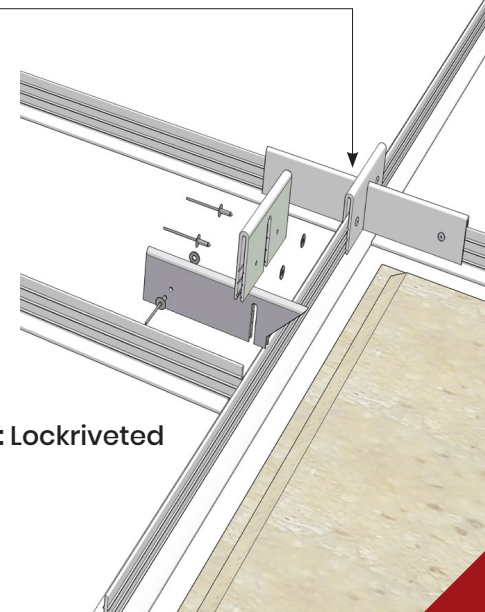


Offset Junction

Lockriveted



Cross Junction : Lockriveted



Offset modified Junction : Lockriveted

Seismic T-Junctions

Seismic Categories C, D, E, F

Seismic-step

Main/Cross Rails ride on the Wallrail ledge to allow for seismic slip movement

Note : The Closure gasket is not shown

Seismic step : Main and Cross Rails ride on the ledge of the Wallrail allowing for a seismic movement of up to $\frac{3}{4}$ inch | 19 mm.

Seismic Cat C, D, E, F : In this seismic category, Splice clamps are never used for Rails terminating into Wallrails, only T-Clamps are configured for Main and Cross Rails terminating into Wallrails.

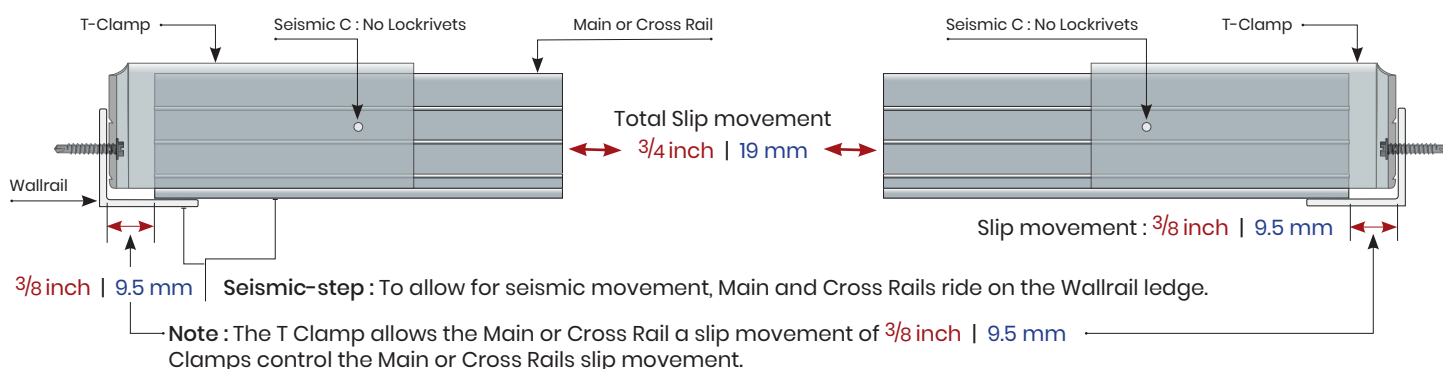
T-T Junction : Seismic-step : Seismic Category : C

Seismic T-T Junctions : Combination : T-Clamp opposite T-Clamp

T-Clamp T-Clamp termination

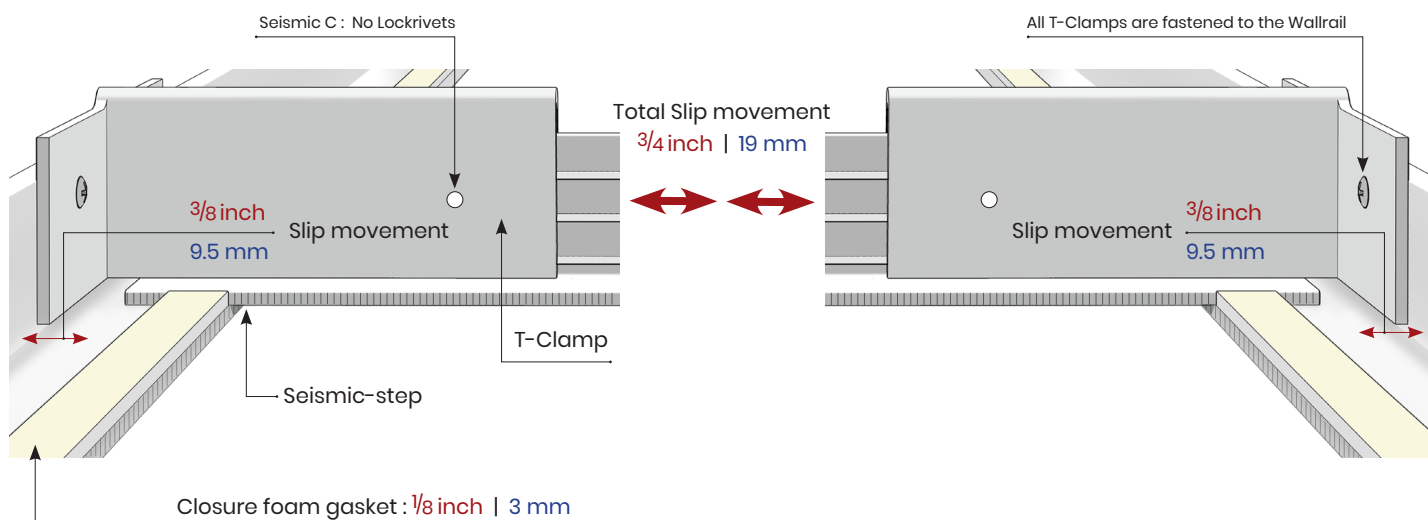
The Seismic-step is necessary for seismic movement Category : C

Category C. Every Main or Cross Rail terminating into a Wallrail must facilitate a slip movement of $\frac{3}{8}$ inch | 9.5 mm.



Category : C

Main and Cross Rails are not lockriveted.

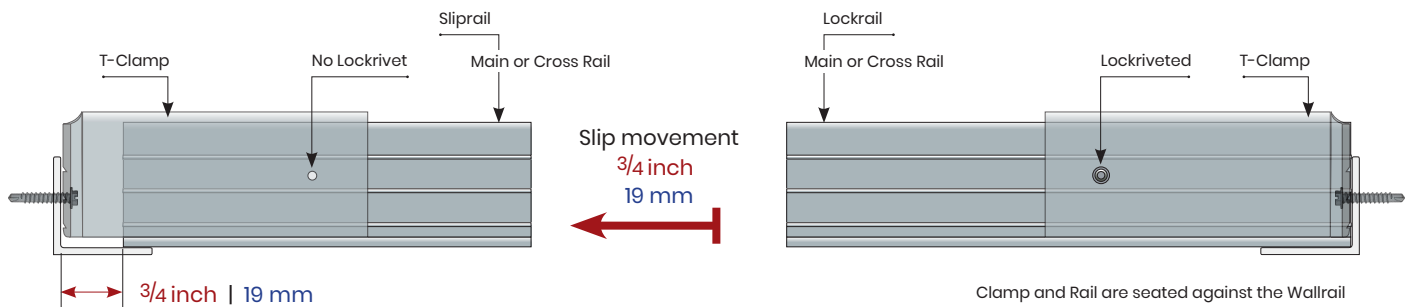


T-T Junctions : Seismic-step : Seismic Categories D, E, F

T-Clamp termination using a Seismic-step, Sliprail opposite Lockrail.

One end of the Main or Cross Rail is not lockriveted to the T-Clamp to allow for seismic slip movement of $\frac{3}{4}$ inch | 19 mm. The opposite end is lockriveted to the T Clamp, to prevent any slip movement.

Note : All T-Clamps are fixed to the Wallrail.



Category D, E, F : Stipulate in a four sided room the ceiling grid must be fixed to two adjacent walls, and each opposing wall must allow for seismic movement of no less than $\frac{3}{4}$ inch | 19 mm.

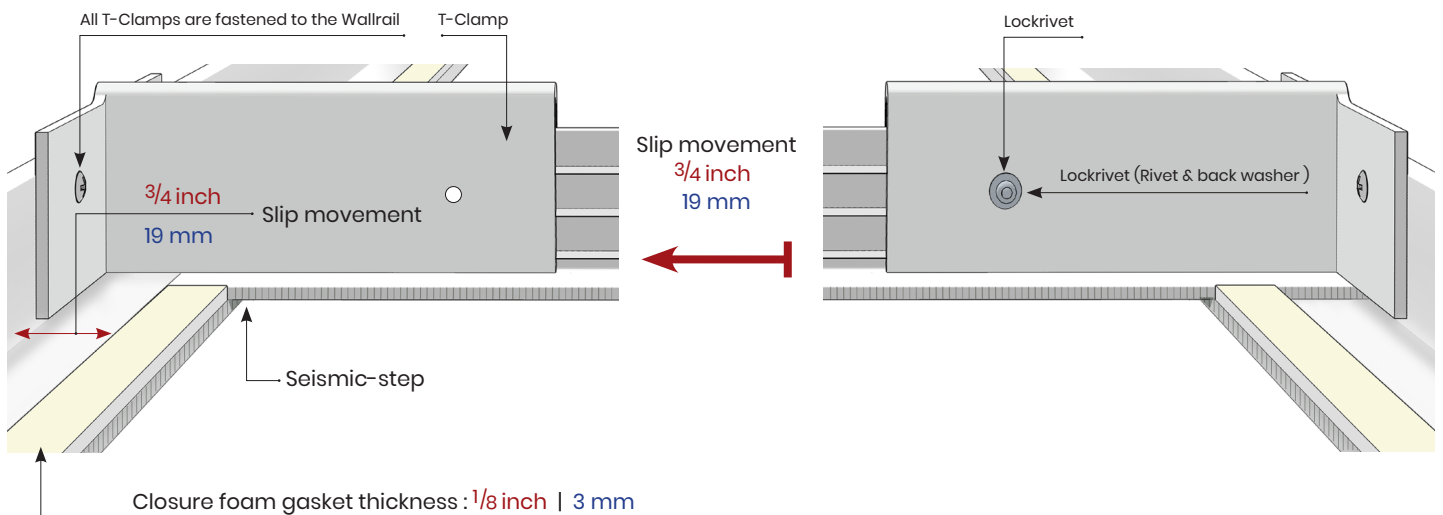
Note : The design of the T Clamp and Splice clamp facilitates the linear slip movement of the Rails, and restricts any non-linear movement.

Sliprail : Describes if a Main or Cross Rail is able to slip in the event of an earth quake.

Lockrail : Rail is locked into position and has no slip movement.

Areas exceeding 2500 Sqft | 232 Sq meters

T-T Junction : Configured so only one end of the Mainrail run is lockriveted. Mainrails spliced together must use Splice Seismic separation junctions.



Seismic Splice Junction

Seismic Splice Junction : Seismic Categories C & D, E, F

Seismic-step : The TR35 grid is assembled with the Main & Cross rails seated on the ledge of the Wallrail to allow for seismic movement in categories C & D, E, F. The TR35 Wallrail ledge is 1½ inches wide, providing ample space for a seismic movement of $\frac{3}{8}$ - $\frac{3}{4}$ inch | 9.5 mm - 19 mm.

There are two arrays for Seismic Splice Junctions.

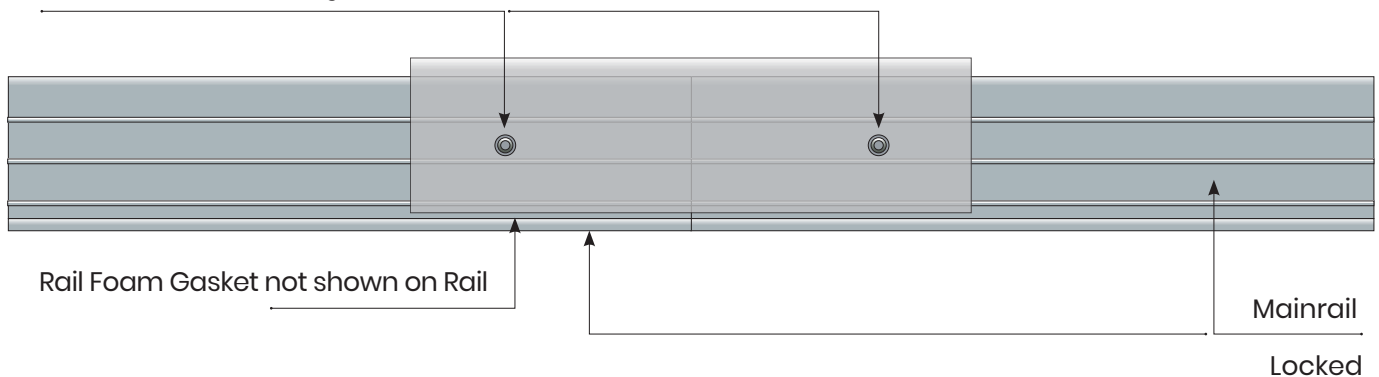
Splice clamp : Both intersecting Mainrails lockriveted together.

Splice clamp with Sliprail cover : One Mainrail is lockrivet with a sliprail cover to conceal the slip movement of the second Mainrail that is not lockriveted and facilitates a slip movement up to : $\frac{3}{4}$ inch | 19 mm.

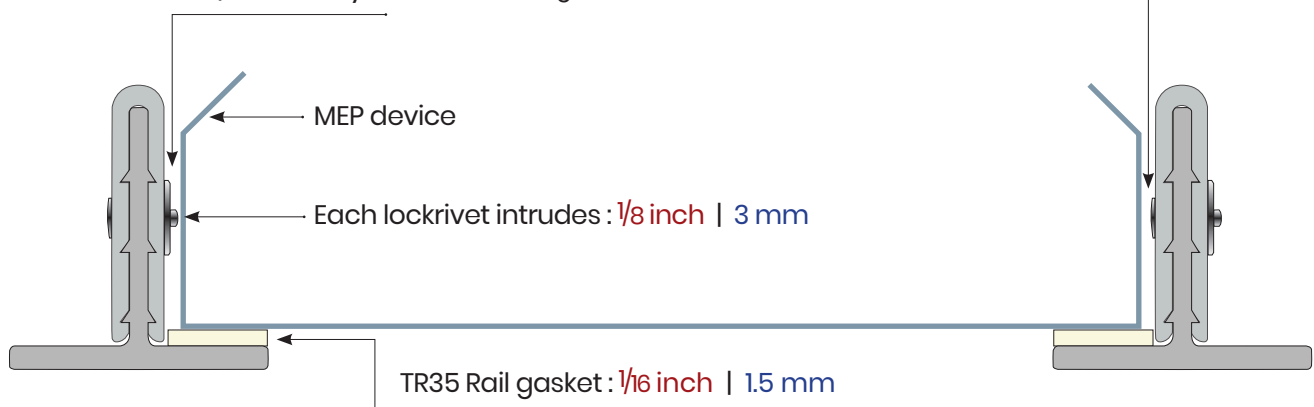
2x Lockrivets : Cat C

2x Lockrivets : Cat D, E, F areas smaller than 2500 sq.ft | 232 Sq meters

Mainrails are lockriveted together.



Lockriveted MEP/ Panel Bays : Width and length clearance : $\frac{1}{4}$ inch | 6 mm



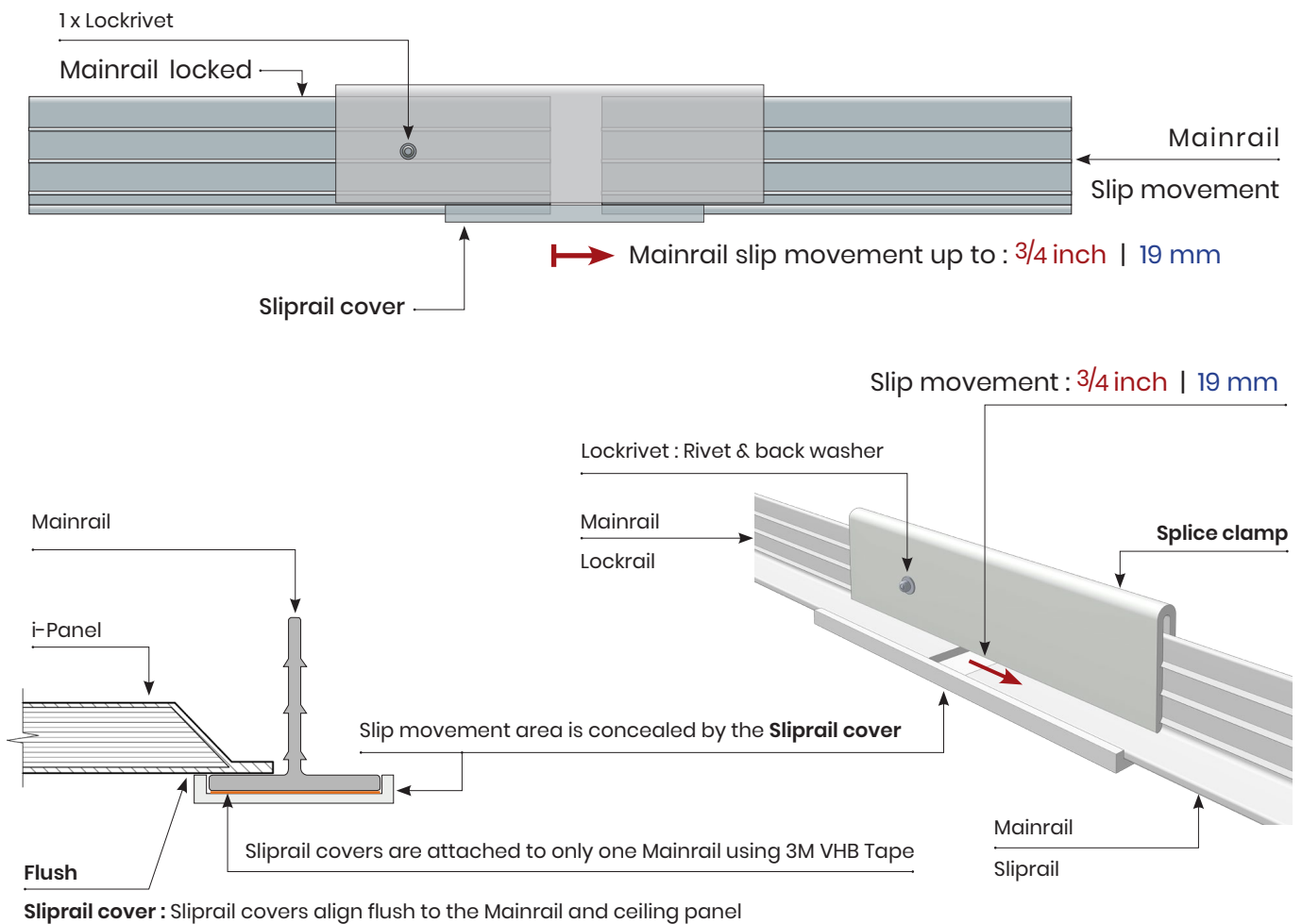
Lockriveted MEP Bays have a smaller housing area due to the lockrivets encroaching into the bay. When selecting an MEP device for a lockriveted MEP Bay, allow : $\frac{1}{4}$ inch | 6 mm for both width & length.

Lockriveted Panel Bays use the SHD panel system, SHD panels are slightly smaller by $\frac{1}{4}$ inch | 6 mm

Splice Seismic Separation Junction : Seismic Categories D, E, F

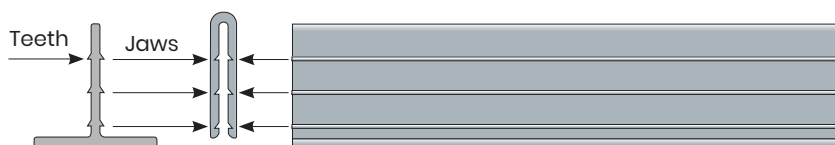
ASCE / SEI 7 Section 13.5.6.2.2.d : Seismic design Category D, E, F

Splice seismic separation junctions are required for areas exceeding **2500 sq.ft** | **232 Sq meters**



Splice seismic separation junction : The junction is made up of 2 Mainrails, the first Mainrail is lockriveted to the Splice clamp, the second mainrail facilitates a slip movement of up to $\frac{3}{4}$ inch | 19 mm.

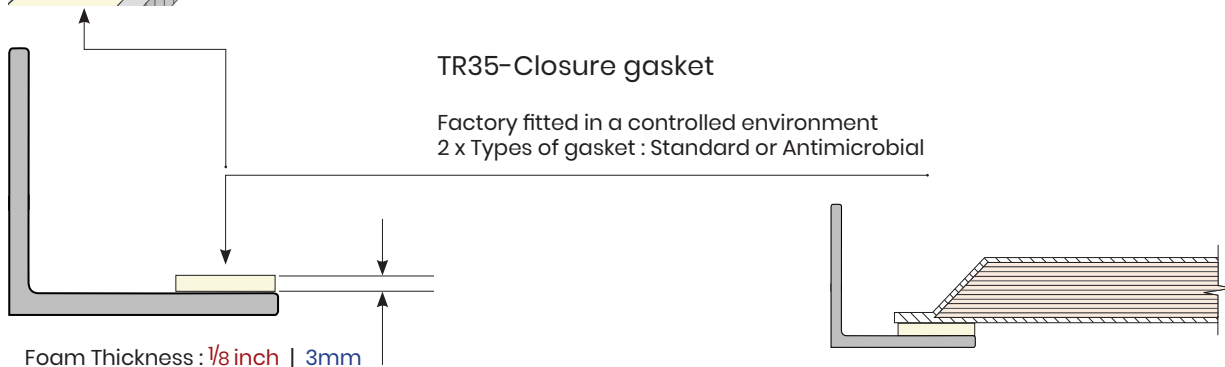
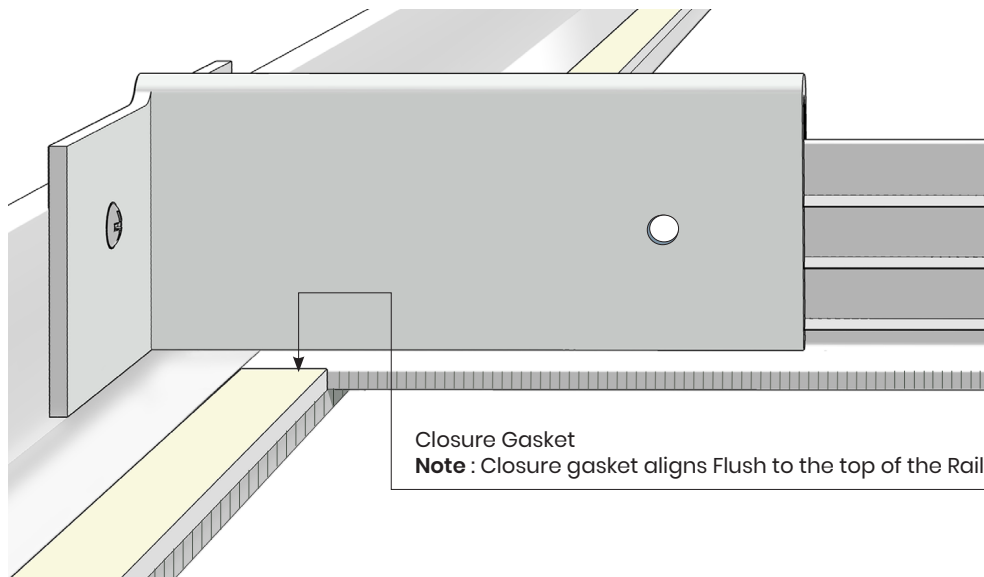
Slip movement : The teeth of the Main and Cross Rail are designed to slip back and forward inside jaws of the clamp. This is how the Splice and T-Clamp controls the Main and Cross Rail's linear slip movement.



Closure gasket

Closure & Rail gasket : Fitted along the Wallrail

Seismic Category C, D, E, F



Note : Cat C, D, E, F require a Closure gasket.

The closure gasket encloses the grid.

The ceiling panel is seated on the Main or Cross Rail and the Wallrail Closure gasket.

Panel Clips ensure the ceiling panel is seated correctly.

There are two types of Closure gasket .

1/ Closure gasket : Fitted only on the Wallrail ledge.

