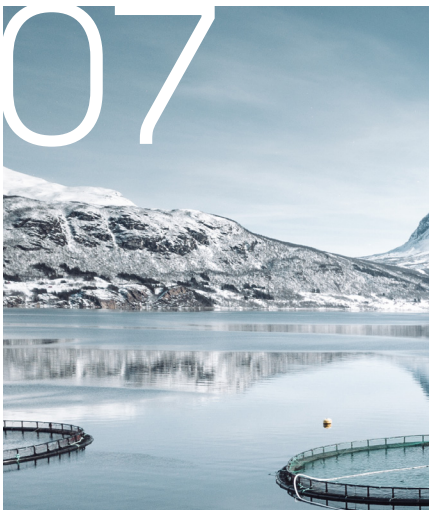
mita | FLEX®

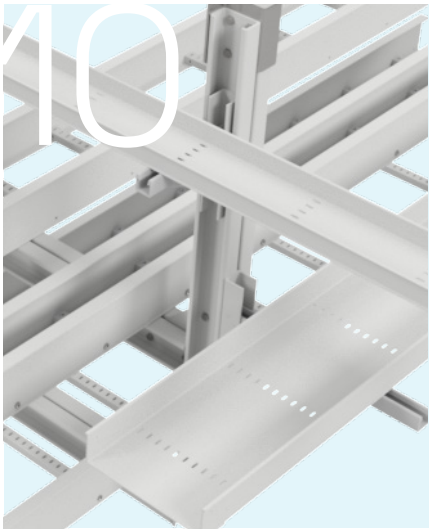
FOCUS CATALOGUE

FRP/GRP Cable Management System

COMPOSITE SOLUTIONS FOR HARSH ENVIRONMENTS

Content



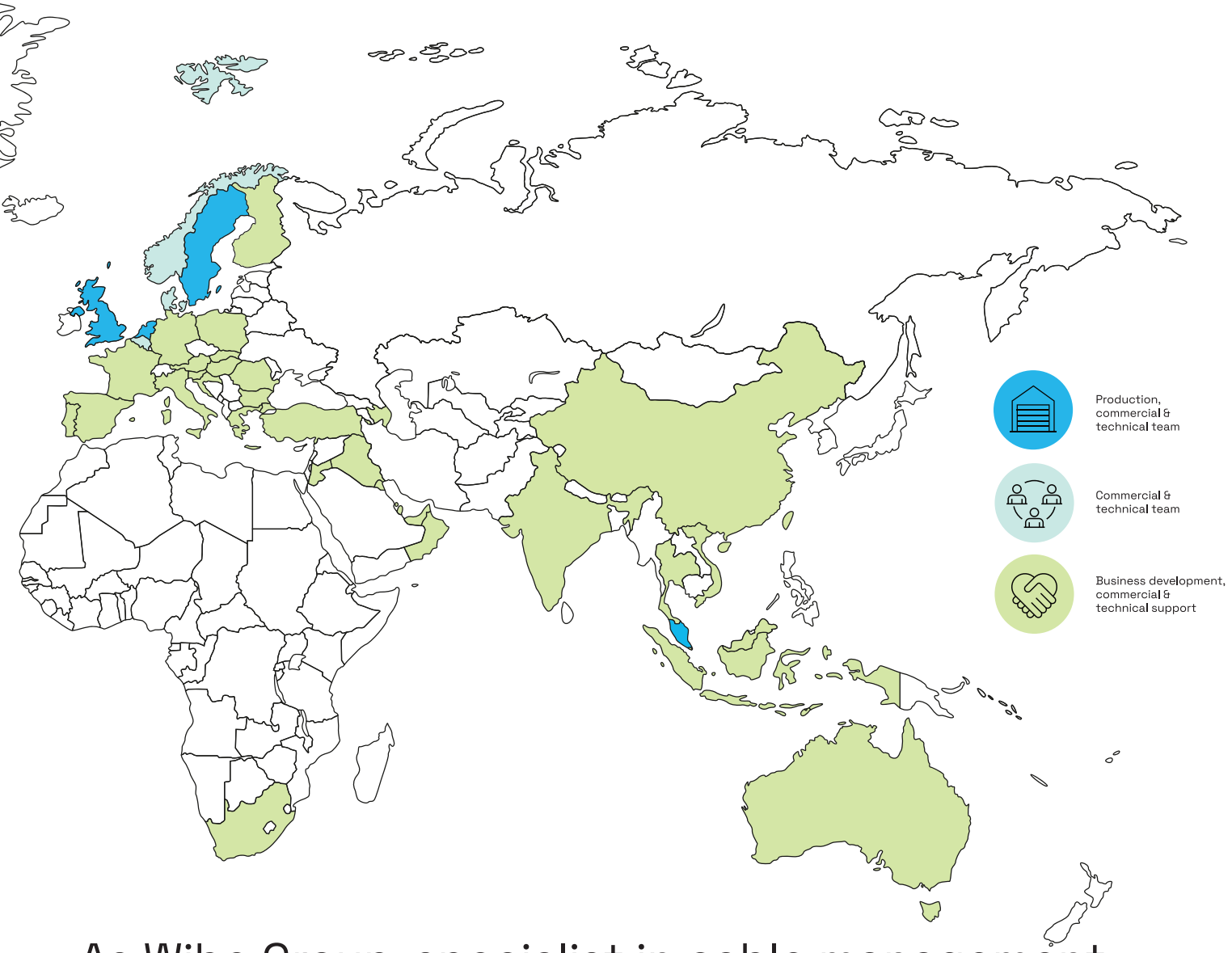


Wibe Group presents; Mita Flex FRP/GRP Cable Management Solution

Welcome into our new catalogue presenting Mita Flex with Multi-Flex Support System – created for your bespoke configuration and freedom of installation. Discover the power of flexibility for harsh corrosive environments.

wibe group

Creating clever, uplifting solutions, together with our clients for almost 100 years.

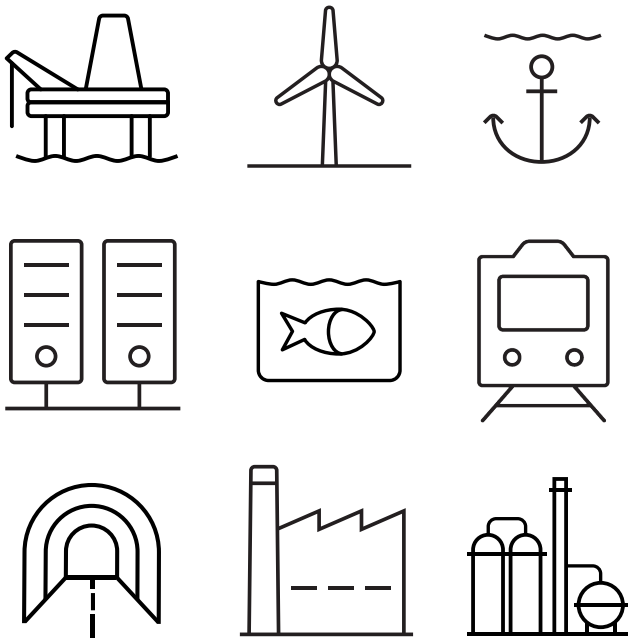


As Wibe Group, specialist in cable management systems, we offer a complete, innovative and high-quality range of cable ladders, cable trays and mesh trays, for a wide variety of applications, ranging from commercial buildings to harsh corrosive industrial environments.

With our head office in Sweden and multiple in-house locations, where we combine expertise, production and distribution, we offer cable management solutions under our brands Wibe, Stago, Defem and Mita.

By the power of combining our brands, we are now able to offer a comprehensive offer in both FRP/GRP pultruded materials, as well as metal materials in surface treatments ranging from pre-galvanized Zinkpox to hot-dipped galvanized and stainless steel.

Mita Flex – our range of FRP/GRP cable management solutions for harsh corrosive environments