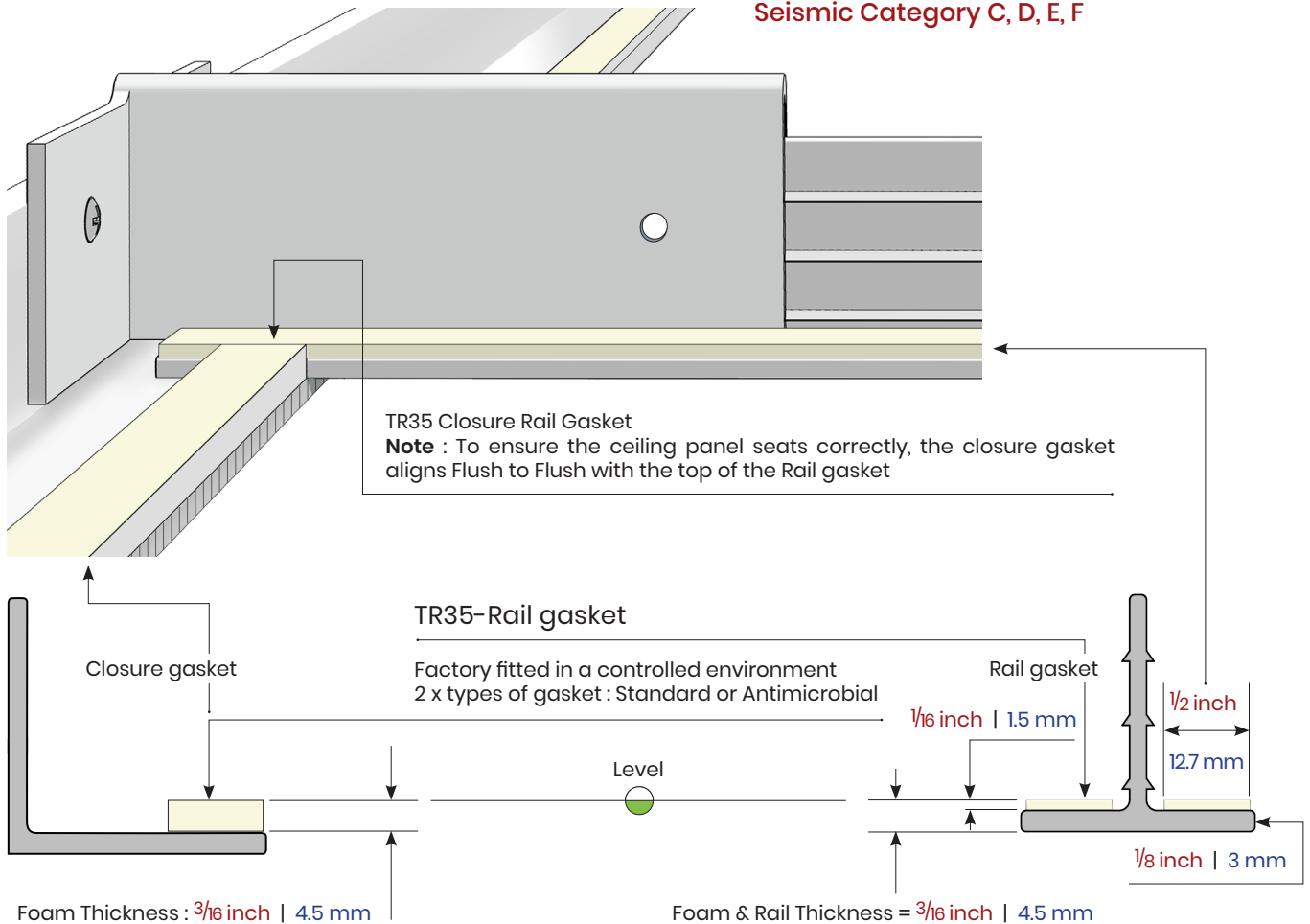
2/ Closure & Rail gasket : Fitted along the Wallrail with a separate Main and Cross Rail gasket.

1/ Closure gasket	1/8 inch 3 mm (Foam thickness)
2/ Closure & Rail gasket	3/16 inch 4.5 mm (Foam thickness)
Main / Cross Rail foam gasket	1/8 inch 1.5 mm (Foam thickness)

Closure & Rail gasket

Closure & Rail gasket : Fitted along the Wallrail with a separate Main and Cross Rail gasket

Seismic Category C, D, E, F



Closure & Rail gaskets are made of the same foam as the standard TR35 Foam Gasket.
 TR35 Rail gasket : $\frac{1}{16}$ inch | 1.5 mm is not as thick as the standard TR35 Foam Gasket.

Note : Cat C, D, E, F require a Closure gasket.

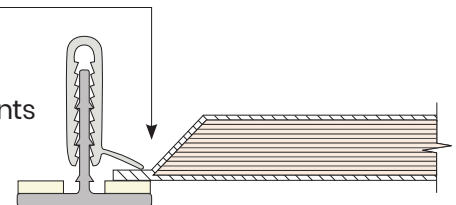
The closure gasket encloses the grid and allows for slip movement.

The ceiling panel rides on the Rail gasket, allowing the grid to move in an earthquake.

The grid slip movement is not impaired by the Closure or Rail gasket or the ceiling panel.

Panel Clips ensure the ceiling panel is seated correctly.

Note : The ceiling panel must not be attached with tape or sealants to the grid, as this will inhibit the slip movement of the grid.



An important difference between Seismic Category : A, B and Category C, D, E, F is the Seismic Step coupled with the Closure gaskets, working in conjunction with the internal structure of the grid assembly. It is these arrays that facilitate controlled movement, necessary in the event of a Category C, D, E, F seismic episode.



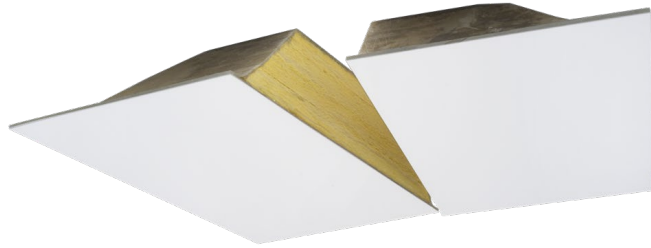
Acryloyl / SHD

Seismic Cat C, D, E, F / Heavy Duty

Seismic / Heavy Duty ceiling panel, True dimensions

Profile	Imperial			Metric		
Square edge	0.25 inch	23½ x 23½ inch	2.0 Lb/Sq.ft	6.3 mm	597 x 597 mm	9.70 Kg/SqM
Square edge	0.375 inch	23½ x 23½ inch	3.5 Lb/Sq.ft	9.5 mm	597 x 597 mm	17.09 Kg/SqM
Tegular edge	0.375 inch	23½ x 23½ inch	3.0 Lb/Sq.ft	9.5 mm	597 x 597 mm	14.60 Kg/SqM
Profile	Imperial			Metric		
Square edge	0.25 inch	23½ x 35½ inch	2.0 Lb/Sq.ft	6.3 mm	597 x 902 mm	9.70 Kg/SqM
Square edge	0.375 inch	23½ x 35½ inch	3.5 Lb/Sq.ft	9.5 mm	597 x 902 mm	17.09 Kg/SqM
Tegular edge	0.375 inch	23½ x 35½ inch	3.0 Lb/Sq.ft	9.5 mm	597 x 902 mm	14.60 Kg/SqM
Profile	Imperial			Metric		
Square edge	0.25 inch	23½ x 47½ inch	2.0 Lb/Sq.ft	6.3 mm	596 x 1207 mm	9.70 Kg/SqM
Square edge	0.375 inch	23½ x 47½ inch	3.5 Lb/Sq.ft	9.5 mm	596 x 1207 mm	17.09 Kg/SqM
Tegular edge	0.375 inch	23½ x 47½ inch	3.0 Lb/Sq.ft	9.5 mm	596 x 1207 mm	14.60 Kg/SqM
Profile	Imperial			Metric		
Square edge	0.25 inch	11½ x 47½ inch	2.0 Lb/Sq.ft	6.3 mm	292 x 1207 mm	9.70 Kg/SqM
Square edge	0.375 inch	11½ x 47½ inch	3.5 Lb/Sq.ft	9.5 mm	292 x 1207 mm	17.09 Kg/SqM
Tegular edge	0.375 inch	11½ x 47½ inch	3.0 Lb/Sq.ft	9.5 mm	292 x 1207 mm	14.60 Kg/SqM

Conclusion : TR35 Grids assembled using lockrivets, require the SHD ceiling panels that have a reduced length and width by : ¼ inch | 6mm



i-Panel /SHD

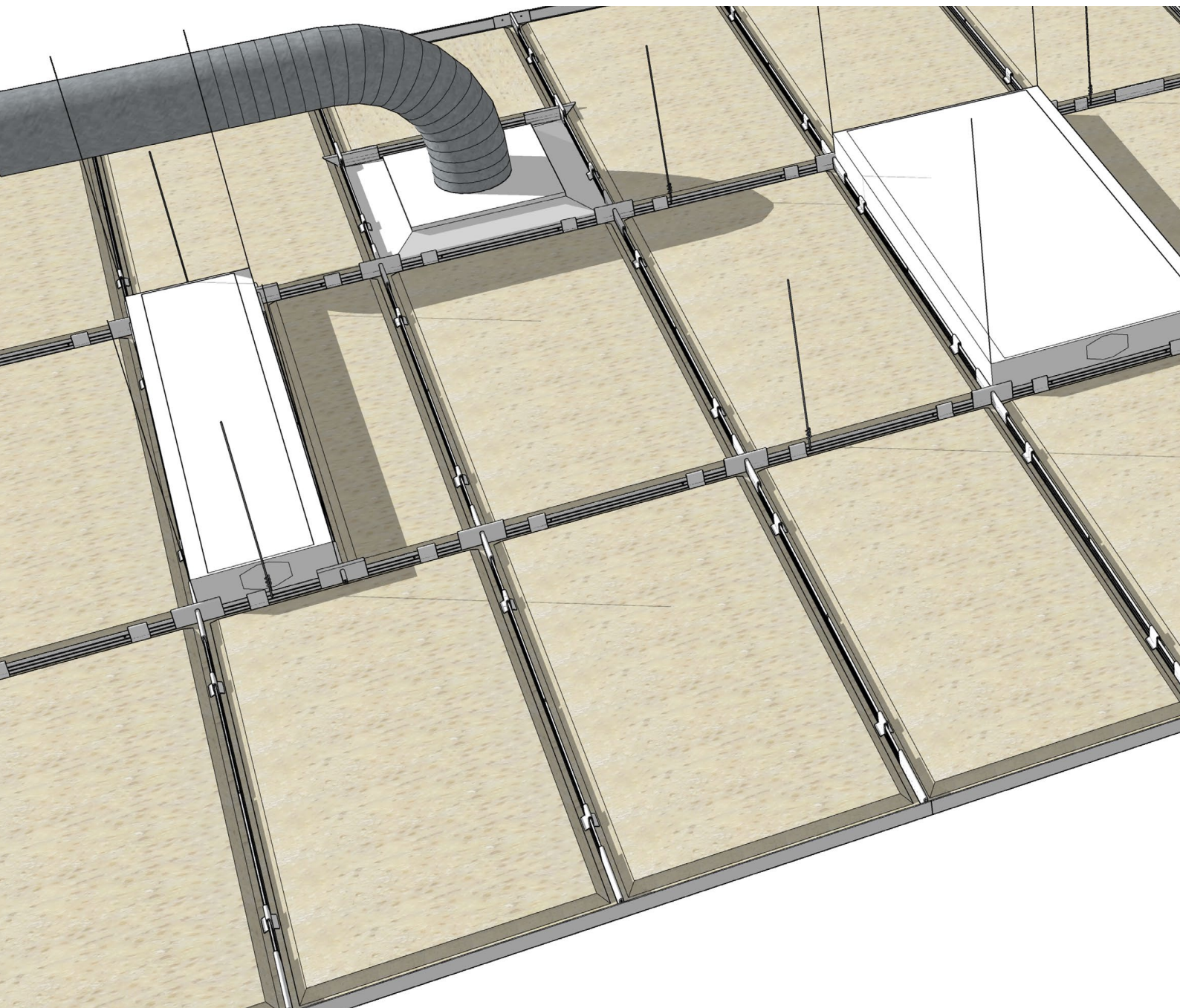
Seismic Cat C, D, E, F / Heavy Duty

Seismic / Heavy Duty ceiling panel, True dimensions

Profile	R Value	Imperial			Metric		
Tapper	R 2.368	5/8 inch	47 1/2 x 47 1/2 inch	1.15 Lb/Sq.ft	15.9 mm	1207 x 1207 mm	5.61 Kg/SqM
Tapper	R 4.523	1 1/8 inch	47 1/2 x 47 1/2 inch	1.25 Lb/Sq.ft	28.6 mm	1207 x 1207 mm	6.09 Kg/SqM
Tapper	R 6.648	1 5/8 inch	47 1/2 x 47 1/2 inch	1.35 Lb/Sq.ft	41.3 mm	1207 x 1207 mm	6.58 Kg/SqM
Tapper	R 8.344	2 1/8 inch	47 1/2 x 47 1/2 inch	1.45 Lb/Sq.ft	53.9 mm	1207 x 1207 mm	7.07 Kg/SqM
Profile	R Value	Imperial			Metric		
Tapper	R 2.368	5/8 inch	23 1/2 x 47 1/2 inch	1.15 Lb/Sq.ft	15.9 mm	597 x 1207 mm	5.61 Kg/SqM
Tapper	R 4.523	1 1/8 inch	23 1/2 x 47 1/2 inch	1.25 Lb/Sq.ft	28.6 mm	597 x 1207 mm	6.09 Kg/SqM
Tapper	R 6.648	1 5/8 inch	23 1/2 x 47 1/2 inch	1.35 Lb/Sq.ft	41.3 mm	597 x 1207 mm	6.58 Kg/SqM
Tapper	R 8.344	2 1/8 inch	23 1/2 x 47 1/2 inch	1.45 Lb/Sq.ft	53.9 mm	597 x 1207 mm	7.07 Kg/SqM
Profile	R Value	Imperial			Metric		
Tapper	R 2.368	5/8 inch	11 1/2 x 47 1/2 inch	1.15 Lb/Sq.ft	15.9 mm	292 x 1207 mm	5.61 Kg/SqM
Tapper	R 4.523	1 1/8 inch	11 1/2 x 47 1/2 inch	1.25 Lb/Sq.ft	28.6 mm	292 x 1207 mm	6.09 Kg/SqM
Tapper	R 6.648	1 5/8 inch	11 1/2 x 47 1/2 inch	1.35 Lb/Sq.ft	41.3 mm	292 x 1207 mm	6.58 Kg/SqM
Tapper	R 8.344	2 1/8 inch	11 1/2 x 47 1/2 inch	1.45 Lb/Sq.ft	53.9 mm	292 x 1207 mm	7.07 Kg/SqM
Profile	R Value	Imperial			Metric		
Tapper	R 2.368	5/8 inch	23 1/2 x 23 1/2 inch	1.15 Lb/Sq.ft	15.9 mm	597 x 597 mm	5.61 Kg/SqM
Tapper	R 4.523	1 1/8 inch	23 1/2 x 23 1/2 inch	1.25 Lb/Sq.ft	28.6 mm	597 x 597 mm	6.09 Kg/SqM
Tapper	R 6.648	1 5/8 inch	23 1/2 x 23 1/2 inch	1.35 Lb/Sq.ft	41.3 mm	597 x 597 mm	6.58 Kg/SqM
Tapper	R 8.344	2 1/8 inch	23 1/2 x 23 1/2 inch	1.45 Lb/Sq.ft	53.9 mm	597 x 597 mm	7.07 Kg/SqM
Profile	R Value	Imperial			Metric		
Tapper	R 2.368	5/8 inch	23 1/2 x 35 1/2 inch	1.15 Lb/Sq.ft	15.9 mm	597 x 902 mm	5.61 Kg/SqM
Tapper	R 4.523	1 1/8 inch	23 1/2 x 35 1/2 inch	1.25 Lb/Sq.ft	28.6 mm	597 x 902 mm	6.09 Kg/SqM
Tapper	R 6.648	1 5/8 inch	23 1/2 x 35 1/2 inch	1.35 Lb/Sq.ft	41.3 mm	597 x 902 mm	6.58 Kg/SqM
Tapper	R 8.344	2 1/8 inch	23 1/2 x 35 1/2 inch	1.45 Lb/Sq.ft	53.9 mm	597 x 902 mm	7.07 Kg/SqM

Conclusion : TR35 Grids assembled using lockrivets, require the SHD Ceiling Panel System that has a reduced length and width by : 1/4 inch | 6mm

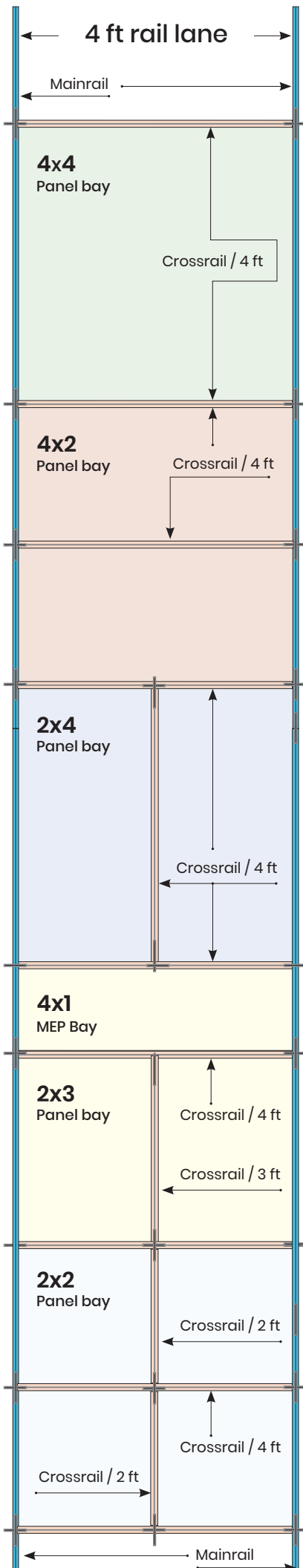
Simplicity of design



Unlimited dynamic configurations

The TR35 grid has virtually no restriction in design. The most complex of layouts result in a clean modern, efficient, future proof system, easily reconfigured, upgraded or modified.

Being manufactured from FRP, TR35 is not impaired by most environmental conditions, resulting in a long-lasting Life-cycle system with no rejuvenating maintenance programs.



Modules : 4x4 4x2 2x2

Modules	Spacing	Duty
4x4 foot module :	Hanger wires 4 feet	Light duty
4x2 foot module :	Hanger wires 2 feet	Medium duty
2x2 foot module :	Hanger wires 2 feet	Heavy duty

Module : Type of hanger wire, spacing of hanger wires, width of rail lane, determines the load and duty of the grid.

It is not only the bearing weight and strength of a grid that needs to be considered. To meet expectations of the working environment the grid must be able to endure frequent negative and positive pressure changes, vibration, chemical wash-down procedures, constant humidity and temperature change.

Metal grid systems can be prone to electrolysis and in salt moisture environments, galvanic action will result in delamination, surface deterioration, oxidation and corrosion. This can lead to corrosion and cyclic loading; A problem known to accelerate corrosion often leading to corrosion-fatigue, a process that begins by weakening the outer protective layers, leading to rupture and accelerated corrosion and crack initiation.

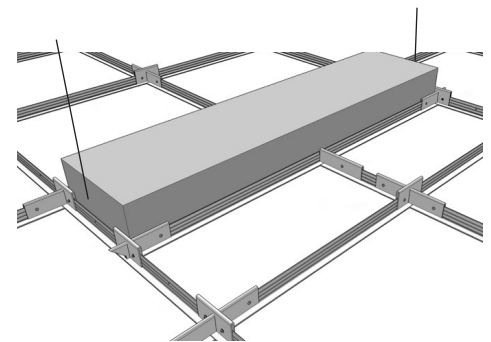
TR35 being an FRP Grid System is not susceptible to electrolysis and galvanic action or corrosive fatigue related issues, a real benefit when MEP Fixtures and plant equipment come into direct contact with the TR35 System.

MEP Bay : Mechanical, Electrical, Plumbing Bay.

Any Panel bay can be assigned as a MEP Bay. All MEP fixtures must be independently secured from the TR35 grid system.

4 x 1 foot LED Light fixture

Lighting fixture housed in a 4 x 1 MEP Bay



Hanger wires : Load tensil strength

12G Galvanized : 375 lbf | 170 Kgf

Suitable for most non-corrosive environments.

12G Stainless steel : 825 lbf | 374.2 Kgf

Usually used when non-magnetic is essential, such as MRI rooms.

12G Monel : 600 lbf | 272.1 Kgf

Generally consider the best option if there is any : Halide, Fluorine/Fluoride, Chlorine/Chloride, Bromine/Bromide, Iodine/Iodide is present, in these conditions Stainless Steel is not suitable due to stress crack corrosion induced by chloride.

Note : In the illustration each color highlights a 4x4 module with a different Panel bay configuration.

TR35 T-Rail : Flexure and load tests

Rivet & back washer

No rivets

48 inch Length and Span	Mean	Std. Dev.
Maximum load [lbf]	48	0.4
Flexure extension at L/360 [inches]	0.133	0.00
Load at L/360 [inches]	19.95	0.18
Flexure extension at maximum load [inches]	0.333	0.00
Flexure stress [psi]	183920.9	2245.0
Flex modulus [Msi]	1922.6	12.0
Flexural modulus [Msi]	1503	58

Mean	Std. Dev.
46	0.5
0.133	0.00
20.03	0.20
0.333	0.00
175140.2	1478.9
1934.7	29.8
1526	43

42 inch Length and Span	Mean	Std. Dev.
Maximum load [lbf]	58	0.4
Flexure extension at L/360 [inches]	0.1777	0.00
Load at L/360 [inches]	22.38	0.23
Flexure extension at maximum load [inches]	0.317	0.00
Flexure stress [psi]	195057.7	1529.6
Flex modulus [Msi]	1624.1	40.0
Flexural modulus [Msi]	1507	55

Mean	Std. Dev.
58	0.4
0.1777	0.00
22.97	0.33
0.317	0.00
195197.6	1532.4
1697.1	31.0
1421	69

36 inch Length and Span	Mean	Std. Dev.
Maximum load [lbf]	73	1.3
Flexure extension at L/360 [inches]	0.100	0.00
Load at L/360 [inches]	24.78	0.32
Flexure extension at maximum load [inches]	0.300	0.00
Flexure stress [psi]	211885.1	3274.4
Flex modulus [Msi]	1448.0	72.1
Flexural modulus [Msi]	1340	21

Mean	Std. Dev.
76	0.00
0.100	0.00
26.13	0.16
0.300	0.00
220270.0	827.8
1448.8	39.4
1281	87

30 inch Length and Span	Mean	Std. Dev.
Maximum load [lbf]	109	0.9
Flexure extension at L/360 [inches]	0.083	0.00
Load at L/360 [inches]	27.77	0.18
Flexure extension at maximum load [inches]	0.283	0.00
Flexure stress [psi]	262058.6	2125.9
Flex modulus [Msi]	1470.0	10.4
Flexural modulus [Msi]	1090	33

Mean	Std. Dev.
114	0.9
0.083	0.00
31.20	0.55
0.283	0.00
273834.6	2217.0
1321.8	6.6
1181	82

24 inch Length and Span	Mean	Std. Dev.
Maximum load [lbf]	172	0.8
Flexure extension at L/360 [inches]	0.067	0.00
Load at L/360 [inches]	32.16	0.47
Flexure extension at maximum load [inches]	0.267	0.00
Flexure stress [psi]	331418.7	1788.5
Flex modulus [Msi]	1283.2	7.4
Flexural modulus [Msi]	1002	7

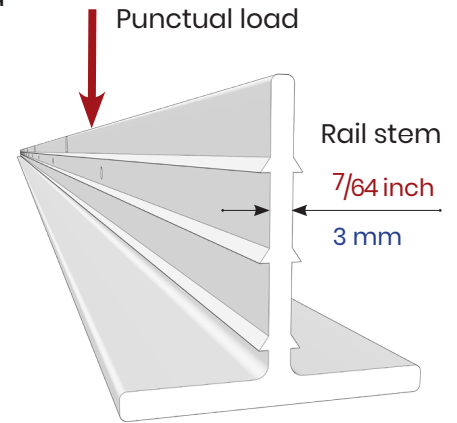
Mean	Std. Dev.
164	1.3
0.067	0.00
30.18	0.97
0.267	0.00
315645.4	2313.2
1120.1	1.6
1016	42

note : Engineering calculations were used to convert center point loads to uniform load performance.

TR35 : Punctual load and strength testsSubject **TR35 Mainrail** : Support span **48 inch** | **1219 mm**Test **TR35 Mainrail** : Punctual load strength testMethod **ASTM D790-17** : Modified samples tested in finished formLoad at L/360 **Peak load : 19.129 lbf / 8.676 kgf** : Test stopped

Descriptions	Measurements are averages	
Mainrail	Imperial	Metric
Support span	48.00 inch	1219.2 mm
Flexural extension at max load	0.762 inch	19.35 mm
Average maximum load	89 lbf	40.37 Kg
Test condition 47.3% RH	73.9° F	23.27° C

5 x tests were conducted to determine the average

**TR35 : Pultruded fiberglass thermoset polyester resin : 4 foot** | **1219 mm** span

Tests	Imperial	Metric
Load : Concentrated load at midspan L / 360	19.129 lbf	8.676 Kg
Load : Uniform load	9 lbs	4.08 Kg
Spacing : Allowable between lateral bracing	48.25 inch	1225 mm
TR35 : Mainrail maximum unsupported span	4 ft	1219 mm

TR35 : Deflection to failure comparison test results

TR35 : **4 foot** | **1219 mm** Mainrail span, deflection to failure test results.
 Force applied at center point with no Crossrail support. All numbers are mean values.

Average Maximum load	89 lbf	40.37 Kg
----------------------	---------------	-----------------



→ TR35 : Mainrail maximum support span : **4 ft** | **1219 mm**

Note : Arcoplast range of Heavy Duty Panels : 1.5 - 3.5 lbs/Sq foot | **7.25 - 17 Kg/S Meters**

Arcoplast have conducted their own tests based on the ASTM C635-04 to determine the strength of the TR35 Grid System

ASTM C 635-04 : The Standard Specification for testing of metal suspension systems for acoustical tile and lay-in panel ceilings. As there are no standard specifications for pultruded fiberglass thermoset polyester resin suspension system for lay-in sanitary panel ceilings, Arcoplast has tested each individual component to determine the structural performance of the TR-35 Rails for each individual span length based on load deflection criteria established at 1/360 of the span between supports.

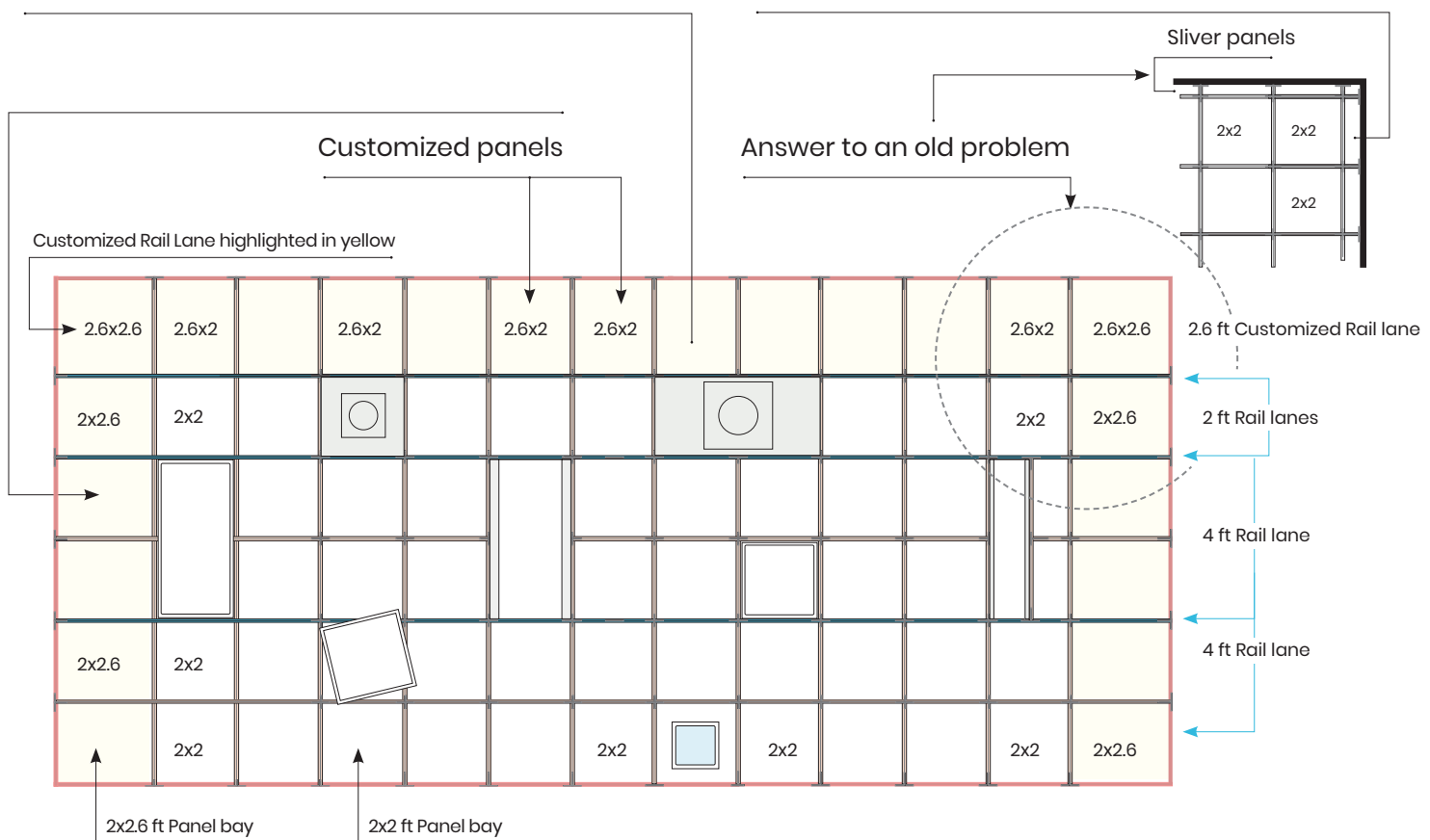
Applied value engineering

Customized rail lane : Problems have answers

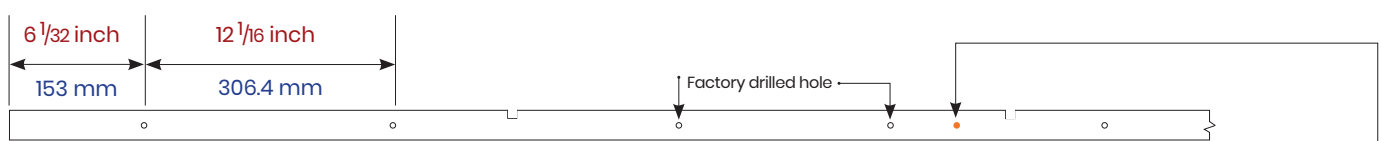
Designing the ceiling grid involves the complexities of the buildings structure, even dispersion of lighting, integration of multiple fixtures and the old problem of panel slivers.

The Arcoplast TR35 suspended ceiling system trims the off cuts right out of sliver panels. You can run the grid how you want with the advantage of multiple options. The TR35 Customized Rail lane uses Offset clamps, customized Crossrails & ceiling panels to work around odd sizes, resulting in a clean modern design, eliminating almost all panel slivers.

Example : Sliver panels are eliminated by running a 2x2 ft Rail lane alongside a Rail lane customized to fit a 2.6 foot ceiling panel. The yellow area depicts where the sliver panels have been eliminated.



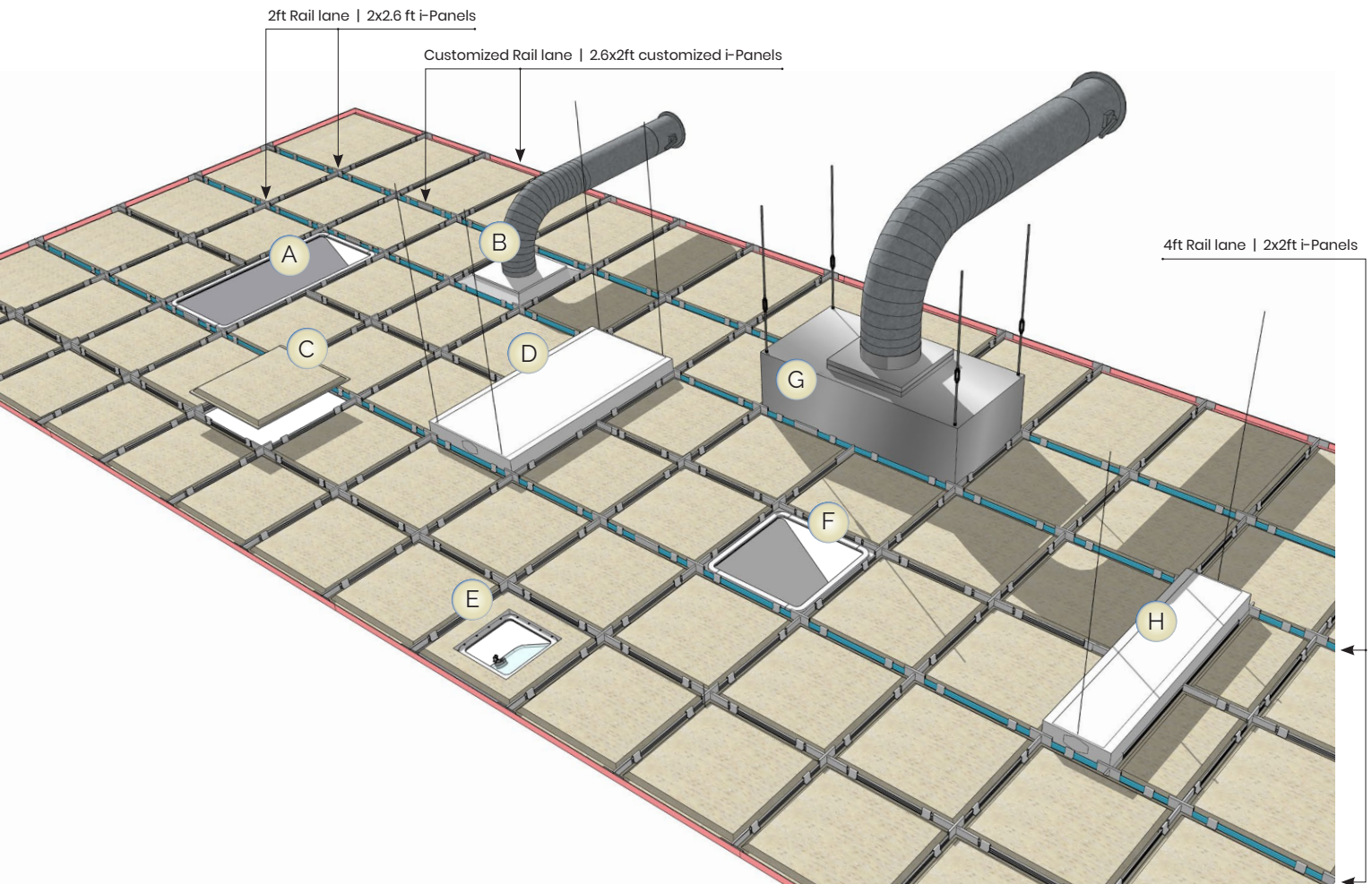
TR35 Mainrail : Hanger wire holes and location notch spacing



Adding additional hanger wire holes can be drilled, but no closer than **3 inch | 75mm**.
The correct drilled hanger wire hole size is : **5/32 inch | 3.95 mm**.

MEP services in a suspended ceiling. Please note the hanger wires for the grid are not shown.

The Mainrail and Wallrail have been colored to highlight how the TR35 grid uses three different Rail lanes :
2ft Rail lanes • 4ft Rail lanes and a Customized 2.6x2.6 ft Rail lanes.



- A 2ft x 4ft Access Hatch : Airtight gasket seal, secured with two flush mounted pull latches.
- B Vent housing : Sealed with componentry seal or TR35 caulking or a TR35 gasket seal.
- C Access ceiling panel : Any ceiling panel can be retrofitted as a service or access panel. Three gasket seals are available. Access panels are secured using TR35 Ceiling-latches.
- D 2x4 sealed light fixture : Sealed with componentry seal or TR35 caulking or a TR35 gasket seal.
- E 12x12 inch Inspection service hatch : Factory fitted with airtight gasket seal and flush locking latch.
- F 2x2 Access hatch : Fitted with or without an inspection window.
- G 2x4 HEPA ventilation system : Componentry seal supplied by manufacturer.
- H 1x4 sealed LED light fixture : Sealed with componentry seal or TR35 caulking or a TR35 gasket seal.



Installation : Always check with local authorities regarding jurisdiction and compliance.

Ceiling Hatches

Access hatch : 24x48 inch

Window service hatch : 12x12 inch

Ceiling Hatch standard color : Pristine white, or available in a wide range of PMS colors.

Option : With or without viewing window

The TR35 Hatch system is designed for high containment and climate controlled environments, offering expedient, efficient entry and exit into the interstitial space. The hatch when closed, retains the integrity of the primary barrier seal.

Factory fabricated and fully assembled ready to install. Arcoplast hatches range in size and function, from full size access hatches, to small service hatches.

The hatch frame and door are made from high gloss cast acrylic. The primary barrier surface frame is fitted with a continuous hollow rubber bubble gasket that seats and seals the hatch.

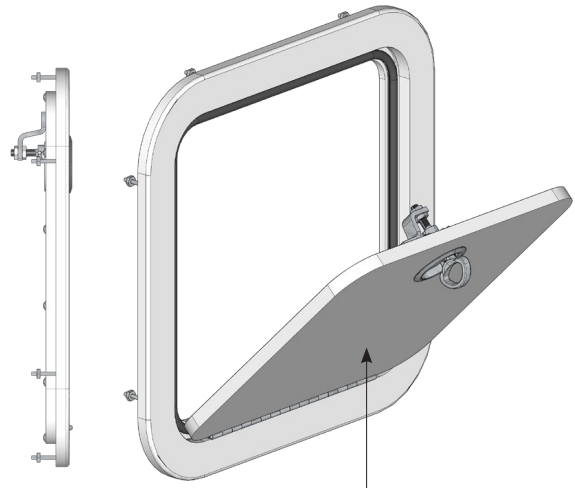
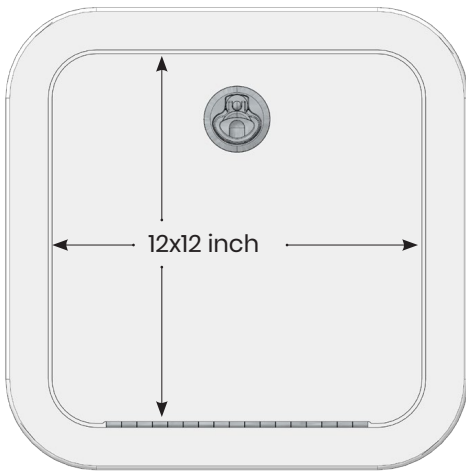
The hatch door swings on a continuous stainless steel hinge. A pair, or single set of stainless steel low profile compression pull latches secure the hatch. For secure access areas, a compression pull key locking latch is available.

The hatch door can be fitted with a clear, high impact, abrasive resistant polycarbonate window designed for 24-7 monitoring of gauges and visual inspections.

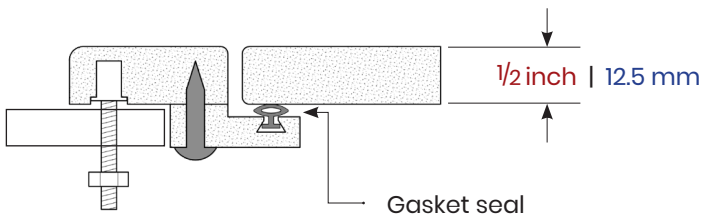
Retrofitting an Arcoplast hatch into an existing TR35 suspended ceiling or Arcoform bulkhead is not an issue.

Test Results for TR35 Hatch : Door, door handle perimeter and seal system

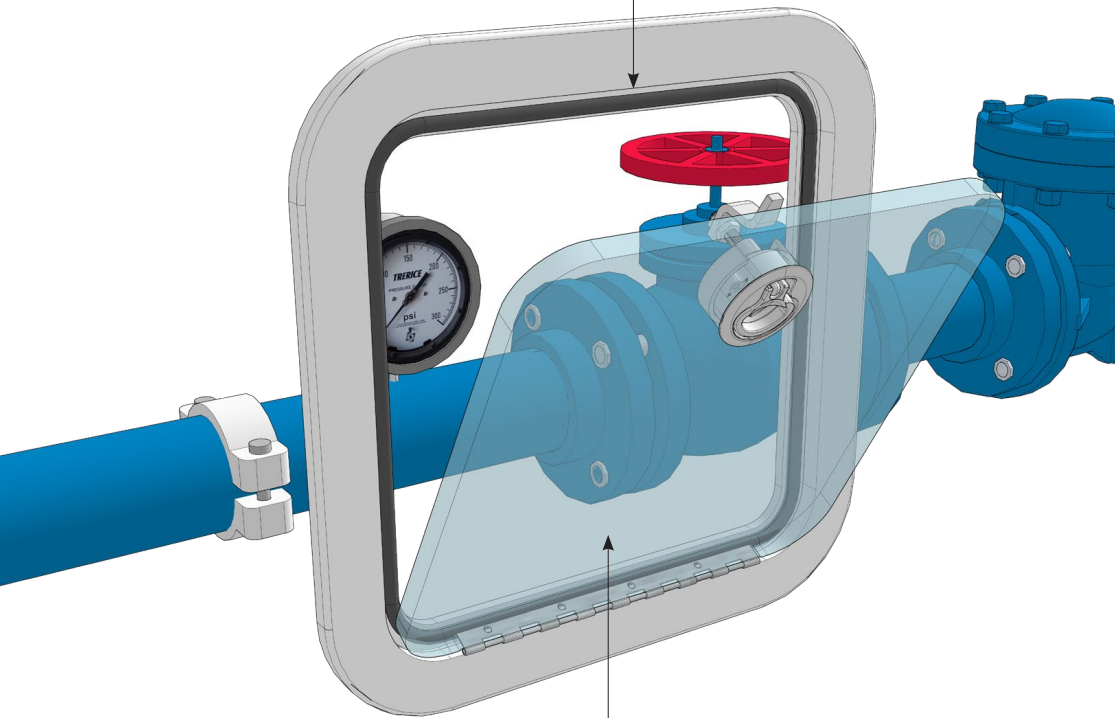
Pressure held 20 minutes before test readings	Imperial	Metric
Air leakage : Infiltration per ATSM E328 : 4.18 psf 200 Pa	0.28 cfm/ft ²	1.4 L/S/m ²
Air leakage : Infiltration per ATSM E328 : 10.44 psf 500 Pa	0.70 cfm/ft ²	3.6 L/S/m ²
Air leakage, infiltration per ATSM E328 : 4.18 psf 200 Pa	0.04 cfm/plm	0.06 L/S per linear m
Air leakage, infiltration per ATSM E328 : 10.44 psf 500 Pa	0.09 cfm/plm	0.14 L/S per linear m



12x12 inch standard solid panel service hatch



Gasket seal



Window service hatch 12x12 inch

Applications

- ✓ Aeronautical & Space
- ✓ Electronic manufacture
- ✓ Food Beverage
- ✓ Health Care
- ✓ Medical
- ✓ Pharmaceutical
- ✓ Vivarium

Clean-rooms

- ✓ BSL-2
- ✓ BSL-3
- ✓ BSL-3 Ag

Features

- ✓ Chemically neutral
- ✓ Energy efficient
- ✓ FDA Incidental food contact
- ✓ Moisture resistant
- ✓ USDA Compliant

Sanitation & cleaning

- ✓ Dry wipe down
- ✓ Non abrasive soap wash
- ✗ High pressure wash
- ✓ Mop wash down
- ✓ Wax polishing

Access hatch dimensions

24 x 24 inch	609 x 609 mm
24 x 36 inch	609 x 915 mm
24 x 48 inch	609 x 1220 mm
24 x 60 inch	609 x 1525 mm

Service hatch dimensions

8 x 8 inch	203 x 203 mm
12 x 12 inch	305 x 305 mm
16 x 16 inch	406 x 406 mm
20 x 20 inch	508 x 508 mm

Note : Please contact Arcoplast for customized sizes

Ceiling Panel latch

TR35 Panel latch : White Molded Plastic
: Philips pan head bolt & nylon nut



Caution and safety first

The TR35 suspended ceiling panel grid is not designed as a walk on access structure through into the interstitial space, nor is it designed for any form of storage or shelving of equipment and tools.

While accessing the interstitial space, it is recommended safety cones are setup and other procedures taken to prevent any injury to people in and around the access point.

A self supporting ladder or portable scaffold is recommended when accessing the interstitial space. Leaning a ladder against the TR35 suspended ceiling grid frame is not acceptable.

Prior accessing the interstitial space, if you have any questions or concerns, please contact Arcoplast.

Access into the plenum space : 3 x options are available

- | | | |
|---|------------------------|--|
| 1 | Single access | TR35 Caulking cut & reseal caulking |
| 2 | Frequent access | TR35 Ceiling Panel Latch with Aqua Fin, Bubble Seal or Foam-gasket |
| 3 | Frequent secure access | TR35-Access or Service Hatch |

The most cost effective means of secure frequent access into the plenum space, is the TR35 Ceiling Panel latch system. Simple to use, easy to fit or retrofit. TR35 Ceiling Panel latches work in combination with any gasket seal and Arcoplast ceiling panel. When used without a gasket seal, Ceiling Panel latches will secure the panel in place preventing panel flutter, but limited in performing a water or air tight seal.

Attributes of the TR35 Ceiling Panel latch :

- Secure access into the interstitial space
- Prevent panel displacement
- Eliminates panel flutter
- 100% Non corrosive



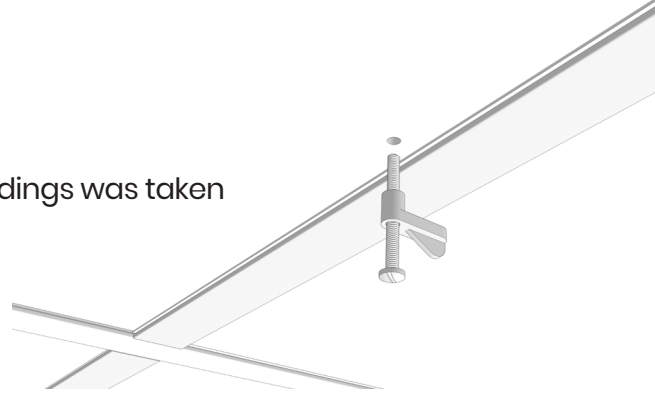
TR35 Ceiling Panel latch air leakage test

Subject **TR35 : Acryloyl and i-Panel : Air leakage test using 4 x Ceiling Panel Latches**

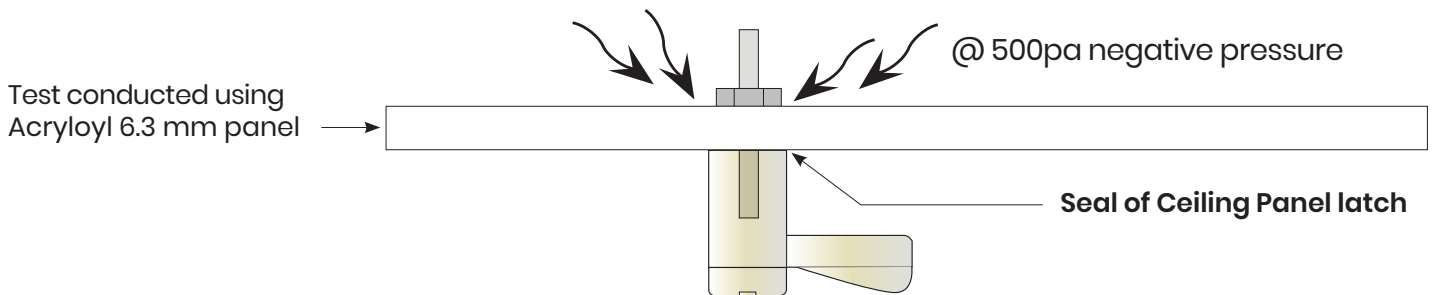
Test **Leakage rate @ 500pa negative pressure**

Method **ASTM E283 : Per client's instructions**
Pressure was held for 20 minutes before readings was taken

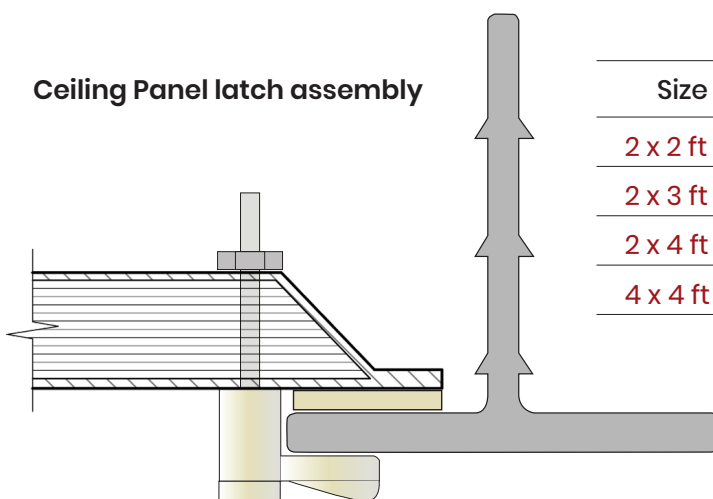
Conditions **Temperature : 73.9°F / 47.3% RH**



Air leakage test	cfm/ft ²	L/s/m ²	cfm/linear ft	L/s/per linear m	Panel Displacement
2x2 panel 4x Ceiling panel latches	0.057	0.289	0.028	0.044	0.168 inch 4.27 mm



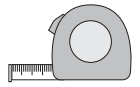
Number of Ceiling Panel Latches : Necessary to secure the different size removable ceiling panels



Size : Ceiling Panel		Ceiling Panel latches
2 x 2 ft	610 x 610 mm	4 x Latches
2 x 3 ft	610 x 915 mm	6 x latches
2 x 4 ft	610 x 1219 mm	6 x latches
4 x 4 ft	1219 x 1219 mm	8 x latches

TR35 True dimension and sizes

Seismic Category : A, B



TR35 true dimensions

Nominal dimensions	True dimensions	
Panel thicknesses	Imperial	Metric
1/4 Quarter inch	1/4 inch	6.3 mm
3/8 Three eighth inch	3/8 inch	9.5 mm
1/2 Half inch	5/8 inch	15.9 mm
1 One inch	1 1/8 inch	28.6 mm
1 1/2 One and a half inch	1 5/8 inch	41.3 mm
2 Two inch	2 1/8 inch	53.9 mm

Panel bay C/C Ceiling panel	True dimensions	
Description	2 x 2 foot	600 x 600 mm
TR35 Panel bay C/C	24 1/8 x 24 1/8 inch	612 x 612 mm
Ceiling panel dimension	23 3/4 x 23 3/4 inch	603 x 603 mm
Description	2 x 3 foot	600 x 900 mm
TR35 Panel bay C/C	24 1/8 x 36 3/16 inch	612 x 919 mm
Ceiling panel dimension	23 3/4 x 35 3/4 inch	603 x 908 mm
Description	1 x 4 foot	300 x 1200 mm
TR35 Panel bay C/C	12 1/16 x 48 1/4 inch	306 x 1225 mm
Ceiling panel dimension	11 3/4 x 47 3/4 inch	298 x 1212 mm
Description	2 x 4 foot	600 x 1200 mm
TR35 Panel bay C/C	24 1/8 x 48 1/4 inch	612 x 1225 mm
Ceiling panel dimension	23 3/4 x 47 3/4 inch	603 x 1212 mm
Description	4 x 4 foot	1200 x 1200 mm
TR35 Panel bay C/C	48 1/4 x 48 1/4 inch	1225 x 1225 mm
Ceiling panel dimension	47 3/4 x 47 3/4 inch	1212 x 1212 mm

Comment : There are nominal dimensions, and then there are true dimensions.