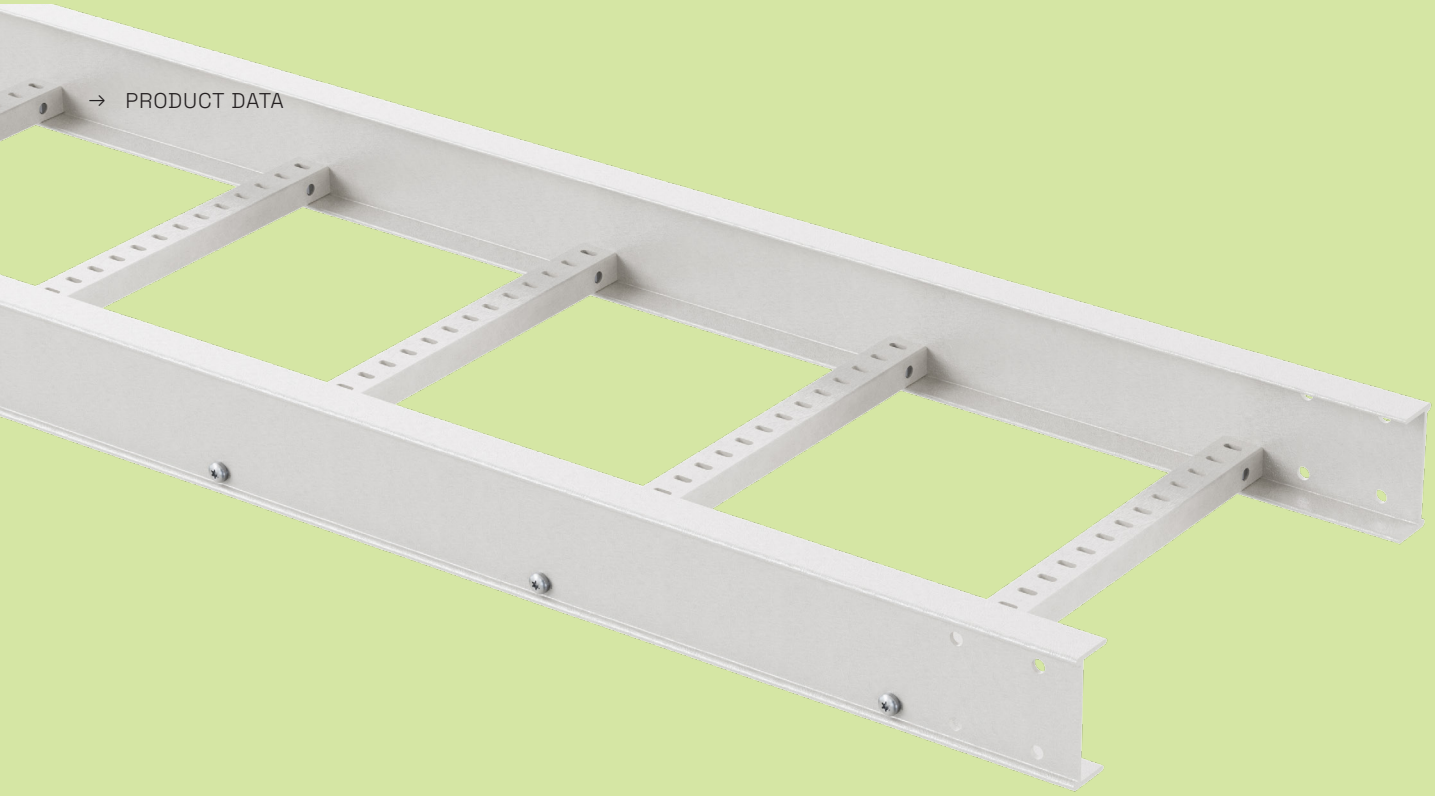
Mita Flex relates to our newest range of FRP/GRP pultruded cable management solutions, including cable ladders, cable trays, all related formpieces and accessories, as well as a new innovative and flexible support system, needed for a professional installation.

As the materials are produced in FRP/GRP, they are perfectly suited to be installed in harsh environments under harsh corrosive circumstances. Examples of such applications are:

- Oil and gas
- Wind energy
- Industry e.g. petrochemical, water treatment
- Infrastructure e.g. tunnels
- Datacenters
- Fish farms
- Marine

Mita

High performance leader in Glass Fibre Polymer (GRP) ladder and tray system. Top-tier corrosion resistance, anti-static and non-conductive solutions tailored for harsh environments and applications.



What is FRP/GRP?

FRP/GRP refers to Glass fibre Reinforced Polymer, meaning it is a man-made resin based material which makes it a polymer, reinforced with glass fibre.

Polymer itself is extremely strong. It is a fiber material and in contrary to how it sounds it is very durable. It is resistant to most chemicals, stretching and shrinking, resistant to mildew and abrasion as well. When it is reinforced with glass, it becomes a structural polymer. Further to these, GRP does not conduct heat. It has extra durability to adverse weather conditions and has UV stability which makes it an excellent candidate for outdoor applications, even for Wind substations built in the middle of the sea.

Long service life

- → UV-resistant
- → Corrosion resistance
- → High chemical resistance
- → Low maintenance

Fire resistance

- → Low thermal propagation
- → Halogen free
- → Self-extinguishing material
- → Lower toxic fumes

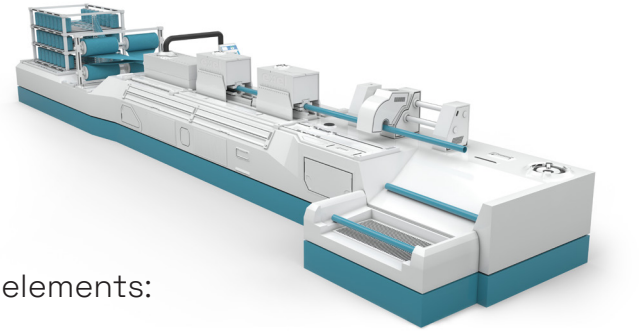
Insulation

- → Excellent electrical insulator
- → No earth needed
- → Excellent cable protection
- → Low thermal conductivity
- → High dielectric strength