Disclaimer : In this document we use nominal USA customary and metric dimensions. In the case of a test report, measurements and dimensions are sighted as per the report.

TR35 Grid weight 10,000 sq feet : 930.23 sq meters

Seismic Category : A, B



TR35 grid size to weight

Nominal dimensions & weights ————— True dimensions —————

TR35 Grid	1 Sq foot	10,000 Sq feet
2 x 2 feet	0.43 Lbs	4292 Lbs
2 x 3 feet	0.42 Lbs	4271 Lbs
2 x 4 feet	0.31 Lbs	3095 Lbs
4 x 4 feet	0.23 Lbs	2292 Lbs

Nominal dimensions & weights ————— True dimensions —————

TR35 Grid	1 Sq meter	930.23 Sq meters
600 x 600 mm	2.09 Kg	1947 Kg
600 x 900 mm	2.08 Kg	1937 Kg
600 x 1200 mm	1.51 Kg	1403 Kg
1200 x 1200 mm	1.12 Kg	1039 Kg

Average calculation, based on four different ceiling areas, totaling : 10,000 sq feet | 930.23 sq meters.

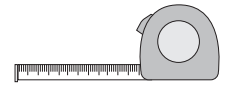
Note : Weights are based only on the TR35 grid assembly.

The Grid weight calculations do not include : Gasket seals, TR35 caulking, Panel clips, ceiling panels, hanger wires, lockrivets, fasteners, MED's etc...

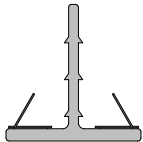
Quality workmanship of installation is critical to attain full potential and performance.

Gasket & caulking weights

TR35 Gasket and caulking weights 10,000 square feet / 930.23 Sq Meters

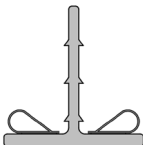


Aqua Fin Gasket Seal/ Light to medium duty



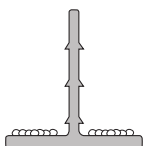
Grid	1 Sq foot	10,000 Sq feet	Grid	1 Sq M	930.23 Sq M
2x2 feet	0.0848 Lbs./sq.ft	847.76 Lbs	600 x 600 mm	0.4134 Kg/sq.m	384.53 kg
2x3 feet	0.0801 Lbs./sq.ft	801.25 Lbs	600 x 900 mm	0.3907 Kg/sq.m	363.44 kg
2x4 feet	0.073 Lbs./sq.ft	734.08 Lbs	600 x 1200 mm	0.3579 Kg/sq.m	332.97 kg
4x4 feet	0.0574 Lbs./sq.ft	573.76 Lbs	1200 x 1200 mm	0.2798 Kg/sq.m	260.25 kg

Bubble Seal Gasket/ Light to Heavy duty



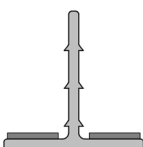
Grid	1 Sq foot	10,000 Sq feet	Grid	1 Sq M	930.23 Sq M
2x2 feet	0.1692 Lbs./sq.ft	1691.52 Lbs	600 x 600 mm	0.8248 Kg/sq.m	767.26 kg
2x3 feet	0.1603 Lbs./sq.ft	1602.50 Lbs	600 x 900 mm	0.781 Kg/sq.m	726.50 kg
2x4 feet	0.1468 Lbs./sq.ft	1468.16 Lbs	600 x 1200 mm	0.7159 Kg/sq.m	665.94 kg
4x4 feet	0.1096 Lbs./sq.ft	1095.62 Lbs	1200 x 1200 mm	0.5342 Kg/sq.m	496.96 kg

Caulking/ Light to Heavy duty



Grid	1 Sq foot	10,000 Sq feet	Grid	1 Sq M	930.23 Sq M
2x2 feet	0.0234 Lbs./sq.ft	234 Lbs	600 x 600 mm	0.1141 Kg/sq.m	106.14 kg
2x3 feet	0.0203 Lbs./sq.ft	203 Lbs	600 x 900 mm	0.099 Kg/sq.m	92.07 kg
2x4 feet	0.0184 Lbs./sq.ft	184 Lbs	600 x 1200 mm	0.0897 Kg/sq.m	83.46 kg
4x4 feet	0.0129 Lbs./sq.ft	129.33 Lbs	1200 x 1200 mm	0.0629 Kg/sq.m	58.51 kg

Foam Gasket / Light duty



Grid	1 Sq foot	10,000 Sq feet	Grid	1 Sq M	930.23 Sq M
2x2 feet	0.129 Lbs./sq.ft	129.11 Lbs	600 x 600 mm	0.0630 Kg/sq.m	58.56 kg
2x3 feet	0.122 Lbs./sq.ft	122.08 Lbs	600 x 900 mm	0.059 Kg/sq.m	55.37 kg
2x4 feet	0.112 Lbs./sq.ft	112.06 Lbs	600 x 1200 mm	0.0546 Kg/sq.m	50.82 kg
4x4 feet	0.0078 Lbs./sq.ft	78.45 Lbs	1200 x 1200 mm	0.0382 Kg/sq.m	35.58 kg

Note : The grid is set using various Panel bays : 2x2 / 2x3 / 1x4 / 2x4 / 4x4

Disclaimer : Weights are specific to gaskets and sealants as specified. Calculations do not include the TR35 grid, panels or any fixtures

Note : Average calculation, based on four different ceiling areas, totaling 10,000 square feet/ 930.23 sq meters

Ceiling panel weights

TR35 Ceiling panel weights 10,000 square feet / 930.23 Sq Meters



Acryloyl/ Solid core ceiling panel

Edge profile	Thickness	1 Sq foot	10,000 Sq feet	Thickness	1 Sq M	930.23 Sq M
Square edge	0.250 inch	2.0 Lbs	20000 Lbs	6.3 mm	9.70 Kg	9023 Kg
Square edge	0.375 inch	3.5 Lbs	35000 Lbs	9.5 mm	17.09 Kg	15898 Kg
Tegular edge	0.375 inch	3.0 Lbs	30000 Lbs	9.5 mm	14.60 Kg	13581 Kg

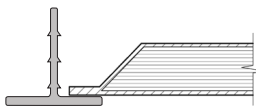
i-Panel/ GFRP, insulated ceiling panel

Edge profile	Thickness	1 Sq foot	10,000 Sq feet	Thickness	1 Sq M	930.23 Sq M
Tapered edge	0.625 inch	1.15 Lbs	11500 Lbs	15.9 mm	5.61 Kg	5216 Kg
Tapered edge	1.125 inch	1.25 Lbs	12500 Lbs	28.6 mm	6.09 Kg	5670 Kg
Tapered edge	1.625 inch	1.35 Lbs	13500 Lbs	41.3 mm	6.58 Kg	6123 Kg
Tapered edge	2.125 inch	1.45 Lbs	14500 Lbs	53.9 mm	7.07 Kg	6577 Kg

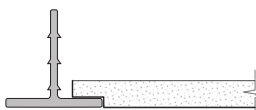
3x Edge profiles



Square edge : Acryloyl : 6mm and 9.5mm



Tapered edge : i-Panel insulated GFRP panels : 16mm, 29mm, 41mm, 54mm
Note : i-Panels all have a 3mm tongue edge



Tegular edge : Acryloyl : only 9.5mm
The tegular recess is milled to fit the specified gasket or caulking seal.

Disclaimer : Weights are specific to ceiling panels as specified. Calculations do not include the TR35 grid, seals or any fixtures

Note : Average calculation, based on four different ceiling areas, totaling 10,000 square feet/ 930.23 sq meters

TR35 A : Aqua Fin : Light to medium duty silicon gasket

TR35 – A | Aqua Fin silicon gasket seal

Air infiltration

Tested to ASTM E-283.04 for low air leakage. Allows no more than 0.3cfm per square foot at 1.57 psf

S44, S77 and S88 are air infiltration tested in accordance with ASTM E-283-04

Air Pressure – Positive

Tested to retain positive air pressure for 20 minutes at 200 Pa

Airworthiness Standards for Interiors

Meets FAR 25.853

Fire Rated

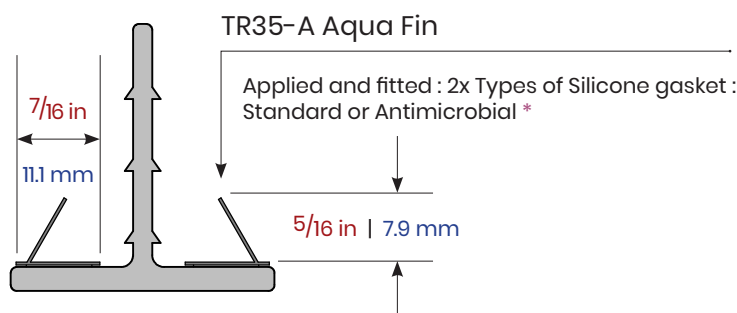
UL10C – Positive Pressure | Self-extinguishing

Smoke Tested

Smoke tested in accordance with UBC 7-2 and UL1784-01; meets the requirements of NFPA 105

Sound test

ASTM E90 : Tested in single/multiple sound seal configurations, for sound attenuation in an opening



Applications

- ✓ Aeronautical & Space
- ✓ Electronic manufacture
- ✓ Food Beverage
- ✓ Health Care
- ✓ Medical
- ✓ Pharmaceutical
- ✓ Vivarium

Dimensions

Width	7/16 in	11.1 mm
Height	5/16 in	7.9 mm
Weight	0.33 oz	31.41 gm

TR35-A Aqua Fin : Features

- Compression seal begins : 7/16 in 11.1 mm
- Compression maximum : 5/16 in 7.9 mm
- Impervious to fungus, mold and mildew
- Unaffected by ozone and ultraviolet rays
- Temperature, effective range : -58°F + 450°F
-60C + 230 C

Features

- ✓ Antimicrobial *
- ✓ Chemically neutral
- ✓ Energy efficient
- ✓ GREENGUARD Gold certified

Sanitation & cleaning

- ✓ Chlorine dioxide
- ✓ Formaldehyde gas
- ✓ Hydrogen vapor peroxide
- ✓ Mid pressure wash down
- ✓ Mop wash down

TR35 B : Bubble Seal : Medium to heavy duty silicon gasket

TR35 – B | Bubble-seal silicon gasket seal

Air infiltration

Tested to ASTM E-283.04 for low air leakage. Allows no more than 0.3cfm per square foot at 1.57 psf

S44, S77 and S88 are air infiltration tested in accordance with ASTM E-283-04

Air Pressure – Positive

Tested to retain positive air pressure for 20 minutes at 200 pa

Airworthiness Standards for Interiors

Meets FAR 25.853

Fire Rated

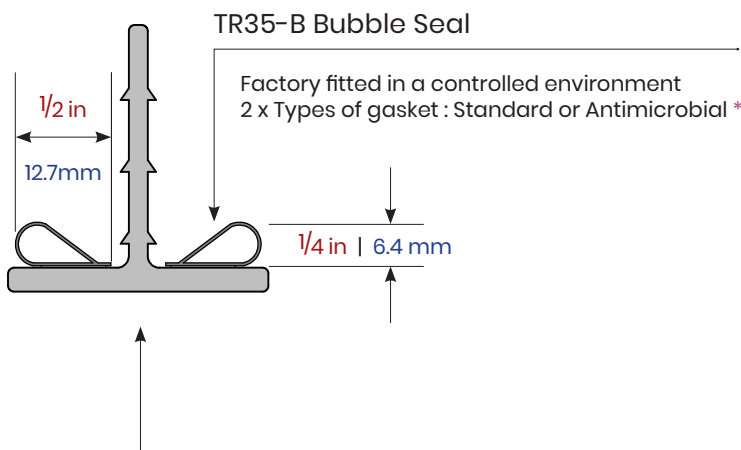
UL10C – Positive Pressure | Self-extinguishing

Smoke Tested

Smoke tested in accordance with UBC 7-2 and UL1784-01; meets the requirements of NFPA 105

Sound test

ASTM E90 : Tested in single/multiple sound seal configurations, for sound attenuation in an opening



Applications

- ✓ Aeronautical & Space
- ✓ Electronic manufacture
- ✓ Food Beverage
- ✓ Health Care
- ✓ Medical
- ✓ Pharmaceutical
- ✓ Vivarium

Dimensions

Width	1/2 in	12.7 mm
Height	1/4 in	6.4 mm
Weight	0.44 oz	41.29 gm

TR35-B Bubble-seal : Features

Compression seal begins : 1/4 in 6.4 mm

Compression maximum : 1/16 in 1.59 mm

Impervious to fungus, mold and mildew

Unaffected by ozone and ultraviolet rays

Temperature, effective range : -58°F + 450°F
-60C + 230 C

Features

- ✓ Antimicrobial *
- ✓ Chemically neutral
- ✓ Energy efficient
- ✓ GREENGUARD Gold certified

Sanitation & cleaning

- ✓ Chlorine dioxide
- ✓ Formaldehyde gas
- ✓ Hydrogen vapor peroxide
- ✓ Mid pressure wash down
- ✓ Mop wash down

TR35 C : Caulking Sealant : Heavy duty

TR35 - C | Caulking

Air infiltration

Tested to ASTM E-283.04 for low air leakage. Allows no more than 0.3cfm per square foot at 1.57 psf

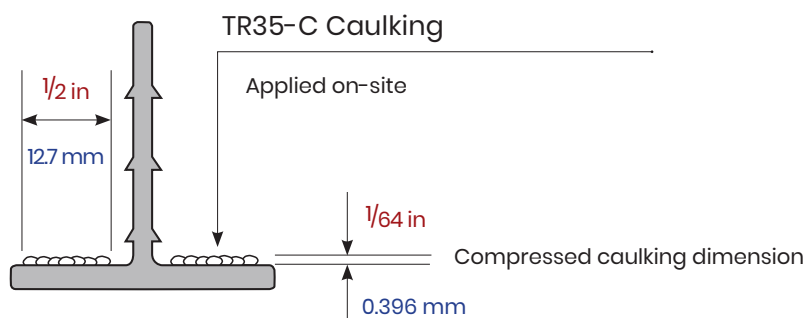
Air Pressure - Positive

Tested to retain positive air pressure for 20 minutes at 200 Pa

Maximum Panel Load

Test data demonstrate the seal impact strength

2'x2' panel	3225 lbf	1462.83 Kg
2'x3' panel	4030 lbf	1827.97 Kg
2'x4' panel	4338 lbf	2194.48 Kg
4'x4' panel	6451 lbf	2926.12 Kg



Applications

- ✓ Aeronautical & Space
- ✓ Electronic manufacture
- ✓ Food Beverage
- ✓ Health Care
- ✓ Medical
- ✓ Pharmaceutical
- ✓ Vivarium

Dimensions

Caulking 1/8 in 3 mm
Weight 0.14 oz 13.12 gm

TR35-C Caulking seal features

- Excellent adhesion to non-porous surfaces
- Contains a food grade fungicide
- Remains permanently flexible.
- Does not shrink, crack, crumble or dry out
- Resists staining, spotting and color changes

High Temperature 350°F | 177°C
Low Temperature -58°F | -17.77°C

Features

- ✓ Mildew resistant
- ✓ Chemically neutral
- ✓ Energy efficient
- ✓ FDA No. 21 CFR 177.2600

Sanitation & cleaning

- ✓ Chlorine dioxide
- ✓ Formaldehyde gas
- ✓ Hydrogen vapor peroxide
- ✓ Mid pressure wash down
- ✓ Mop wash down

TR35 F : Foam Seal : Light to Medium duty

TR35 - F | Foam-gasket

Air infiltration

Tested to ASTM E 283.04 for low air leakage. Allows no more than 0.3cfm per square foot at 1.57 psf

Smoke Tested

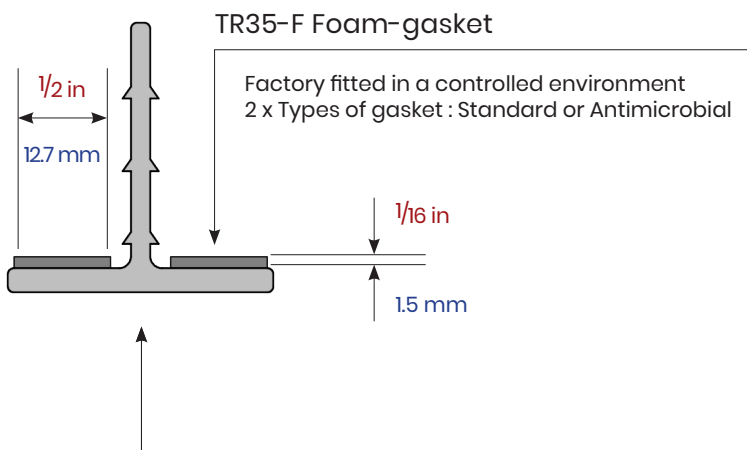
Tested to US 1784 Meets the requirements : NFPA 105-2013 for smoke leakage in an opening
Allows no more than 3.0 cfm per square foot at 0.10"water column (about75 Pa)

Sound test

ASTM E90 : Tested in single/multiple sound seal configurations, for sound attenuation in an opening

Maximum Panel Load

Test data demonstrate the seal impact strength



Applications

- ✓ Aeronautical & Space
- ✓ Electronic manufacture
- ✓ Food Beverage
- ✓ Health Care
- ✓ Medical
- ✓ Pharmaceutical
- ✓ Vivarium

Dimensions

Width	1/2 in	12.7 mm
Height	1/16 in	1.5 mm
Weight	0.08 oz	7.87 gm

Features

- ✓ Chemically neutral
- ✓ Energy efficient
- ✓ FDA Incidental food contact
- ✓ Low compression set
- ✓ Moisture resistant

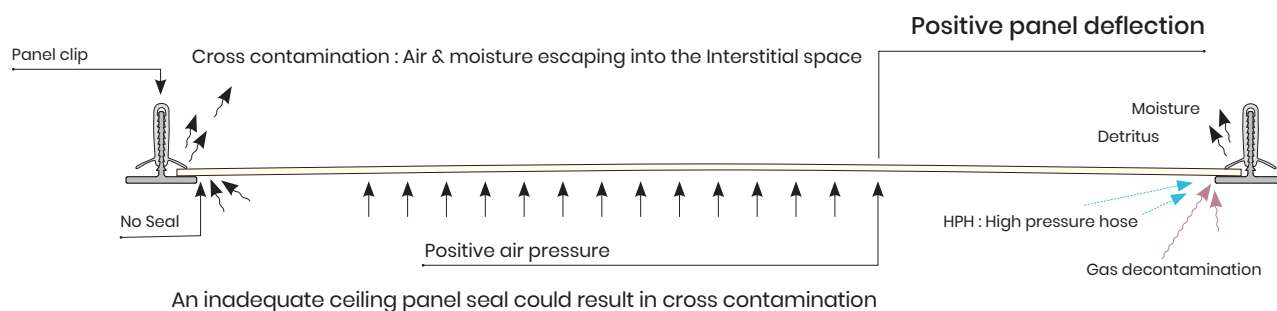
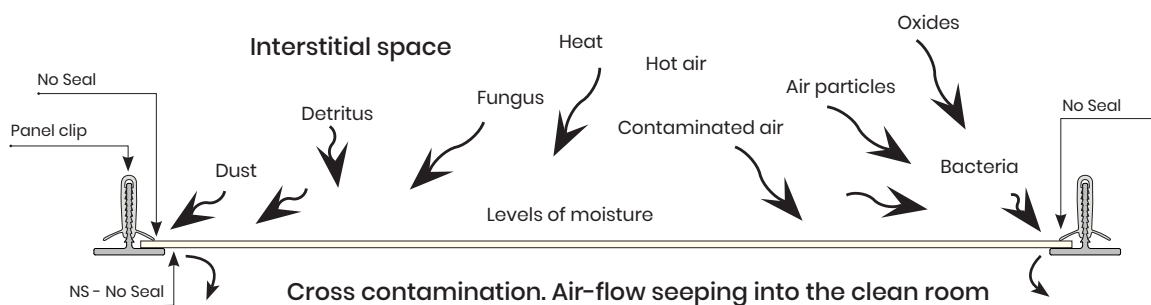
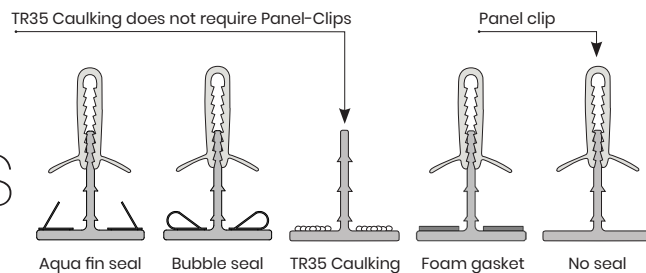
Sanitation & cleaning

- ✓ Dry wipe down
- ✗ High pressure wash
- ✓ Mop wash down

TR35-F Foam polyethylene closed cell foam

Conform to panel surface	Excellent
Cushioning & shock absorption	Excellent
Displacement ASTM E 283 with :	Panel clips
	200 Pa 9.01 mm
	500 Pa 12.69 mm
FDA Meets standards for incidental food contact	
Insulation : Sound	Excellent
Insulation : Thermal	Excellent
Service temperature Range :	-70F to 175F
	-57C to 79C

Gaskets & Seals



i-Panel : Cleaning, Decontamination and Sanitation

Typically clean rooms are subject to harsh chemical cleaning regimes, decontaminations and foam-in-place washdown processes, followed by intense rinsing using high pressure hoses and mops etc. Arcoplast commissioned a series of laboratory tests to determine how gasket seals and TR35 Caulking performed with various cleaning and decontamination procedures.

Note : High pressure wash downs up to 1000 psi will not damage the Arcoplast Fiberglass Gelcoat Ceiling Panel, but it will dislodge panels from the TR35 grid unless secured using Panel clips or TR35-Caulking.

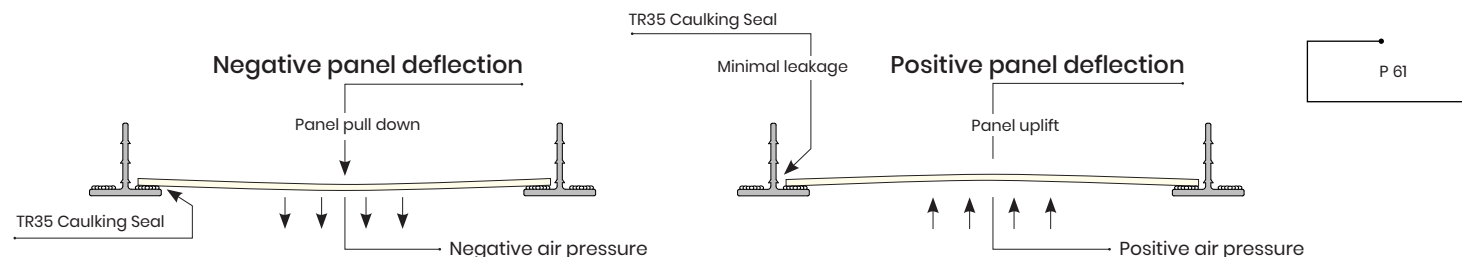
HPH wash down : High Pressure Hose wash-down at 45° degrees @ 1000 psi. Hose nozzle no closer than 1 foot / 300mm

Test panel : i-Panel length : $23\frac{3}{4}$ width : $23\frac{3}{4}$ depth : $\frac{5}{8}$ inch | L : 603.25 W : 603.25 D : 15.9 mm

Seal	Chemical decon*	Foam in place	HPH wash 1000 Psi	Wipe down
Aqua Fin Seal	✓	✓	✓	✓
Bubble Seal	✓	✓	✓	✓
Caulking	✓	✓	✓	✓
Foam gasket	-	-	-	✓
No Seal	-	-	-	✓

* **Chemical Decontamination** : Chlorine Dioxide, Formaldehyde, Hydrogen Vapor Peroxide.