Materials

- → Light, flexible and robust
- → Light weight & very strong
- → None sparking
- → UV resistance
- → High mechanical resistance
- → High temperature resistance
- → Optimized design to reduce volume and handling

Mita Flex FRP/GRP is pultruded for optimal strength



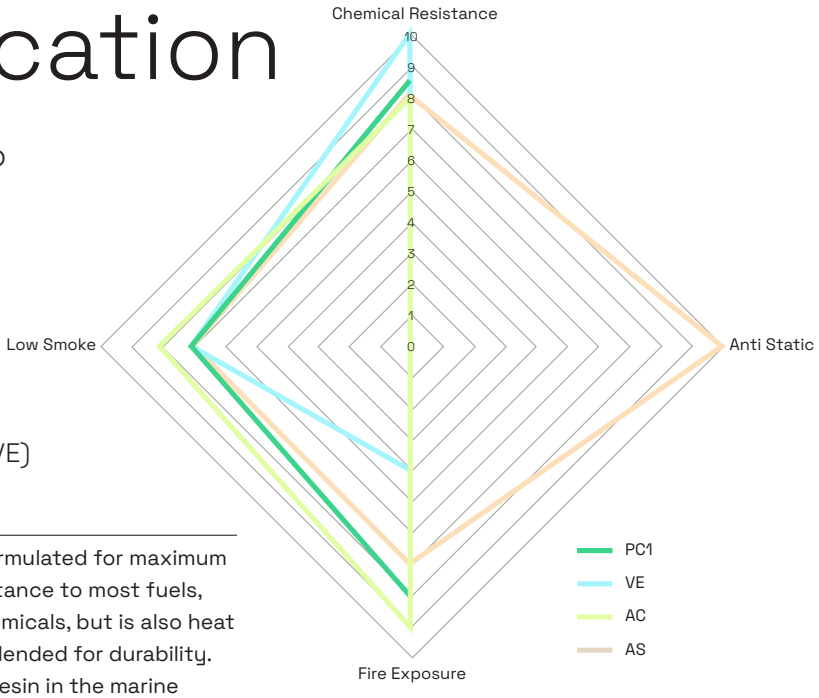
Pultruded Composites consist of four or five main elements:

1) Glass rovings (strands) and mats -approx. 50% by weight
2) Resin - usually Polyester
3) Filler - usually Calcium Carbonate
4) UV Veil and UV additives
5) Fire Retardants as required

Pultruded composites remain largely impervious to corrosion regardless of application.

Resin types for any kind of application

Mita® Flex offers 4 main resin types to accommodate the requirements of various industrial applications which can be in chemically aggressive, demanding environments.



Polyester Class 1 (PC1)

Colour RAL7047

Polyester is the most widely used resin. It offers good weathering properties with resistance to ultraviolet light and offers resistance to corrosion. Our polyester resin has been specially formulated to meet certain fire and smoke standards and can be classified as a “class 1” resin in accordance with BS476 P7 and ASTM E84.

Vinylester (VE)

Colour RAL7047

Vinylester is formulated for maximum corrosion resistance to most fuels, vapors and chemicals, but is also heat resistant and blended for durability. It’s a common resin in the marine industry due to it’s excellent corrosion resistance and ability to withstand water absorption.

Acrylic (AC)

Colour RAL7047

Acrylic is a formula that meets or exceeds the most stringent low flame, smoke and toxicity standards in the market today. Typical applications such as tunnels, mass transit, enclosed areas or needs where low flame, smoke and toxicity levels are critical.

Polyester with anti-static properties (AS)

Colour RAL9004

Polyester resin can be given anti-static properties to meet specific project requirements. Anti-static resins contain carbon powder, which increases the conductivity of the material and as a result this material requires grounding.

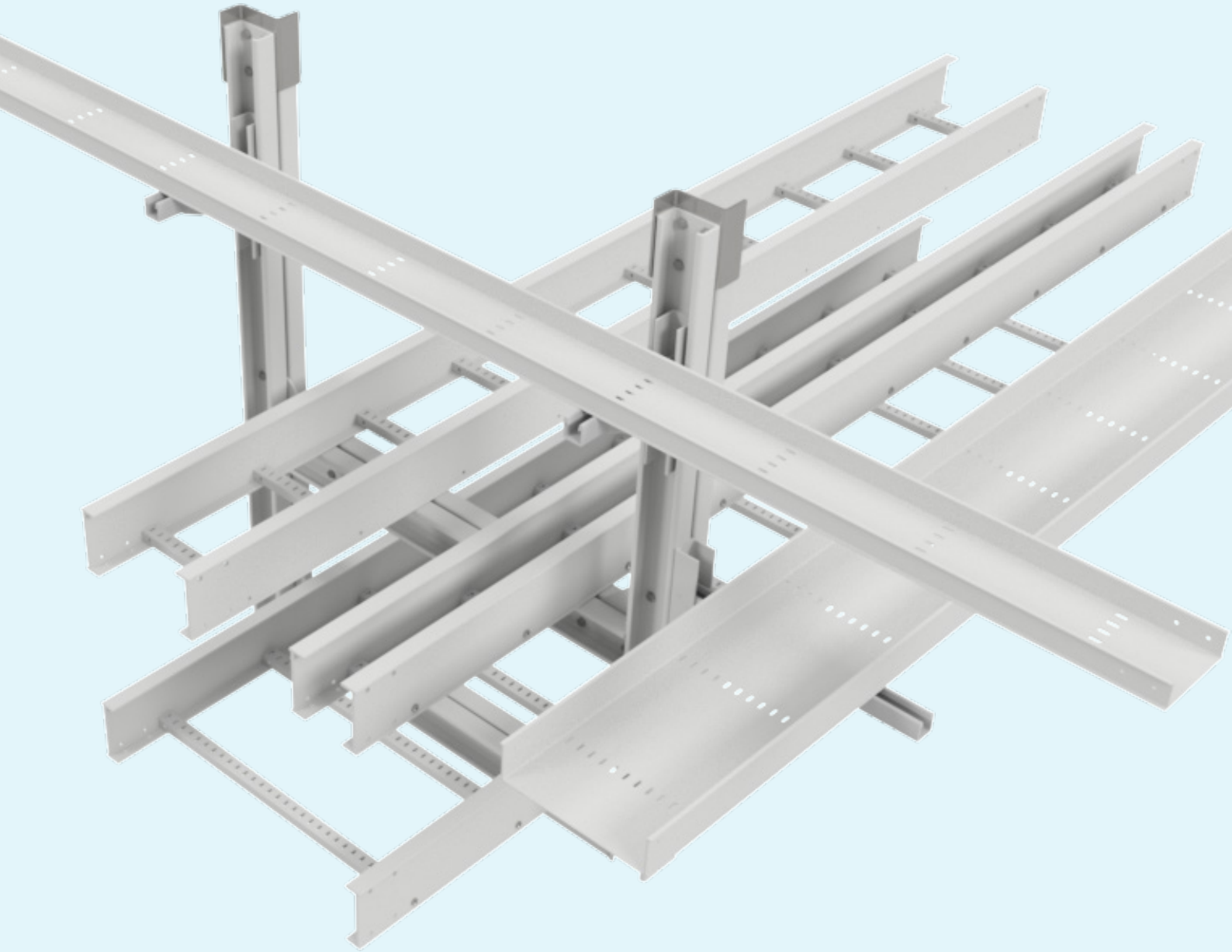
All FRP/GRP materials are standard available in Polyester Class 1 - article numbers with suffix PC1. To obtain article numbers for materials in other available resins, Polyester Antistatic (AS), Vinyl Ester (VE) and Acrylic (AC), simply replace the “PC1” suffix at the end of the article number with “AS”, “VE” and “AC” respectively.

For example, cable ladder LM100 CL-150-3000;

MLM1142PC1 for material in PC1
MLM1142AS for material in AS
MLM1142PVE for material in VE
MLM1142PAC for material in AC

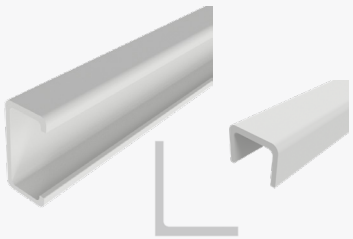
MultiFlex Support System

Introducing a flexible support system designed to meet the demands of professional installations in harsh environments.



Channel Support Profile

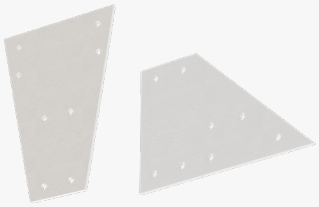
Support Channels for a robust yet flexible framework.



Product	Ref No	Kg
Channel Sup profile SC100-50/6 3m PC1	MS4101PC1	
Channel Sup profile SC100-50/6 6m PC1	MS4129PC1	
Channel Sup profile SC53-40 6m PC1	MS4130PC1	

Gusset Plate

Are used to strengthen central joints or corners that could need more bracing because of increasing loading.