Disclaimer : Prior using any cleaning product please review the Arcoplast chemical and stain resistant information.



Air-Leakage & Deflection test results

The TR35 suspended ceiling system was Lab tested to ascertain how combinations of seals and panels performed under negative & positive air pressure. Test focus : i-Panel. TR 35 Caulking. TR35 Gasket Seals with and without Panel clips.

i-Panel : length : 23 ³/₄ width : 23 ³/₄ depth : ⁵/₈ inch | L : 603.25 W : 603.25 D : 15.9 mm

Negative pressure held for 20 min before readings were taken. **TR35 Caulking air leakage test**

TR35 Caulking	Negative 200 pa				Negative 500 pa	
Air Leakage test	min air leakage	min air leakage	min air leakage	min air leakage		
Panel displacement	0.0393701 inch	1.00 mm	0.0590551 inch	1.50 mm		
Positive pressure	Max. Panel uplift pressure		Max. Panel uplift pressure		Max. Panel deflection	
Panel Uplift Test	4.4816 Bar	448.16 kPa	65 psi	448159 Pa	0.9251969 inch	23.50 mm

Negative pressure held for 20 min before readings were taken. **Gasket air leakage test with panel-clips**

Gasket seals	Negative 200 pa				Negative 500 pa			
Measurement	cfm/ft²	cfm/in.ft	L/s/M²	L/s/per lin.m	cfm/ft²	cfm/in.ft	L/s/M²	L/s/per lin.m
Aqua Fin Seal	0.120	0.057	0.610	0.088	0.139	0.066	0.706	0.102
Bubble Seal	0.086	0.041	0.437	0.063	0.090	0.043	0.457	0.067
Foam Seal	0.028	0.013	0.142	0.020	0.037	0.018	0.188	0.028
No Seal	>0.390*	>0.184*	>1.98*	>0.285*	>0.390*	>0.184*	>1.98*	>0.285*

Positive pressure. Panel displacement test, with Panel clips

Gasket seals	Negative 200 pa		Negative 500 pa	
Aqua Fin Seal	0.255906 inch	6.50 mm	0.255906 inch	8.00 mm
Bubble Seal	0.314961 inch	8.00 mm	0.374016 inch	9.50 mm
Foam Seal	0.3547244 inch	9.01 mm	0.4996063 inch	12.69 mm
No Seal	N/A*	N/A*	N/A*	N/A*

Positive pressure. Panel uplift test, without Panel clips

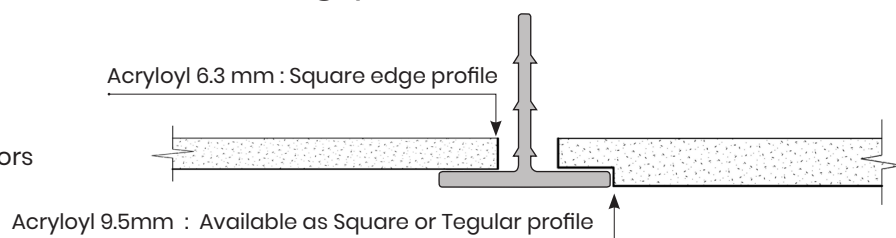
Gasket seals	Max. Panel uplift pressure		Max. Panel uplift pressure		Max. Panel deflection	
Aqua Fin Seal	4.4816 Bar	448.16 kPa	65 psi	448159 Pa	0.177165 inch	4.50 mm
Bubble Seal	4.6884 Bar	468.84 kPa	68 psi	468843 Pa	0.0393701 inch	1.00 mm
Foam Seal	4.6884 Bar	468.84 kPa	68 psi	468843 Pa	0.019685 inch	0.50 mm
No Seal	Maximum pressure PA 468.84 / Psi 68 No deflection due to failing air-pressure					

* N/A : Unable to reach designated pressure.



Acryloyl : solid core ceiling panel 6.3mm / 9.5mm

Color | Pristine white
Available in most PMS colors



Acryloyl – Solid matrix ceiling panels are the most cost effective Arcoplast ceiling panel

Acryloyl : Solid core ceiling panel

Edge profile	Thickness	1 Sq foot	10,000 Sq feet	Thickness	1 Sq M	930.23 Sq M
Square edge	0.250 inch	2.0 Lbs	20000 Lbs	6.3 mm	9.70 Kg	9023 Kg
Square edge	0.375 inch	3.5 Lbs	35000 Lbs	9.5 mm	17.09 Kg	15898 Kg
Tegular edge	0.375 inch	3.0 Lbs	30000 Lbs	9.5 mm	14.60 Kg	13581 Kg

Nominal dimensions : Acryloyl ceiling panels 6mm & 9.5mm

2 x 1 feet	2 x 2 feet	2 x 3 feet	4 x 1 feet	4 x 2 feet
600 x 300 mm	600 x 600 mm	600 x 900 mm	1200 x 300 mm	1200 x 600 mm

Wet / Dry Clean-room

Acryloyl :  Living Building Challenge Criteria : Declare label compliant.

Acryloyl ceiling panels are categorized as chemically neutral and compliant for high grade clean-room environments. Acryloyl ceiling panels have the lowest smoke flame index of all the Arcoplast suspended ceiling panels.

The Tegular recess is tailored specifically to fit each gasket seal or the caulking or the grid without a seal.

Acryloyl 6mm is only available as a square edge ceiling panel.

Acryloyl 9.5mm is available as a tegular or square edge ceiling panel.

For customized ceiling panel sizes, Please contact Arcoplast.

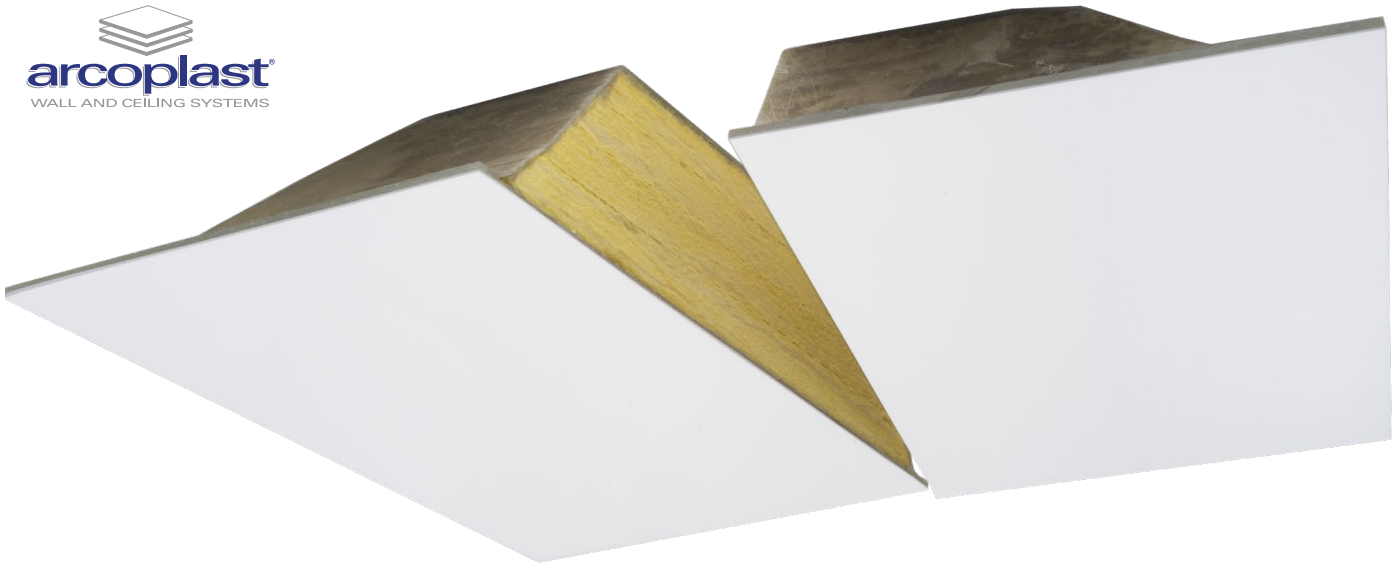
Acryloyl facts and figures

Compliance	Test	Result
City of New York Department of Buildings	MEA 414-04-M	Pass
Determination of Extractives Residue according to US FDA (A-1010 Bio-Seal)	US FDA 21 CFR 177.2600	Pass
 Living Building Challenge 3.1 – Declare label compliant	LBC 3.1	Pass
Product Guide Specification Written According To CSI 3	CSI 3-Part Format	Pass
USDA, FDA, NIH, CDC, NIAID, NSF, Canada Agriculture Compliant	Compliant test	Pass

Fire and Smoke	Test	Result
Measurement of acute lethality decomposition products	UPITT Protocol Toxicity	MEA 64-96-M
On surface burning characteristics (Must be on full composite construction – Canada)	UL S-102 Test	19.9 FS – 10.8 SD
On surface burning characteristics (Must be on full composite construction – USA)	ASTM E-84 Test	15 FS – 5 SD
Vertical burning test	UL 94 – 5VA 500W	Pass

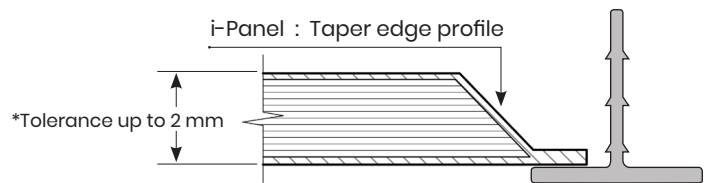
Physical properties	Test	Result
Barcol indentation hardness test	ASTM D 2583	59
Coefficient of linear thermal expansion test	ASTM D 696-03	22.64 x 10 ⁻⁶ in/in °F
Compressive strength properties test	ASTM D 695-02a	12173.2 psi
Degree of surface disfigurement by fungal/algal growth test	ASTM D3274	Pass
DTUL – Deflection temperature under load test	ASTM D 648	200°F
Flexural properties for Reinforced plastics test	ASTM D 790-15	6536.4 psi
Impact resistance test	Mil 1073.2	8ft x 2 lbs
Resistance to mold on the surface test	ASTM D3273	Pass
Resistance to bacteria test	ISO 846A-B-C	Pass
Thermal conductivity test	R-Value ASTM D177	0.524
Sound absorption Test	ASTM C 423-09a / E 795-05	0.04
Sound transmission loss test	ASTM E 90-09 / E 413-10	58
Specular gloss test at 85° degrees	ASTM D 523	97.8
Surface profile & surface finish analysis test	ISO 10012-1	Pc750
Tensile properties test	ASTM D 638-14	3440 psi
Water absorption test	ASTM D 570 (24 hrs)	0.01
Water vapor transmission test	ASTM E 96-05	0.008

Sound Absorption test : ASTM C423-09a/E795-05	Test	Result
Noise Reduction coefficient	NRC	0.05
Sound absorption average	SAA	0.06



i-Panel : closed edge GFRP Insulated ceiling panel

Color | Pristine white
Available in most PMS colors



* i-Panel : Tolerance of up to 2 mm is due to the outer texture of the protective shell being made of chopped fiberglass

TR35 i-Panel : GFRP Gelcoat Insulated core :: 15.9 mm – 53.9 mm

i-Panel : GFRP, insulated ceiling panel edge profiles

Edge profile	Thickness	1 Sq foot	10,000 Sq feet	Thickness	1 Sq M	930.23 Sq M
Tapered edge	0.625 inch	1.15 Lbs	11500 Lbs	15.9 mm	5.61 Kg	5216 Kg
Tapered edge	1.125 inch	1.25 Lbs	12500 Lbs	28.6 mm	6.09 Kg	5670 Kg
Tapered edge	1.625 inch	1.35 Lbs	13500 Lbs	41.3 mm	6.58 Kg	6123 Kg
Tapered edge	2.125 inch	1.45 Lbs	14500 Lbs	53.9 mm	7.07 Kg	6577 Kg

Dimensions : i-Panel ceiling panels ■ Contact Arcoplast for customized sizes

2 x 1 feet	2 x 2 feet	2 x 3 feet	4 x 1 feet	4 x 2 feet	4 x 4 feet
600 x 300 mm	600 x 600 mm	600 x 900 mm	1200 x 300 mm	1200 x 300 mm	1200 x 1200 mm

Wet / Dry Clean-room : Humidity & Temperature ASTM C518 Thermal values

The TR35 i-Panel is a new level of control over humidity and temperature, addressing several insulation factors at the same time, namely : Conductivity, air flow and air leakage.

i-Panel : GFRP insulated ceiling panel

TR35 i-Panel has an internal matrix of 6.0 pcf* (96Kg/m³) comprising of a high density, rigid glass fiber insulation core. The core is encapsulated by a saturated chopped strand glass fiber mat shell, protecting the internal insulation layer from moisture, vermin, dust and contaminant migration. The fully encapsulated internal insulation core does not shed glass fibers, collapse or decompress over time.

TR35 i-Panel ceiling panel has a high gloss Gelcoat surface that provides an impact, chemical, stain resilient, maintenance free finish. i-Panels have excellent light reflective properties that significantly contribute to the efficiency of a working environment.

i-Panel facts and figures

- ✓ **ASTM C612** : Mineral Fiber Block & Board Thermal Insulation, Types IA, IB
- ✓ **ASTM E84** -Class A-Flame spread index 0-25 Smoke development index 0-450
- ✓ **Contains no** : Fire retardant decabrominated or diphenyl (decaBDE)
- ✓ **Face surface** : Fire rated gelcoat, pigmented polyester resin
- ✓ **International compliance** : International Building Code 2021 (IBC 2021)
- ✓ **Made of** : Inorganic glass fibers with a thermosetting resin binder
- ✓ **Nuclear Regulatory Commission Guide** : 1.36, Non-Metallic Thermal Insulation 1

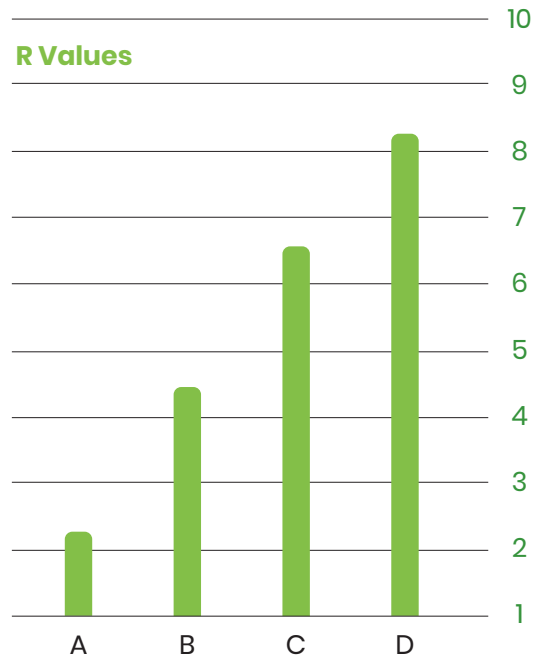
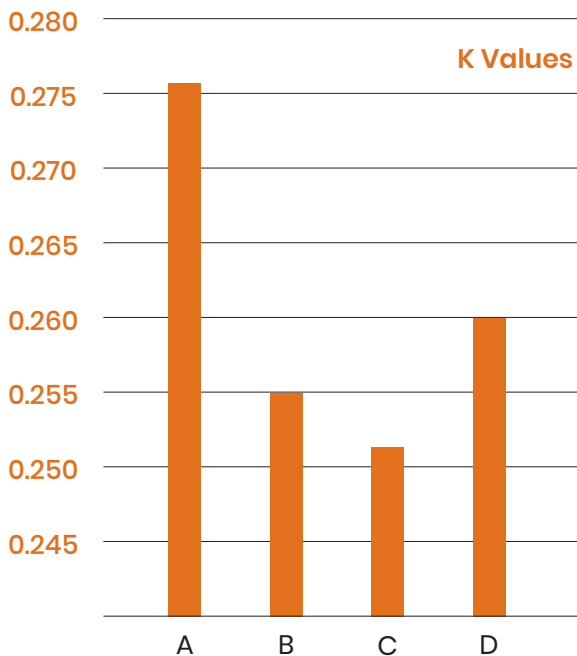
Sound Absorption test : ASTM C423-09a/E795-05	Test	Result
Noise Reduction coefficient	NRC	0.20
Sound absorption average	SAA	0.19

Wet and dry clean-rooms : Humidity & temperature : ASTM C518 thermal values

Standard test method for : Steady State Thermal Transmission, by means of the heat flow apparatus **ASTM C 518-17**

Panel density	Temperature range	Humidity range
3.34 lbm/sq ft 1.632 g/cm ³	F 36° to 100° C 2.2° to 37.7°	20% to 100%

note : Panel density, temperature and humidity range were constant for all TR35 i-Panel tests



Graph	*Panel Thickness		K Value	R Value
A	0.654 inch	16.61 mm	0.276	2.368
B	1.153 inch	29.29 mm	0.255	4.523
C	1.678 inch	42.62 mm	0.252	6.648
D	2.171 inch	55.14 mm	0.260	8.344

The engineers report presents different thicknesses. The tolerance of 2 mm is due to the texture of the chopped fiberglass shell*

Arcoform shroud system

Arcoform Form meets function

Arcoform is a fully integral modular profile system. Made up of different profiles, when assembled, form into a protective shroud. The shroud is a division barrier, designed to conceal and protect building structures and MEP services.

Beam & column covers, bulkheads, soffits, fascias, utility chases are the standard profiles available with a range of variables. The custom profiles are made to specification and have almost unlimited design possibilities.

Please Note : All Arcoform shrouds are manufactured with a high gloss gelcoat surface.

Terminology

Arcoform : Molded fiberglass, Gel Coat surface, protective shroud.

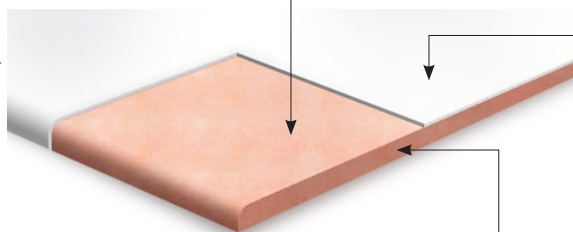
Arcoform profile : Shape and design of the molded fiberglass shroud.

Available as : Beam & column covers, bulkheads, soffits, fascias & utility chases.

Arcoform shroud : Architectural protective covering for building structures, MEPs and plant equipment.

Arcoform shroud profile, physical properties

Arcoform : Gelcoat surface, fire retardant resin embedded glass strand fiber-mat matrix.



Gelcoat high gloss surface : 0.018 inch | 0.4572 mm

Color – White, or available in most PMS colors

Color fast, antimicrobial, chemical resilient

No rejuvenating maintenance

Weights and dimensions

Thickness : 1/8 inch | 3 mm

Weight : 1 pound per sq foot | 4.88 Kg/Sq meter

Length : 12 feet | 3658 mm (includes flange 1 1/2 inch | 38 mm)

Width and Height : Relevant to final profile design

Flange Overlap • Square Cut

Joint Flush butt joint • Joggle joint

Adhesive Bio-Seal A-1010 adhesive sealant finishing compound

Factory fitted insulation : Closed-cell polyurethane foam insulation

Density	ft ³ : 2 pounds	M ³ : 0.0566337 Kg
Thickness	1/2 - 2 inch	12.5 - 50 mm
Weight	1/2 inch = 0.28 lb/ft ²	12.5 mm = 1.365 Kg/Sq M
R-value	Per inch = R-6.56	Per 25.5 mm = R-6.56

Arcoform shroud cleanroom compliance : ISO 4, 5, 6, 7, 8 • BSL-1 • BSL-2 • BSL-3 • cGMP

Arcoform ASTM test results

Description : Color fastness properties	Test	Result
Arcoplast cleanability & stain resistance	ISFA 2-01/td	Pass
Arcoplast surface and sealant chemical compatibility	ASTM D 1308-02	Pass
Arcoplast surface and sealant chemical compatibility	ISO 2812-4	Pass
Chlorine dioxide decontamination procedure	Coloration	Pass
Formaldehyde gas decontamination procedure	Coloration	Pass
Hydrogen peroxide vapor decontamination procedure	Coloration	Pass
Exposure cycles	UV test	Pass

Description : Compliance

USDA, FDA, NIH, CDC, NIAID, CANADA AGRICULTURE Compliant

Product Guide Specification Written According To CSI 3-Part Format

Description : Fire and Smoke development	Test	Result
On surface burning characteristics (USA)	ASTM E-84	0-25 FS - 0-450 SD
On surface burning characteristics (Canada)	UL S-102	18,9 FS - 634 SD

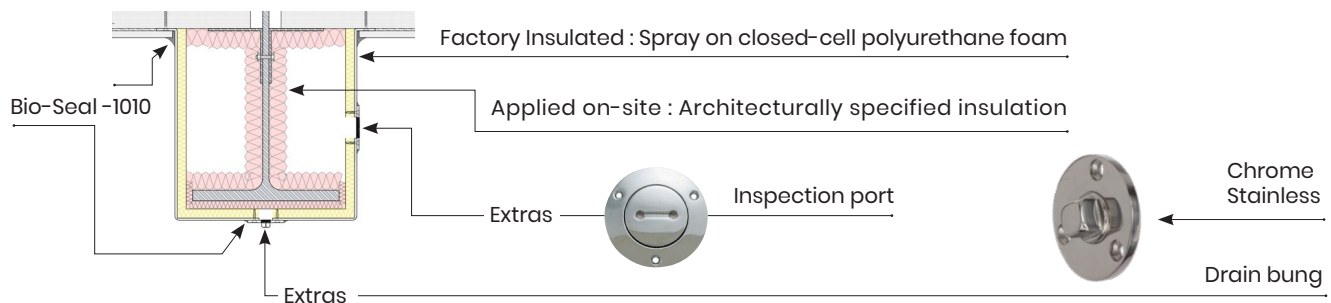
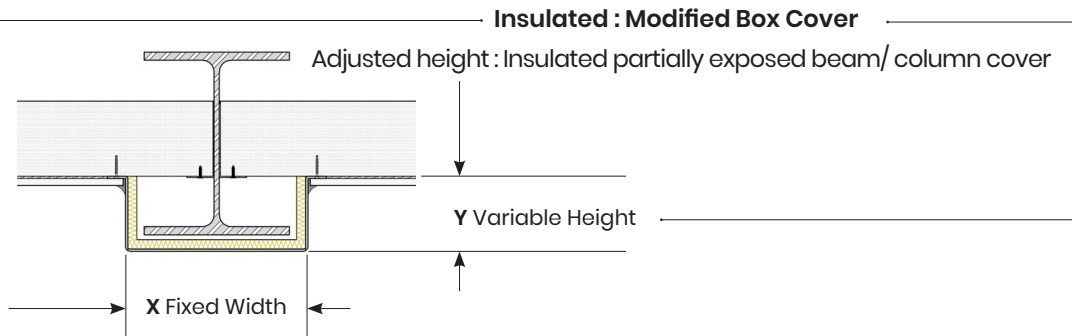
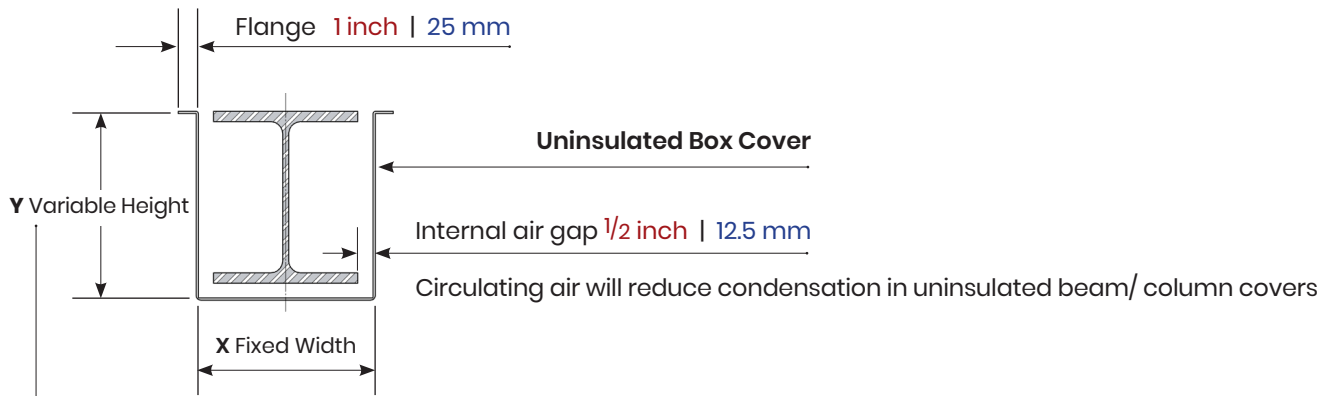
Description : Surface properties	Test	Result
The action of microorganism resistance to fungi and bacteria	ISO 846	Pass
Degree of surface disfigurement by fungal or algal growth, soil or dirt accumulation	ASTM D 3274	Pass
Resistance to growth of mold on surface	ASTM D 3273	Pass
Resistant to vermin and rodents, has no nutritional value		

Description : Physical properties	Test	Results
Barcol hardness	ASTM D 2583	Ave 46.3
Compressive strength properties	ASTM D 695-02A	17506.7 (PSI)
Flexural properties reinforced plastics	ASTM D 790-03	27753.3 (PSI)
Tensile properties	ASTM D 638-03	10659 (PSI)

Coefficient of thermal expansion	ASTM E 228	58.5 L (-30C°) (mm)
	ASTM E 228	58.89 L (30C°) (mm)
Thermal conductivity	ASTM C 518-17	0.15 BTU in/ft-h-degree F (0.022 W/m-degree C)
Thermal resistance	ASTM C 518-17	R : 6.56 per inch of foam
Water vapor transmission	ASTM E 96-05	0.01

Arcoform beam, column covers

Box beam, column covers | Insulated or Uninsulated | Application : Vertical or horizontal



Extras : Factory fitted or retro fitted : Screw-in drain bung. Inspection port.