Product	Ref No	Kg
Gusset Plate T CH100 6mm	MS4103PC1	
Gusset Plate L CH100 6mm	MS4102PC1	

Angle Bracket PC1

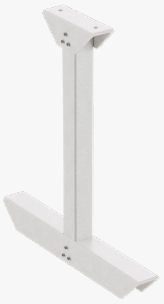
When combined with channel sleeve, allows sliding adjustability with a fixed angle inside the support channels. Fasteners needed M4825SS M10 x 35 and coach headbolts

Product	Ref No	Kg
Angle Bracket PC1	MS4184PC1	

L-bracket

Product	Height	Ref No	Kg
L Support Bracket 200PC1	0,6m	MS4165PC1	3,3
L Support Bracket 300 PC1	0,6m	MS4166PC1	3,5
L Support Bracket 400 PC1	0,6m	MS4167PC1	3,7
L Support Bracket 600 PC1	0,6m	MS4169PC1	4,2

Central support

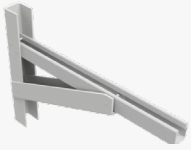


Product	Height	Ref No	Kg
Central Support 200 PC1	0.5m	MS41655PC1	1.2
Central Support 200 PC1	1.0m	MS416510PC1	1.8
Central Support 300 PC1	0.5m	MS41605PC1	1.3
Central Support 300 PC1	1.0m	MS416010PC1	1.9
Central Support 400 PC1	0.5m	MS41615PC1	1.4
Central Support 400 PC1	1.0m	MS416110PC1	2
Central Support 600 PC1	0.5m	MS41635PC1	1.8
Central Support 600 PC1	1.0m	MS416310PC1	2.3

LW Cantilever Arm

Product	Ref No	Kg
LW Cantilever Arm 50 PC1	MS4197PC1	0,5
LW Cantilever Arm 100 PC1	MS4198PC1	0,5
LW Cantilever Arm 150 PC1	MS4199PC1	0,6
LW Cantilever Arm 200 PC1	MS4200PC1	0,6

HD Cantilever Arm

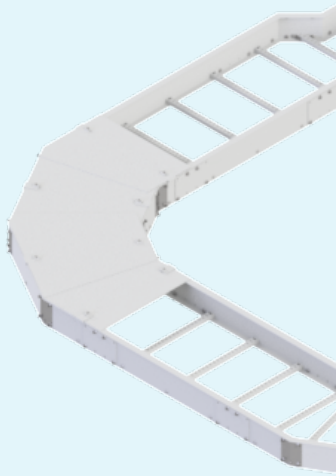


Product	Ref No	Kg
HD Cantilever Arm 200 PC1	MCS4121PC1	1,2
HD Cantilever Arm 300 PC1	MCS4122PC1	1,6
HD Cantilever Arm 400ZPC1	MCS4125PC1	
HD Cantilever Arm 600 PC1	MCS4124PC1	2,2