Standard : Insulated and Uninsulated Box beam column cover dimensions

Arcoform profile	Width X Fixed		Height Y Variable		Length manufactured	
Box cover	6 inch	152 mm	1 - 6 inch	25 - 152 mm	12 feet	3658 mm
Box cover	6 inch	152 mm	1 - 12 inch	25 - 305 mm	12 feet	3658 mm
Box cover	10 inch	254 mm	1 - 10 1/2 inch	25 - 254 mm	12 feet	3658 mm
Box cover	16 3/4 inch	425 mm	1 - 12 1/2 inch	25 - 317 mm	10 feet	3048 mm

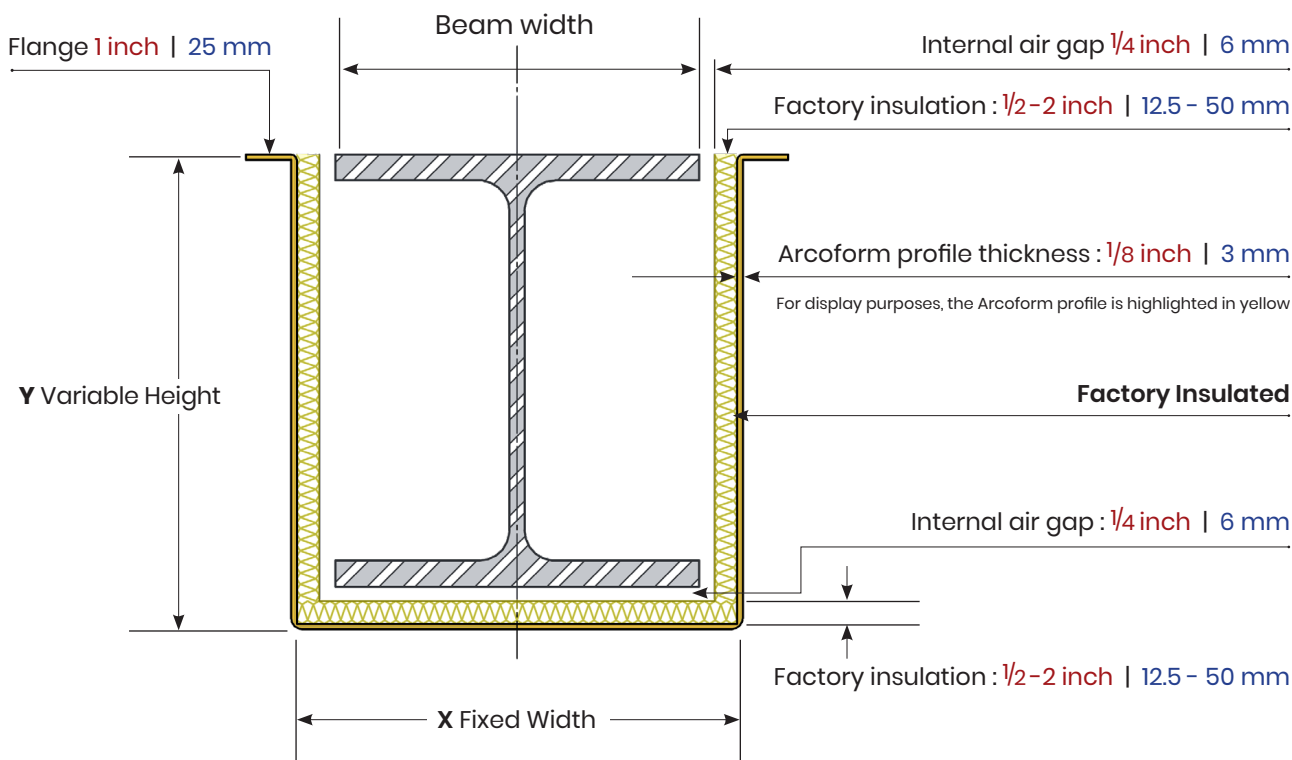
Weight : 1 Lb/Sq foot | 4.88 Kg/Sq Meter

Flange : 1 inch | 25 mm

Joint : Joggle joint

Arcoform insulated covers

Box beam, column covers | Insulation & dimensions | Application : Vertical or horizontal



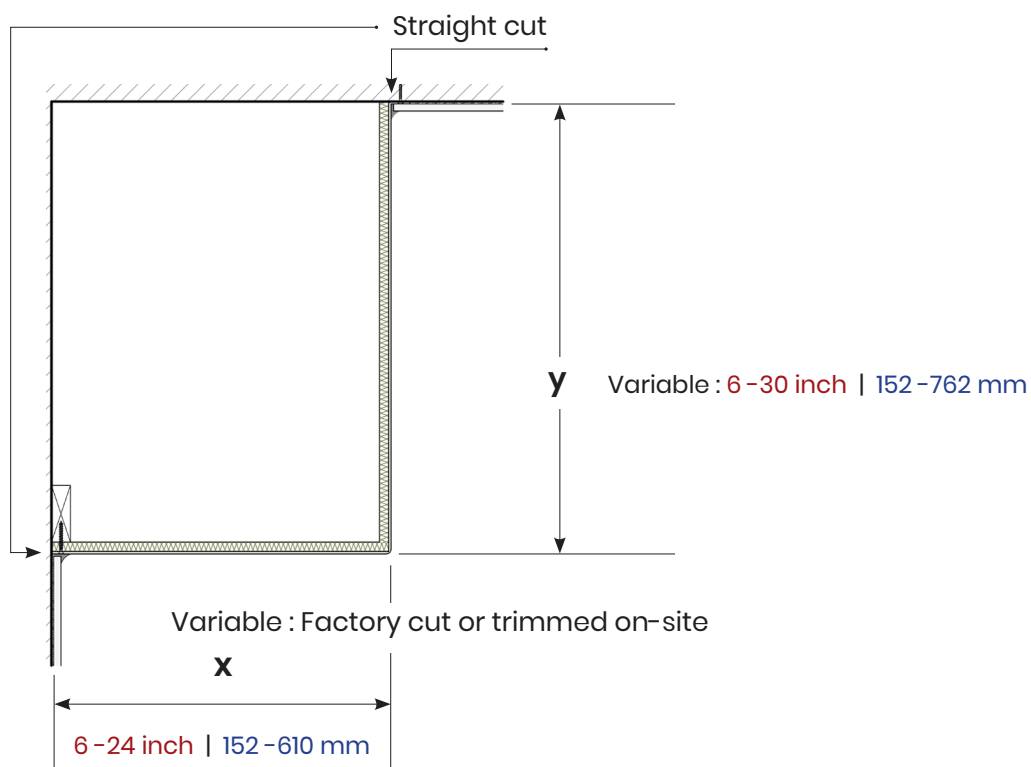
Fixed : Profile dimension, relating to height or width, are fixed & can not be cut or trimmed
Variable : Within given dimensions the profile is able to be factory cut, or trimmed on-site

Extras : Factory fitted or retro fitted : Screw in drain bung. Inspection port

Factory fitted insulation : Closed-cell polyurethane foam insulation

Density	ft ³ : 2 pounds	M ³ : 0.0566337 Kg
Thickness	1/2 - 2 inch	12.5 - 50 mm
Weight	1/2 inch = 0.28 lb/ft ²	12.5 mm = 1.365 Kg/Sq M
R-value	Per inch = R-6.56	Per 25.5 mm = R-6.56

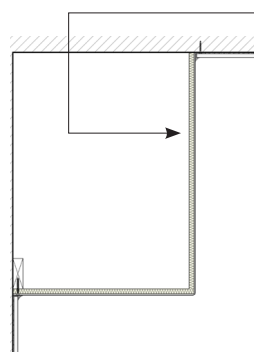
Corner cover | Insulated or uninsulated | Application : Vertical or horizontal



Arcoform profile	Width X Variable		Height Y Variable		Length manufactured	
Corner cover	6 -24 inch	152 -610 mm	6 -30 inch	152 -762 mm	12 feet	3658 mm
Weight : 1 Lb/Sq foot 4.88 Kg/Sq Meter			Flange : Straight cut		Joint : Butt joint	

Extras : Factory fitted or retro fitted, screw in drain bung. Inspection port.
Access hatches with or without, inspection monitoring window.

Insulation Closed-cell polyurethane foam



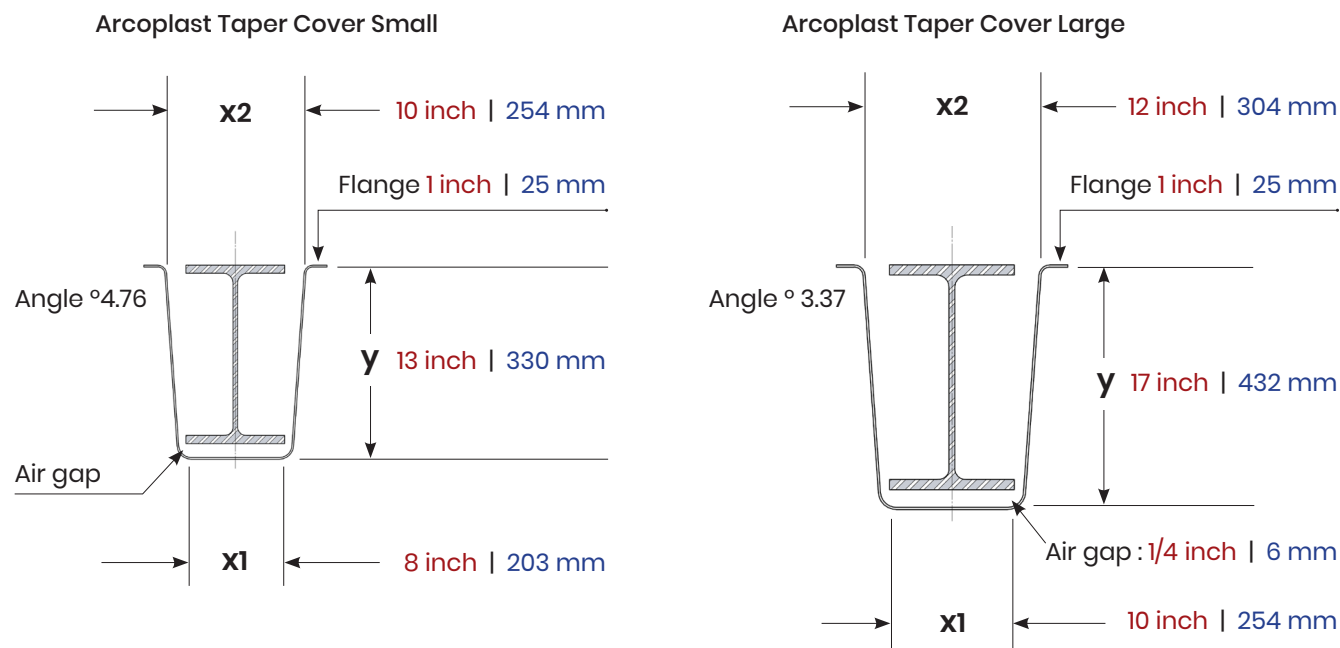
Insulation properties

Factory fitted insulation : Closed-cell polyurethane foam insulation

Density	ft ³ : 2 pounds	M ³ : 0.0566337 Kg
Thickness	1/2 -2 inch	12.5 -50 mm
Weight	1/2 inch = 0.28 lb/ft ²	12.5 mm = 1.365 Kg/Sq M
R-value	Per inch = R-6.56	Per 25.5 mm = R-6.56

Box, Corner and Taper covers are designed to encase : Columns/ beams, water pipes, air vents, MEP services, cables, ducting, exhaust conduits etc...

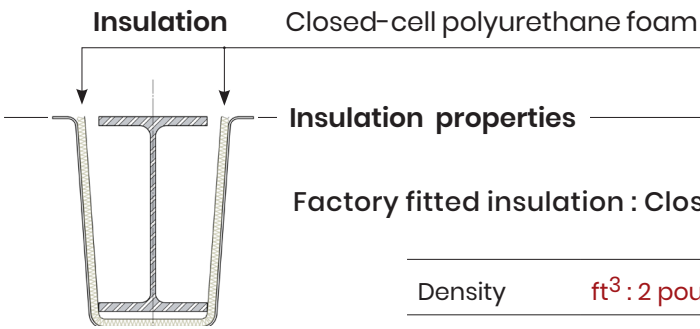
Taper cover | Insulated or uninsulated | Application : Vertical or horizontal



Arcoplast Taper covers are available in two sizes : small and large. The dimensions for the width are fixed. The dimensions for the height can be factory cut or trimmed on-site. The length can be trimmed on-site.

Arcoform profile	Width X Fixed		Height Y Fixed		Length manufactured	
Taper cover Sm	X1 8 inch X2 10 inch	203 mm 254 mm	13 inch	330 mm	12 feet	3658 mm
Taper cover Lg	X1 10 inch X2 12 inch	254 mm 304 mm	17 inch	431 mm	12 feet	3658 mm
Weight : 1 Lb/Sq foot 4.88 Kg/Sq Meter			Flange : 1 inch 25 mm		Joint : Joggle joint	

Extras : Factory fitted or retro fitted : Screw in drain bung. Inspection port



Factory fitted insulation : Closed-cell polyurethane foam insulation

Density	ft ³ : 2 pounds	M ³ : 0.0566337 Kg
Thickness	1/2 - 2 inch	12.5 - 50 mm
Weight	1/2 inch = 0.28 lb/ft ²	12.5 mm = 1.365 Kg/Sq M
R-value	Per inch = R-6.56	Per 25.5 mm = R-6.56

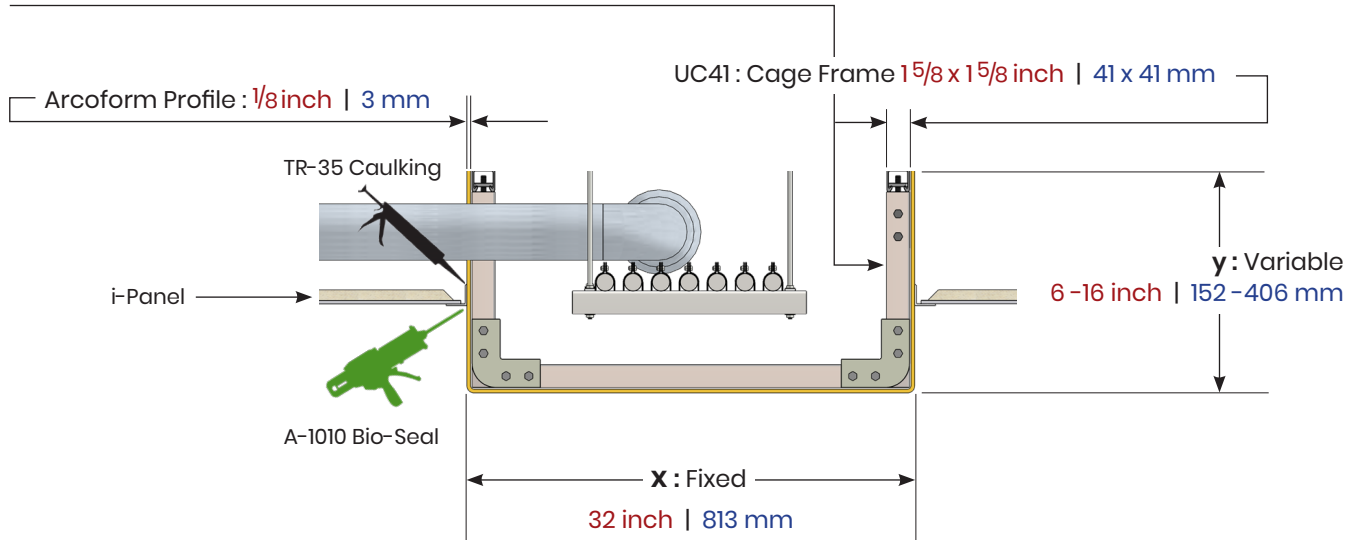
For more information : Please contact Arcoplast.

Arcoform utility chases

Utility Chase | Box profile | Insulated or uninsulated | Application : Vertical or horizontal

For display purposes, the Arcoform Utility Chase profile is highlighted in yellow

UC41 : 41mm U Channel, pultruded polyester resin, non-metallic cage frame



Box Utility Chase dimensions : Maximum $x + y$ footprint = 64 inch | 1626 mm

Width : X fixed		Height : Y variable		Profile wall thickness		Length manufactured	
32 inch	813 mm	6 - 16 inch	152 - 406 mm	1/8 inch	3 mm	12 feet	3658 mm
Weight : 1 Lb/Sq foot 4.88 Kg/Sq Meter				Flange : Straight cut		Joint : Butt joint	

Extras : Factory fitted or retro fitted

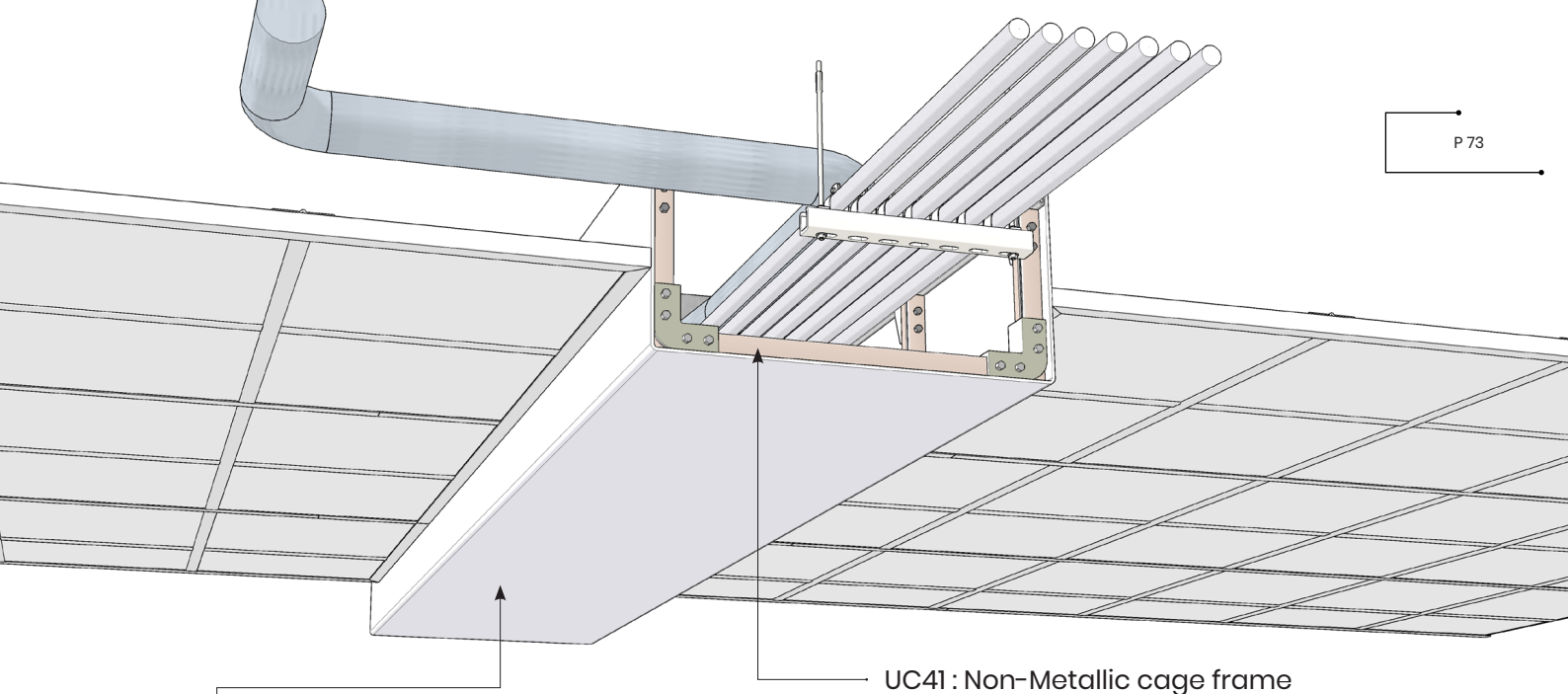
Screw in drain bung. Inspection port. Access hatch, with or without inspection window

Factory fitted insulation : Closed-cell polyurethane foam insulation

Density	ft ³ : 2 pounds	M ³ : 0.0566337 Kg
Thickness	1/2 - 2 inch	12.5 - 50 mm
Weight	1/2 inch = 0.28 lb/ft ²	12.5 mm = 1.365 Kg/Sq M
R-value	Per inch = R-6.56	Per 25.5 mm = R-6.56

Application : Clean-rooms, food & beverage, pharmaceutical, medical, life science industries...

Arcoform shroud cleanroom compliance : ISO 4, 5, 6, 7, 8 • BSL-1 • BSL-2 • BSL-3 • cGMP



UC41 : Non-Metallic cage frame

Utility Chase : Molded one piece reinforced fiberglass profile with a high gloss gelcoat surface

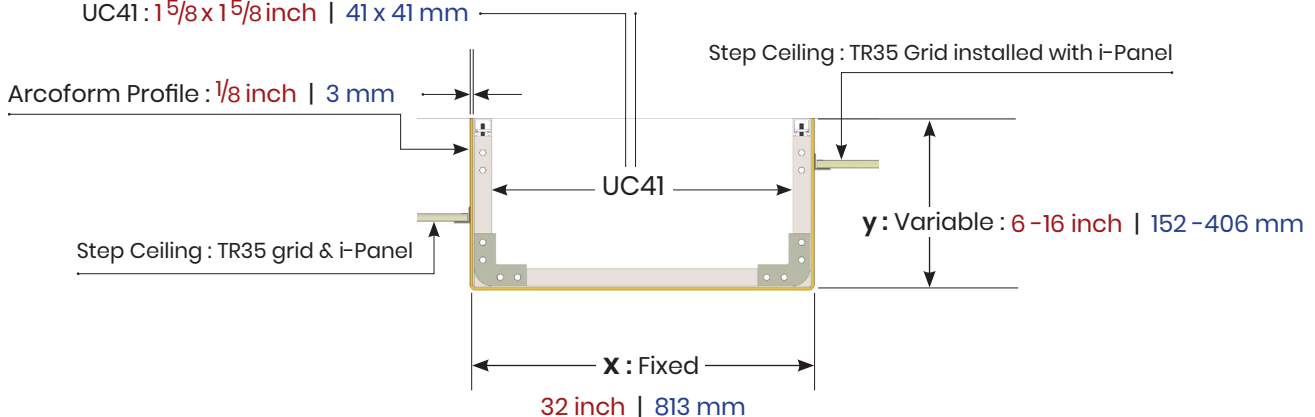
Simplicity... is in the design

UC41 : Non-metallic cage frame assembled using pultruded fiberglass struts

UC41 : 1⁵/₈ x 1⁵/₈ inch | 41 x 41 mm

Arcoform Profile : 1/8 inch | 3 mm

Step Ceiling : TR35 Grid installed with i-Panel



On-site assembly

The Arcoform system fits together like a giant kit set. Arcoform cage frames are mechanically fastened together, the shrouds are modular and assemble together without brackets, external fasteners or any auxiliary attachments. As there are no bulk weight components or complicated installment processes, a small experienced crew can quickly and efficiently handle and install the most complex of designs.

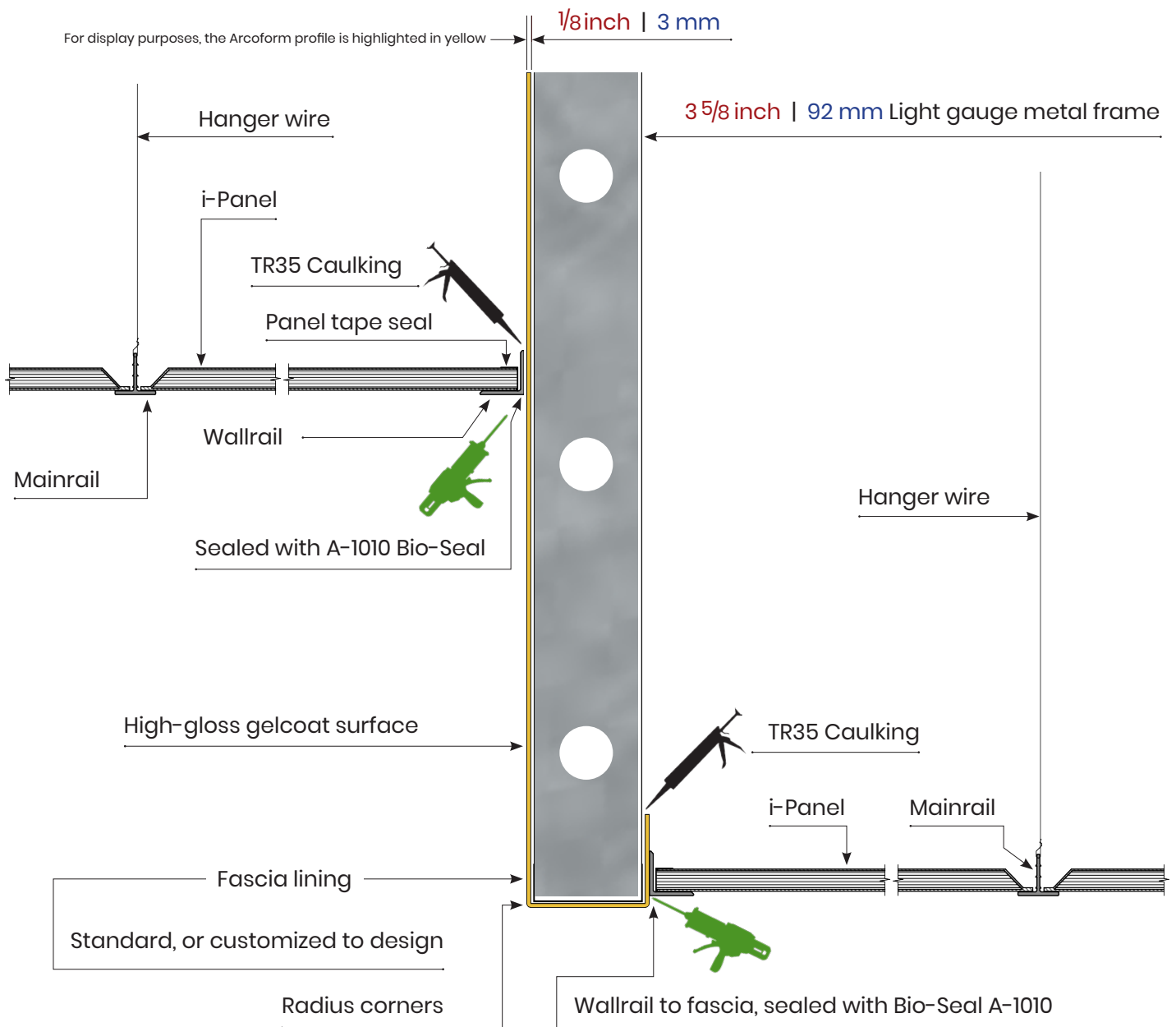
Installation or retro fitting auxiliary components is a clean on-site process. No specialized tools are required, there is no plastering, sanding, painting, welding or pop riveting.

Arcoform shrouds and integration of most third party components are joined, sealed and finished using Bio-Seal A-1010. The Bio-Seal adhesive sealant finishing compound does not distort, crack, shrink or color blotch.

In the event a shroud is damaged, it is easily repaired using the Arcoplast GC Repair kit.

Arcoform fascias

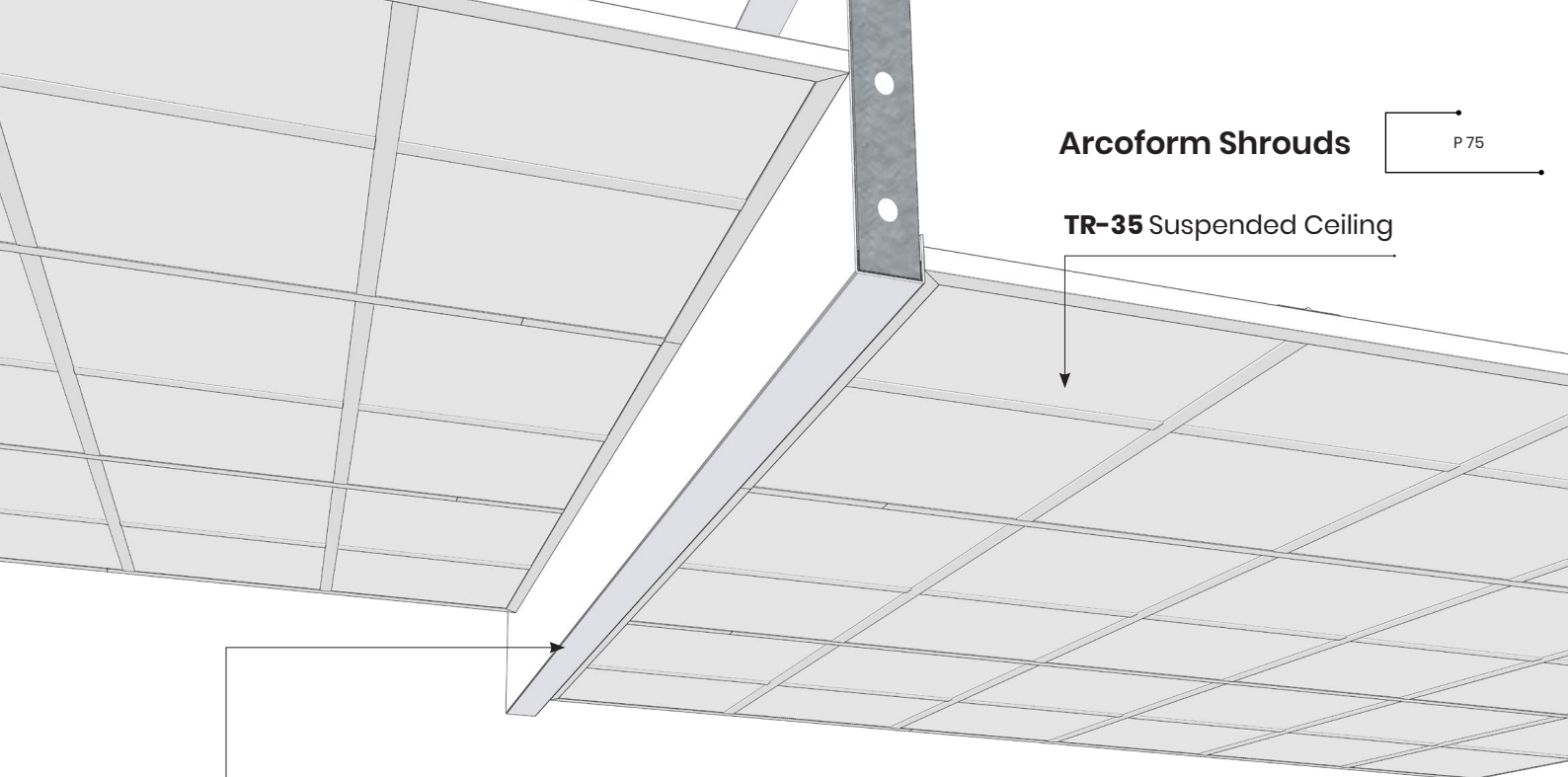
Arcoform Standard and customized fascias available in a range of sizes and formats



Arcoform Fascias and Bulkheads

Arcoform fascia shrouds are designed to fit around designated support framing. The frame ensures the fascia shroud retains its shape without sagging, shrinking or undulating. Arcoform shrouds do not, delaminate, bubble, blister or fray.

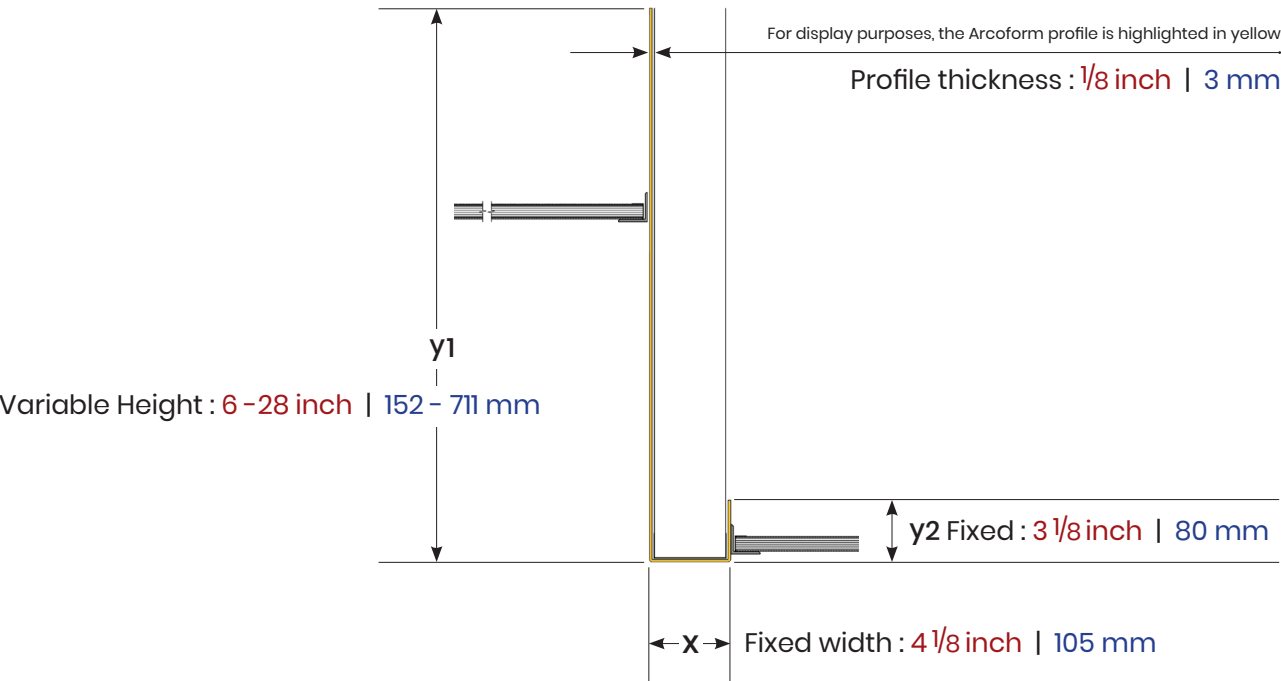
All Arcoplast products must be installed by qualified, experienced installers.



TR-35 Suspended Ceiling

Fascia : Molded one piece reinforced fiberglass shroud. Step ceiling fitted with i-Panel.

Fascia | Standard profile | Insulated or uninsulated | Application : Vertical or horizontal



Width X Fixed		Height Y1 Variable		Height Y2 Fixed		Length manufactured	
4 $\frac{1}{8}$ inch	105 mm	6 - 28 inch	152 - 711 mm	3 $\frac{1}{8}$ inch	80 mm	12 feet	3658 mm
Weight : 1 Lb/Sq foot 4.88 Kg/Sq Meter				Flange : Straight cut		Joint : Flush butt joint	

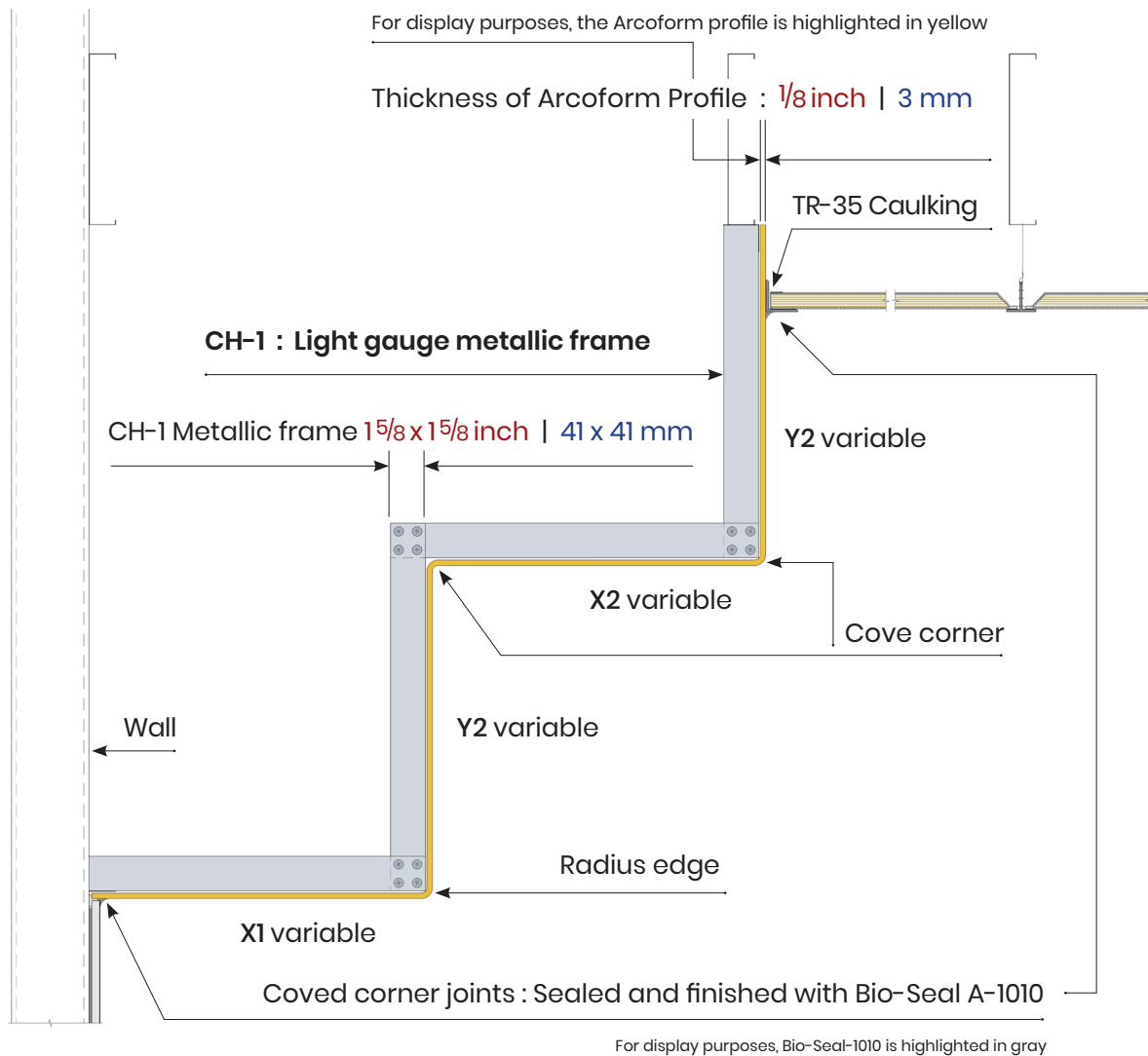
Architecturally specified insulation : Applied on-site.

Standard fascia : Designed to wrap around light gauge metal frames : $3\frac{5}{8}$ inch | 92 mm.

Contact Arcoplast to have a customized profile, fabricated to your design & specifications.

Arcoform step utility chase

Utility Chase | Customized Step profile | Insulated or uninsulated | Application : Vertical or horizontal

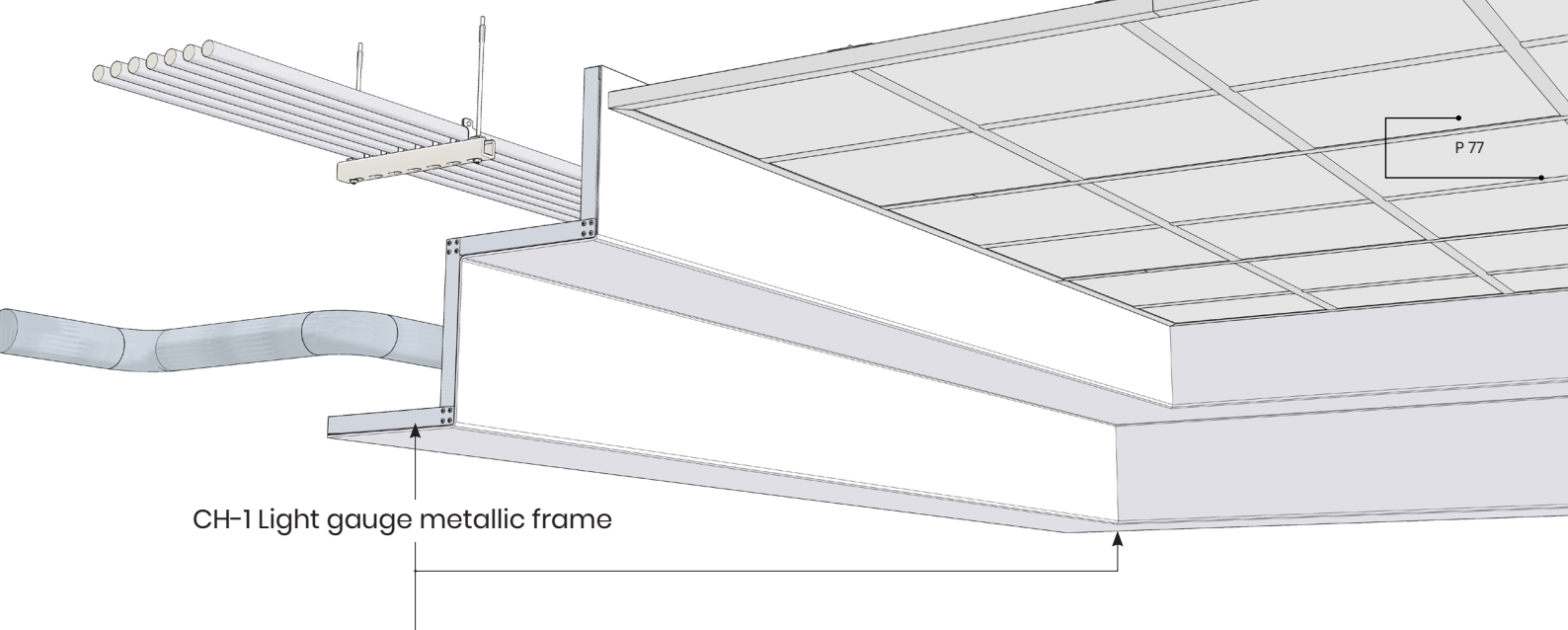


Standard fitted Length = 12 feet | 3658 mm (includes flange $1\frac{1}{2}$ inch | 38 mm)

X1-Y1-X2-Y2 : Asymmetric variable dimensions

Step Utility Chase Profiles are Flush butt jointed.

Having a customized Arcoform profile is sometimes the only option.
For more information on how to proceed please call Arcoplast.



CH-1 Light gauge metallic frame

Arcoform Utility chases connect together using a flush butt joint and A-1010 Bio-Seal three in one adhesive sealant finishing compound, forming a seamless air tight water proof joint.

Functional performance

Ceilingscapes have a foot print often entangled in plant equipment, diverse linear and non linear projections, accidented ceilings with different geometries. The conundrum architects, engineers designers face, is how to address all these factors and create a practical, functional, aesthetically pleasing outcome.

Arcoform Shrouds are a new science in the field of clean room division barrier systems. The protection of a buildings fundamental structure and infrastructure is critical to the longevity and uninterrupted delivery of a buildings equipment and structural performance. Arcoform shrouds significantly diminish the risk of failure by encapsulating and protecting the columns, beams, MEP's and plant equipment of the building.

Arcoform profiles have coved internal and rounded external edges, preventing harboring of water, inhibiting development of mold and mildew; essential for efficient cleaning and good house keeping practices. Arcoforms high gloss gelcoat ultra smooth non-porous surface is antimicrobial, resilient to mildew, bacteria and chemical staining.

From design, manufacture to final application

Consistent end results, through immutable quality controlled fabrication and installment, ensures increased performance in hygiene, longevity of critical infrastructure, with no ongoing maintenance programs or extra hidden costs, equating to a cost return on investment.

Practical aesthetics

Arcoform shrouds are made up of elegant clean modern lines, streamline shapes, easy to clean accented radius coves and corners with no hard edges or exposed auxiliary components.

Thank you for considering Arcoplast

Mainrail • Crossrail • Wallrail

Rails	Name	Imperial		Metric		Pcs/Ctn	P/N
	Mainrail	12 ft ³ / ₄ inch	80 Lbs	3677 mm	36.28 Kg	24 x items	TR-6000
	Crossrail 1 ft	1 ft	25 Lbs	305 mm	11.34 Kg	96 x items	TR-6001
	Crossrail 2 ft	2 ft	50 Lbs	610 mm	22.68 Kg	96 x items	TR-6015
	Crossrail 3 ft	3 ft	35 Lbs	915 mm	15.50 Kg	48 x items	TR-6003
	Crossrail 4 ft	4 ft	50 Lbs	1220 mm	22.68 Kg	48 x items	TR-6010
	Wallrail	12 ft	76 Lbs	3657 mm	34.48 Kg	20 x items	WR-5060

Gasket seals and Caulking

Gaskets	Name	Fitted	Pcs/Ctn	P/N
	Aqua Fin seal	*Factory fitted	per meter fitted	TR-AF
	Bubble Seal	*Factory fitted	per meter fitted	TR-BS
	TR35 Caulking	Applied on-site	per carton 12 items	TR-CK
	Foam Gasket	*Factory fitted	per meter fitted	TR-FG16
	Closure Foam Gasket	Applied on-site	per meter fitted	TR-FG47

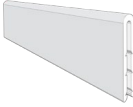
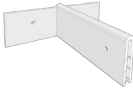
*Factory fitted gaskets involve 6-8 week lead time. For further information regarding factory fitted gaskets, please contact Arcoplast
P/N number for Rails installed with TR35 Caulking or factory fitted with Gasket seals.

1/ Select the quantity and type of Rail using the appropriate P/N number.

2/ Select the P/N number for the appropriate gasket or chalking for the assigned area.
Note : Calculate the quantity of the gasket or caulking based on the reflected ceiling plan, dimensions and configuration of the Rail Bays.

Hint : If there are multiple areas with different configurations, it is recommended to calculate each area separately.

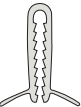
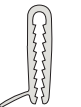
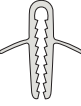
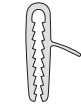
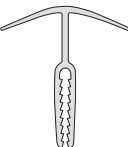
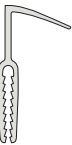
Clamps

Clamps	Name	Imperial		Metric		Pcs/Ctn	P/N
	Splice clamp	6 inch	30 Lbs	152 mm	13.61 Kg	300 x items	TR-5020
	T-Clamp	4 1/4 inch	1 Lbs	108 mm	0.45 Kg	10 x items	TR-5010
	Interlock Clamp*	8 inch	38 Lbs	204 mm	17.24 Kg	300 x items	TR-5035
	Interlock modified Clamp*	Modified to specification or on-site				300 x items	TR-5035 MC
	Overlock Clamp	4 inch	20 Lbs	102 mm	9.07 Kg	250 x items	TR-5040
	Offset Clamp*	8 inch	38 Lbs	204 mm	17.24 Kg	300 x items	TR-5030
	Offset modified Clamp*	Modified to specification or on-site				300 x items	TR-5030 MC



* Offset and Interlock clamps can be modified on site or factory cut to specification

Clips

Clips	Name	Imperial		Metric		Pcs/Ctn	P/N
	Panel Clip PC-50 Double	1/8 inch	1.13 Lbs	3 mm	0.820 Kg	100 x items	TR-5050D
	Panel Clip PC-50 Single	1/8 inch	1.10 Lbs	3 mm	0.760 Kg	100 x items	TR-5050S
	Panel Clip PC-51 Double	5/8 - 1 1/4 inch	2. Lbs	16 - 32 mm	0.9 Kg	100 x items	TR-5051D
	Panel Clip PC-51 Single	5/8 - 1 1/4 inch	2. Lbs	16 - 32 mm	0.9 Kg	100 x items	TR-5051S
	Panel Clip PC-52 Double	2 inch	2. Lbs	50 mm	0.9 Kg	100 x items	TR-5052D
	Panel Clip PC-52 Single	2 inch	2. Lbs	50 mm	0.9 Kg	100 x items	TR-5052S

Fasteners • Rivets washers • Wafer screws

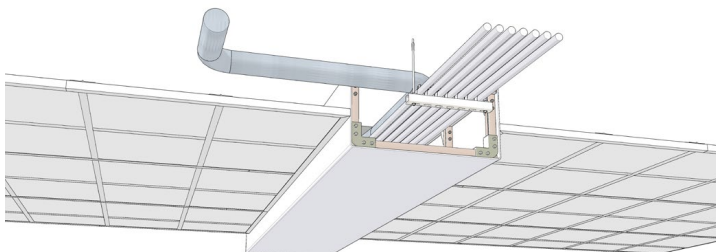
Fastener	Name	Imperial		Metric		Pcs/Ctn	P/N
	Lockrivet R13A 3x13mm Rivet & Washer Aluminum	1/8 x 1/2 inch	7.7 oz	3 x 13 mm	218 g	100 x items	TR-7020
	Lockrivet R13S 3x13mm Rivet & Washer Stainless	1/8 x 1/2 inch	8.7 oz	3 x 13 mm	246 g	100 x items	TR-7025
	Lockrivet R13Z 3x13mm Rivet & Washer Zinc plated steel	1/8 x 1/2 inch	8.2 oz	3 x 13 mm	232 g	100 x items	TR-7030
	Screw Wafer Head. 8 Gauge	5/8 inch	4.6 oz	15.8 mm	130 g	100 x items	TR-7035

BioSeal A-1010

	Name	Imperial		Metric		Pcs/Ctn	P/N
	BioSeal A-1010 : Twin cartridge	13.5 Fl oz	1.67 Lb	400 ml	644 g	1 x item	A-1010

3M Tape • ArcoZap Spray

Extras	Name	Imperial		Metric		Pcs/Ctn	P/N
	3M#396 Panel Tape Seal 2 inch	2 in x 36 yards	8.4 oz	50 mm x 33 M	238 g	1 x item	3M#396-2
	3M#396 Panel Tape Seal 3 inch	3 in x 36 yards	12.6 oz	75 mm x 33 M	340 g	1 x item	3M#396-3
	ArcoZap : Acrylic Protection spray	12 oz	13.7 oz	0.355 Lt	388 g	1 x item	TR-7060



Arcoform Shrouds : Product Numbers

There are many profiles and options for Arcoform shrouds, please contact Arcoplast to discuss your project requirements.