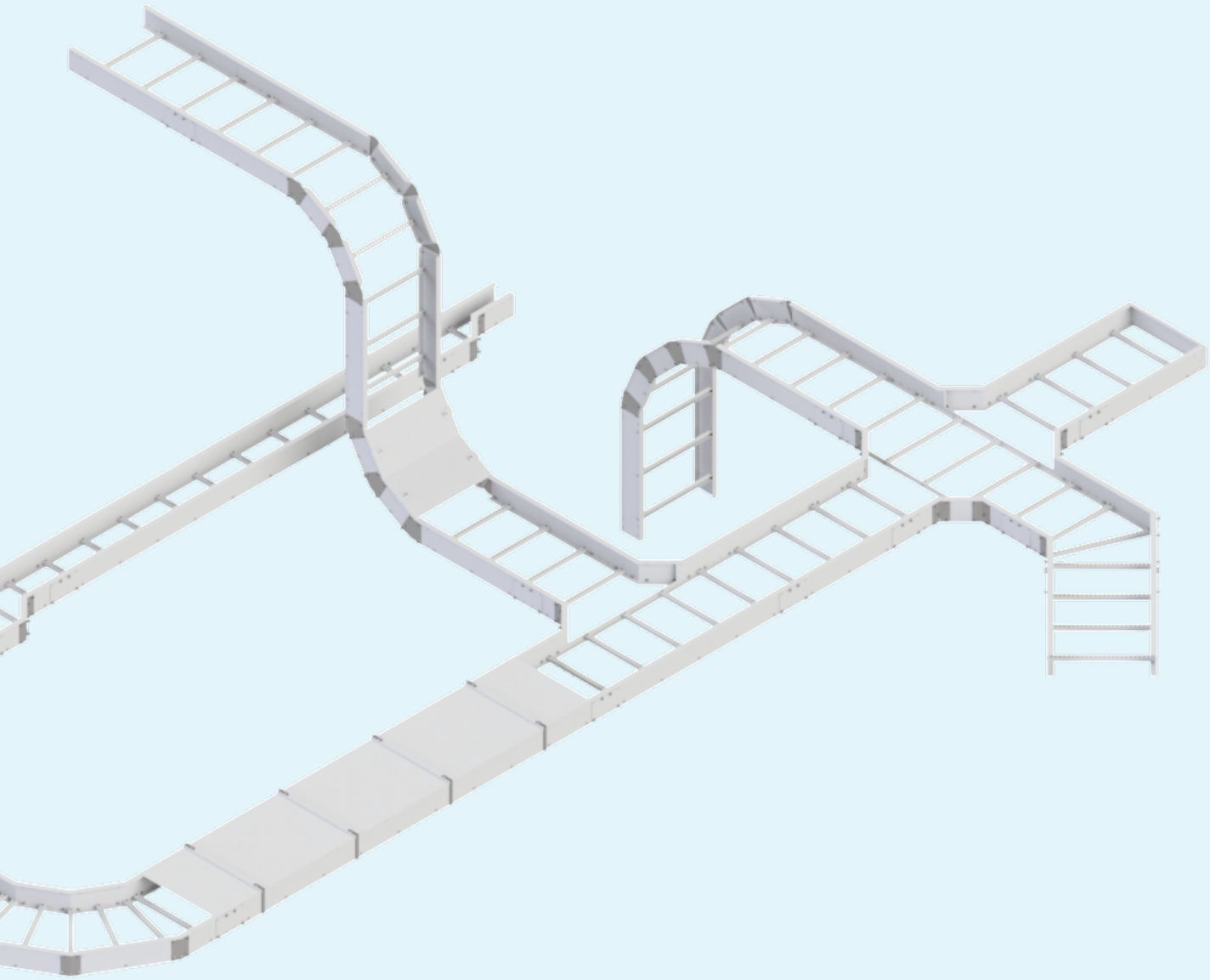
Channel Spring Nut M10 PC1

Product	Ref No	Kg
Channel Spring Nut M10 PC1	M4829PC1	

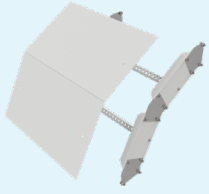
A complete range of composite Cable Ladders with fittings & accessories



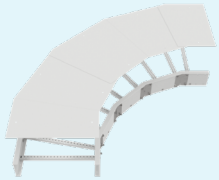
Available in three series, LM100, LMP150 and LH150, the FRP/GRP cable ladders are light, yet strong and corrosion resistant. They are designed to deliver high performance, maximum load capacity with reduced weight and improved handling, allowing easy and quick installation. The cable ladders are available in a variety of resin types.



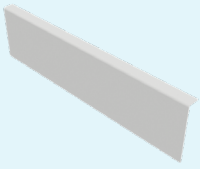
Straight Length



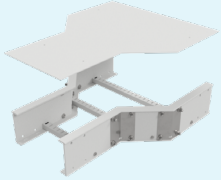
Flexi Riser



90° Flat Elbow

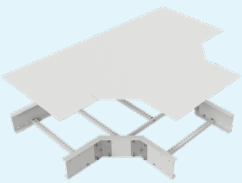


End Plate

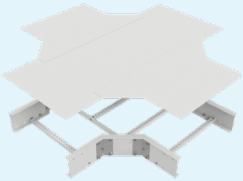


Reducer

45° Flat Elbow



Tee

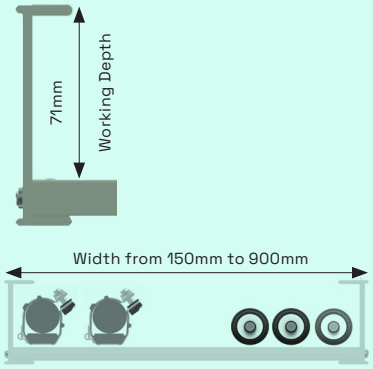


Cross

Cable Ladders and fitting selection

Cable Ladder
LM100

Cable ladder with system height 100mm, used for medium duty applications.



Product	Ref No	Kg
CL-200-3000	MLM1148PC1	9,5
CL-300-3000	MLM1143PC1	10
CL-400-3000	MLM1155PC1	10,6
CL-600-3000	MLM1145PC1	11,7

Composite Cable Ladder range for supporting cables.