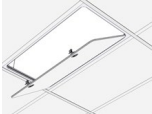
Hangers

Hanger	Name	Imperial		Metric		Pcs/Ctn	P/N
	Hanger Wire Galvanized 12 Gauge	12 feet	25 Lbs	3657 mm	11.34 Kg	50 x units	TR-7210
	Hanger wire Monel 12 Gauge	12 feet	19 Lbs	3657 mm	8.62 Kg	50 x units	TR-7220
	Hanger Wire Stainless 12 Gauge	12 feet	25 Lbs	3657 mm	11.34 Kg	50 x units	TR-7230
	TR35-7400 Lather carrier channel clip					100 x units	TR-7400

Ceiling Panel Latch

Latch	Name	Imperial		Metric		Pcs/Ctn	P/N
	Ceiling Panel latch	7.3 oz	per unit	20 g	per unit	100 x items	TR-5059

Ceiling Service and Access Hatches

Service	Name	Imperial		Metric		Pcs/Ctn	P/N
	Service Hatch : Solid door	8 x 8 inch	7.67 lbs	203 x 203 mm	3.47 Kg	1 x unit	SH-SD 88
		12 x 12 inch	9.85 lbs	305 x 305 mm	4.46 Kg	1 x unit	SH-SD 1212
		16 x 16 inch	15.32 lbs	406 x 406 mm	6.94 Kg	1 x unit	SH-SD 1616
		20 x 20 inch	23.90 lbs	508 x 508 mm	10.84 Kg	1 x unit	SH-SD 2020
	Service Hatch : Clear door	8 x 8 inch	7.67 lbs	203 x 203 mm	3.47 Kg	1 x unit	SH-CD 88
		12 x 12 inch	9.85 lbs	305 x 305 mm	4.46 Kg	1 x unit	SH-CD 1212
		16 x 16 inch	15.32 lbs	406 x 406 mm	6.94 Kg	1 x unit	SH-CD 1616
		20 x 20 inch	23.90 lbs	508 x 508 mm	10.84 Kg	1 x unit	SH-CD 2020
Access	Name	Imperial		Metric		Pcs/Ctn	P/N
	Access Hatch : Solid door	24 x 24 inch	24.46 lbs	609 x 609 mm	11.09 Kg	1 x unit	SH-SD 2424
		24 x 36 inch	29.9 lbs	609 x 915 mm	13.56 KG	1 x unit	SH-SD 2426
		24 x 48 inch	38.52 lbs	609 x 1220 mm	17.47 KG	1 x unit	SH-SD 2448

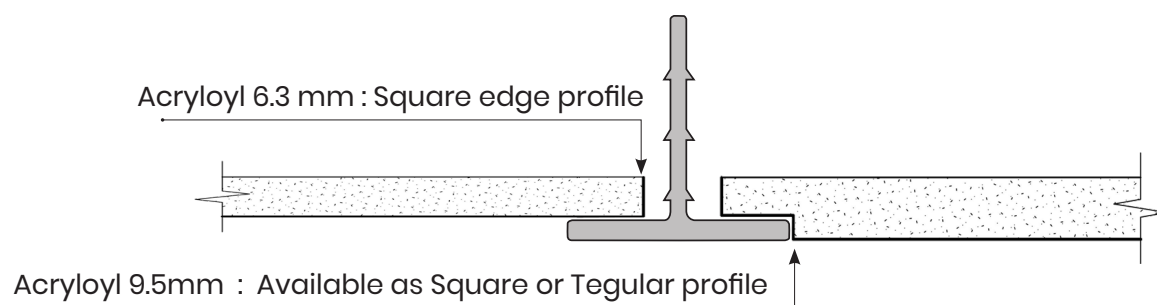


Acryloyl standard dimensions

Seismic Category A, B ceiling panel dimensions

Profile	Imperial			Metric			P/N
Square edge	0.25 inch	23 ³ / ₄ x 23 ³ / ₄ inch	2.0 Lb/Sq.ft	6.3 mm	603.3 x 603.3 mm	9.70 Kg/SqM	AS-2x2/6
Square edge	0.375 inch	23 ³ / ₄ x 23 ³ / ₄ inch	3.5 Lb/Sq.ft	9.5 mm	603.3 x 603.3 mm	17.09 Kg/SqM	AS-2x2/9.5
Tegular edge	0.375 inch	23 ³ / ₄ x 23 ³ / ₄ inch	3.0 Lb/Sq.ft	9.5 mm	603.3 x 603.3 mm	14.60 Kg/SqM	AT-2x2/9.5
Profile	Imperial			Metric			P/N
Square edge	0.25 inch	23 ³ / ₄ x 35 ³ / ₄ inch	2.0 Lb/Sq.ft	6.3 mm	603.3 x 908 mm	9.70 Kg/SqM	AS-2x3/6
Square edge	0.375 inch	23 ³ / ₄ x 35 ³ / ₄ inch	3.5 Lb/Sq.ft	9.5 mm	603.3 x 908 mm	17.09 Kg/SqM	AS-2x3/9.5
Tegular edge	0.375 inch	23 ³ / ₄ x 35 ³ / ₄ inch	3.0 Lb/Sq.ft	9.5 mm	603.3 x 908 mm	14.60 Kg/SqM	AT-2x3/9.5
Profile	Imperial			Metric			P/N
Square edge	0.25 inch	23 ³ / ₄ x 47 ³ / ₄ inch	2.0 Lb/Sq.ft	6.3 mm	603.3 x 1212.9 mm	9.70 Kg/SqM	AS-2x4/6
Square edge	0.375 inch	23 ³ / ₄ x 47 ³ / ₄ inch	3.5 Lb/Sq.ft	9.5 mm	603.3 x 1212.9 mm	17.09 Kg/SqM	AS-2x4/9.5
Tegular edge	0.375 inch	23 ³ / ₄ x 47 ³ / ₄ inch	3.0 Lb/Sq.ft	9.5 mm	603.3 x 1212.9 mm	14.60 Kg/SqM	AT-2x4/9.5
Profile	Imperial			Metric			P/N
Square edge	0.25 inch	11 ³ / ₄ x 47 ³ / ₄ inch	2.0 Lb/Sq.ft	6.3 mm	298.5 x 1212.9 mm	9.70 Kg/SqM	AS-1x4/6
Square edge	0.375 inch	11 ³ / ₄ x 47 ³ / ₄ inch	3.5 Lb/Sq.ft	9.5 mm	298.5 x 1212.9 mm	17.09 Kg/SqM	AS-1x4/9.5
Tegular edge	0.375 inch	11 ³ / ₄ x 47 ³ / ₄ inch	3.0 Lb/Sq.ft	9.5 mm	298.5 x 1212.9 mm	14.60 Kg/SqM	AT-1x4/9.5

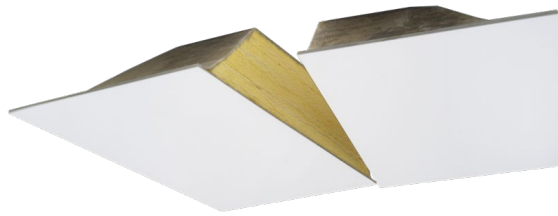
Note : Please contact Arcoplast for a full range of custom panel sizes



Profile Acryloyl

Square edge : 6.3 mm and 9.5 mm

Tegular edge : 9.5 mm

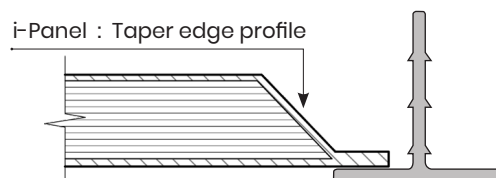


i-Panel standard dimensions

Seismic Category A, B ceiling panel dimensions

Profile	R Value	Imperial			Metric			P/N
Tapper	R 2.368	5/8 inch	47 3/4 x 47 3/4 inch	1.15 Lb/Sq.ft	15.9 mm	1212.9 x 1212.9 mm	5.61 Kg/SqM	iP4x4/12
Tapper	R 4.523	1 1/8 inch	47 3/4 x 47 3/4 inch	1.25 Lb/Sq.ft	28.6 mm	1212.9 x 1212.9 mm	6.09 Kg/SqM	iP4x4/25
Tapper	R 6.648	1 5/8 inch	47 3/4 x 47 3/4 inch	1.35 Lb/Sq.ft	41.3 mm	1212.9 x 1212.9 mm	6.58 Kg/SqM	iP4x4/37
Tapper	R 8.344	2 1/8 inch	47 3/4 x 47 3/4 inch	1.45 Lb/Sq.ft	53.9 mm	1212.9 x 1212.9 mm	7.07 Kg/SqM	iP4x4/50
Profile	R Value	Imperial			Metric			P/N
Tapper	R 2.368	5/8 inch	23 3/4 x 47 3/4 inch	1.15 Lb/Sq.ft	15.9 mm	603.3 x 1212.9 mm	5.61 Kg/SqM	iP2x4/12
Tapper	R 4.523	1 1/8 inch	23 3/4 x 47 3/4 inch	1.25 Lb/Sq.ft	28.6 mm	603.3 x 1212.9 mm	6.09 Kg/SqM	iP2x4/25
Tapper	R 6.648	1 5/8 inch	23 3/4 x 47 3/4 inch	1.35 Lb/Sq.ft	41.3 mm	603.3 x 1212.9 mm	6.58 Kg/SqM	iP2x4/37
Tapper	R 8.344	2 1/8 inch	23 3/4 x 47 3/4 inch	1.45 Lb/Sq.ft	53.9 mm	603.3 x 1212.9 mm	7.07 Kg/SqM	iP2x4/50
Profile	R Value	Imperial			Metric			P/N
Tapper	R 2.368	5/8 inch	11 3/4 x 47 3/4 inch	1.15 Lb/Sq.ft	15.9 mm	298.5 x 1212.9 mm	5.61 Kg/SqM	iP1x4/12
Tapper	R 4.523	1 1/8 inch	11 3/4 x 47 3/4 inch	1.25 Lb/Sq.ft	28.6 mm	298.5 x 1212.9 mm	6.09 Kg/SqM	iP1x4/25
Tapper	R 6.648	1 5/8 inch	11 3/4 x 47 3/4 inch	1.35 Lb/Sq.ft	41.3 mm	298.5 x 1212.9 mm	6.58 Kg/SqM	iP1x4/37
Tapper	R 8.344	2 1/8 inch	11 3/4 x 47 3/4 inch	1.45 Lb/Sq.ft	53.9 mm	298.5 x 1212.9 mm	7.07 Kg/SqM	iP1x4/50
Profile	R Value	Imperial			Metric			P/N
Tapper	R 2.368	5/8 inch	23 3/4 x 23 3/4 inch	1.15 Lb/Sq.ft	15.9 mm	603.3 x 603.3 mm	5.61 Kg/SqM	iP2x2/12
Tapper	R 4.523	1 1/8 inch	23 3/4 x 23 3/4 inch	1.25 Lb/Sq.ft	28.6 mm	603.3 x 603.3 mm	6.09 Kg/SqM	iP2x2/25
Tapper	R 6.648	1 5/8 inch	23 3/4 x 23 3/4 inch	1.35 Lb/Sq.ft	41.3 mm	603.3 x 603.3 mm	6.58 Kg/SqM	iP2x2/37
Tapper	R 8.344	2 1/8 inch	23 3/4 x 23 3/4 inch	1.45 Lb/Sq.ft	53.9 mm	603.3 x 603.3 mm	7.07 Kg/SqM	iP2x2/50
Profile	R Value	Imperial			Metric			P/N
Tapper	R 2.368	5/8 inch	23 3/4 x 35 3/4 inch	1.15 Lb/Sq.ft	15.9 mm	603.3 x 908 mm	5.61 Kg/SqM	iP2x3/12
Tapper	R 4.523	1 1/8 inch	23 3/4 x 35 3/4 inch	1.25 Lb/Sq.ft	28.6 mm	603.3 x 908 mm	6.09 Kg/SqM	iP2x3/25
Tapper	R 6.648	1 5/8 inch	23 3/4 x 35 3/4 inch	1.35 Lb/Sq.ft	41.3 mm	603.3 x 908 mm	6.58 Kg/SqM	iP2x3/37
Tapper	R 8.344	2 1/8 inch	23 3/4 x 35 3/4 inch	1.45 Lb/Sq.ft	53.9 mm	603.3 x 908 mm	7.07 Kg/SqM	iP2x3/50

Profile : All i-Panels have a taper edge



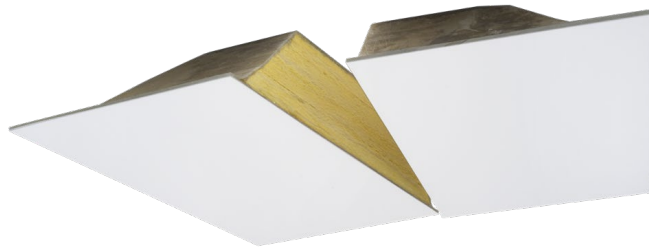


Acryloyl / SHD Seismic Cat C, D, E, F / Heavy Duty

Seismic / Heavy Duty ceiling panel dimensions

Profile	Imperial			Metric			P/N
Square edge	0.25 inch	23½ x 23½ inch	2.0 Lb/Sq.ft	6.3 mm	597 x 597 mm	9.70 Kg/SqM	AS-2x2/6 SHD
Square edge	0.375 inch	23½ x 23½ inch	3.5 Lb/Sq.ft	9.5 mm	597 x 597 mm	17.09 Kg/SqM	AS-2x2/9.5 SHD
Tegular edge	0.375 inch	23½ x 23½ inch	3.0 Lb/Sq.ft	9.5 mm	597 x 597 mm	14.60 Kg/SqM	AT-2x2/9.5 SHD
Profile	Imperial			Metric			P/N
Square edge	0.25 inch	23½ x 35½ inch	2.0 Lb/Sq.ft	6.3 mm	597 x 902 mm	9.70 Kg/SqM	AS-2x3/6 SHD
Square edge	0.375 inch	23½ x 35½ inch	3.5 Lb/Sq.ft	9.5 mm	597 x 902 mm	17.09 Kg/SqM	AS-2x3/9.5 SHD
Tegular edge	0.375 inch	23½ x 35½ inch	3.0 Lb/Sq.ft	9.5 mm	597 x 902 mm	14.60 Kg/SqM	AT-2x3/9.5 SHD
Profile	Imperial			Metric			P/N
Square edge	0.25 inch	23½ x 47½ inch	2.0 Lb/Sq.ft	6.3 mm	596 x 1207 mm	9.70 Kg/SqM	AS-2x4/6 SHD
Square edge	0.375 inch	23½ x 47½ inch	3.5 Lb/Sq.ft	9.5 mm	596 x 1207 mm	17.09 Kg/SqM	AS-2x4/9.5 SHD
Tegular edge	0.375 inch	23½ x 47½ inch	3.0 Lb/Sq.ft	9.5 mm	596 x 1207 mm	14.60 Kg/SqM	AT-2x4/9.5 SHD
Profile	Imperial			Metric			P/N
Square edge	0.25 inch	11½ x 47½ inch	2.0 Lb/Sq.ft	6.3 mm	292 x 1207 mm	9.70 Kg/SqM	AS-1x4/6 SHD
Square edge	0.375 inch	11½ x 47½ inch	3.5 Lb/Sq.ft	9.5 mm	292 x 1207 mm	17.09 Kg/SqM	AS-1x4/9.5 SHD
Tegular edge	0.375 inch	11½ x 47½ inch	3.0 Lb/Sq.ft	9.5 mm	292 x 1207 mm	14.60 Kg/SqM	AT-1x4/9.5 SHD

Conclusion : TR35 Grids assembled using lockrivets, require the SHD Ceiling Panel System that has a reduced length and width by : 1/4 inch | 6mm



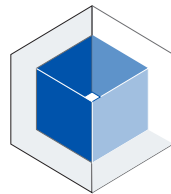
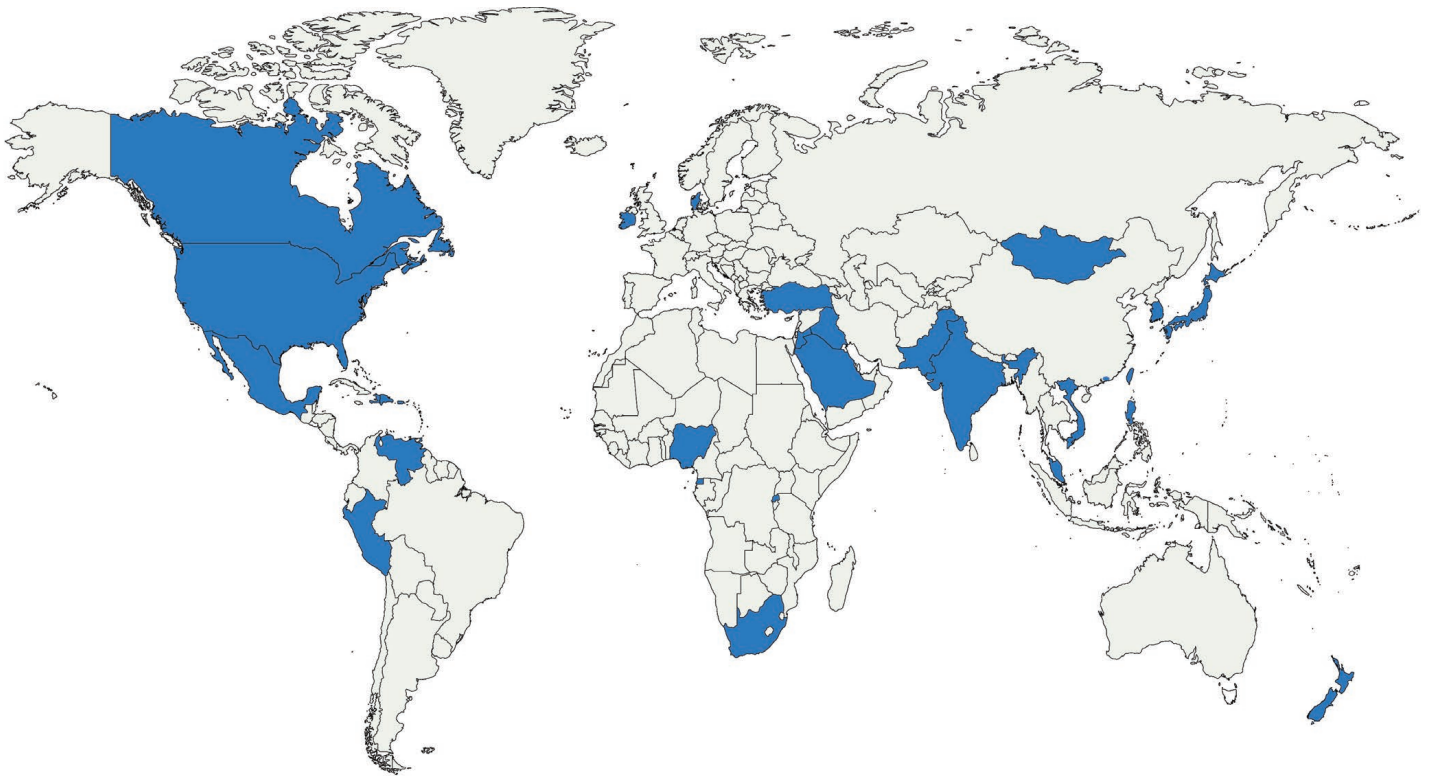
i-Panel /SHD

Seismic Cat C, D, E, F / Heavy Duty

Seismic / Heavy Duty ceiling panel dimensions

Profile	R Value	Imperial			Metric			P/N
Tapper	R 2.368	5/8 inch	47 1/2 x 47 1/2 inch	1.15 Lb/Sq.ft	15.9 mm	1207 x 1207 mm	5.61 Kg/SqM	iP4x4/12 SHD
Tapper	R 4.523	1 1/8 inch	47 1/2 x 47 1/2 inch	1.25 Lb/Sq.ft	28.6 mm	1207 x 1207 mm	6.09 Kg/SqM	iP4x4/25 SHD
Tapper	R 6.648	1 5/8 inch	47 1/2 x 47 1/2 inch	1.35 Lb/Sq.ft	41.3 mm	1207 x 1207 mm	6.58 Kg/SqM	iP4x4/37 SHD
Tapper	R 8.344	2 1/8 inch	47 1/2 x 47 1/2 inch	1.45 Lb/Sq.ft	53.9 mm	1207 x 1207 mm	7.07 Kg/SqM	iP4x4/50 SHD
Profile	R Value	Imperial			Metric			P/N
Tapper	R 2.368	5/8 inch	23 1/2 x 47 1/2 inch	1.15 Lb/Sq.ft	15.9 mm	597 x 1207 mm	5.61 Kg/SqM	iP2x4/12 SHD
Tapper	R 4.523	1 1/8 inch	23 1/2 x 47 1/2 inch	1.25 Lb/Sq.ft	28.6 mm	597 x 1207 mm	6.09 Kg/SqM	iP2x4-/25 SHD
Tapper	R 6.648	1 5/8 inch	23 1/2 x 47 1/2 inch	1.35 Lb/Sq.ft	41.3 mm	597 x 1207 mm	6.58 Kg/SqM	iP2x4/37 SHD
Tapper	R 8.344	2 1/8 inch	23 1/2 x 47 1/2 inch	1.45 Lb/Sq.ft	53.9 mm	597 x 1207 mm	7.07 Kg/SqM	iP2x4/50 SHD
Profile	R Value	Imperial			Metric			P/N
Tapper	R 2.368	5/8 inch	11 1/2 x 47 1/2 inch	1.15 Lb/Sq.ft	15.9 mm	292 x 1207 mm	5.61 Kg/SqM	iP1x4/12 SHD
Tapper	R 4.523	1 1/8 inch	11 1/2 x 47 1/2 inch	1.25 Lb/Sq.ft	28.6 mm	292 x 1207 mm	6.09 Kg/SqM	iP1x4/25 SHD
Tapper	R 6.648	1 5/8 inch	11 1/2 x 47 1/2 inch	1.35 Lb/Sq.ft	41.3 mm	292 x 1207 mm	6.58 Kg/SqM	iP1x4/37 SHD
Tapper	R 8.344	2 1/8 inch	11 1/2 x 47 1/2 inch	1.45 Lb/Sq.ft	53.9 mm	292 x 1207 mm	7.07 Kg/SqM	iP1x4/50 SHD
Profile	R Value	Imperial			Metric			P/N
Tapper	R 2.368	5/8 inch	23 1/2 x 23 1/2 inch	1.15 Lb/Sq.ft	15.9 mm	597 x 597 mm	5.61 Kg/SqM	iP2x2/12 SHD
Tapper	R 4.523	1 1/8 inch	23 1/2 x 23 1/2 inch	1.25 Lb/Sq.ft	28.6 mm	597 x 597 mm	6.09 Kg/SqM	iP2x2/25 SHD
Tapper	R 6.648	1 5/8 inch	23 1/2 x 23 1/2 inch	1.35 Lb/Sq.ft	41.3 mm	597 x 597 mm	6.58 Kg/SqM	iP2x2/37 SHD
Tapper	R 8.344	2 1/8 inch	23 1/2 x 23 1/2 inch	1.45 Lb/Sq.ft	53.9 mm	597 x 597 mm	7.07 Kg/SqM	iP2x2/50 SHD
Profile	R Value	Imperial			Metric			P/N
Tapper	R 2.368	5/8 inch	23 1/2 x 35 1/2 inch	1.15 Lb/Sq.ft	15.9 mm	597 x 902 mm	5.61 Kg/SqM	iP2x3/12 SHD
Tapper	R 4.523	1 1/8 inch	23 1/2 x 35 1/2 inch	1.25 Lb/Sq.ft	28.6 mm	597 x 902 mm	6.09 Kg/SqM	iP2x3/25 SHD
Tapper	R 6.648	1 5/8 inch	23 1/2 x 35 1/2 inch	1.35 Lb/Sq.ft	41.3 mm	597 x 902 mm	6.58 Kg/SqM	iP2x3/37 SHD
Tapper	R 8.344	2 1/8 inch	23 1/2 x 35 1/2 inch	1.45 Lb/Sq.ft	53.9 mm	597 x 902 mm	7.07 Kg/SqM	iP2x3/50 SHD

Conclusion : TR35 Grids assembled using lockrivets, require the SHD Ceiling Panel System that has a reduced length and width by : **1/4 inch** | **6mm**



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