→ Tested to IEC & NEMA Standards for SWL

→ Material: FRP Polyester Class 1 (Other Resins are available)

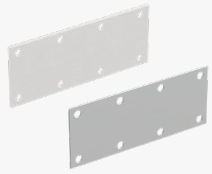
Cable Ladder Type	Resin Selection	Rail Height (mm)	Working Depth	Rung Fixation	SWL 3m(kg/m)	Length (m)	Nema FG1 / UL568
LM100	PC1 – Polyester Class 1 AS – Polyester Antistatic VE – Vinyl ester AC – Acrylic	100	70	√	200	3 *	12C

SWL according to IEC 61537, Test Type 3 with reduced end span 3/4 | For NEMA F61 Load rating. Technical Department to be contacted.

* Alternative lengths available on request

CL Splice Connector

Fasteners not included. For splice plates in SS use M10x20 mm bolt set. For splice plates in GRP use M10x25 mm bolt set.



	LM100	
Product	Ref No	Kg
CL splice plates PC1	MLM2326PC1	0,2
CL splice plates SS	MLM2328SS	0,2

CL Horizontal Angle Bracket 90°

Fasteners not included. For splice plates in SS use M10x20 mm bolt set.For splice plates in GRP use M10x25 mm bolt set.

	LM100	
Product	Ref No	Kg
CL hor angle bracket 90 PC1	MLM2253PC1	
CL hor angle bracket 90 SS	MLM2222SS	

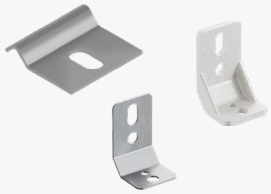
CL Vertical Hinge

Fasteners not included. For splice plates in SS use M10x20 mm bolt set.For splice plates in GRP use M10x25 mm bolt set.

	LM100	
Product	Ref No	Kg
CL vertical hinge PC1	MLM2254PC1	
CL vertical hinge adj SS	MLM2223SS	

CL/CT Fixing Clamp

Supplied without bolts.
Use M10 for CL/CT Flange Fixing Clamp.
For Fixing Clamp use M10 for cable ladder and M6 for cable trays.



Product	Ref No	Kg
CL/CT Flange Fixing clamp SS	MCT2125SS	
CL/CT Fixing clamp SS	MCT2123SS	
CL/CT Fixing clamp PC1	MCT2124PC1	

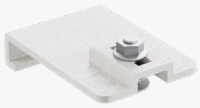
CL Cover

Material GRP, Length 3000mm

Product	Ref No	Kg
CL Cover-200	MLC1158PC1	
CL Cover-300	MLC1659PC1	5,5
CL Cover-400	MLC1159PC1	
CL Cover-600	MLC1661PC1	10,6

CL Cover Fixing Clamp

Fastners included.



Product	Ref No	Kg
CL Cover Fixing clamp PC1	MCC2331PC1	

CL Cover Clamp HD

	LM100	
Product	Ref No	Kg
CL cover clamp-200	MCL3241PC1	0,3
CL cover clamp-300	MCL3242PC1	0,3
CL cover clamp-400	MCL3243PC1	0,4
CL cover clamp-600	MCL2373PC1	0,5

CL Divider

	LM100	
Product	Ref No	Kg
CL Divider	MLM2272PC1	1,7

CL Flat Elbow 45° R3

Prefabricated standard flat elbow, appx radius 400mm
Ladder Height 100 & 150
Material: FRP Polyester Class 1 (Other Resins are available)
Angle plates and fasteners SS316L as Standard
(GRP Angle Plates also available)

	LM100	
Product	Ref No	Kg
CL Flat Elbow-200	MLF1152PC1	2,4
CL Flat Elbow-300	MLF1440PC1	2,6
CL Flat Elbow-400	MLF1153PC1	2,8
CL Flat Elbow-600	MLF1442PC1	3,7

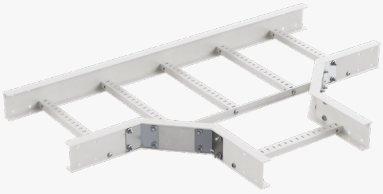
CL Flat Elbow 90° R3

Prefabricated standard flat elbow, Available in Radius R300, R600 & R900
Ladder Height 100 & 150
Material: GRP Polyester Class 1 (Other Resins are available)
Angle plates and fasteners SS316L as Standard
(GRP Angle Plates also available)

	LM100	
Product	Ref No	Kg
CL Flat Elbow-200	MLF1150PC1	4
CL Flat Elbow-300	MLF1426PC1	4,4
CL Flat Elbow-400	MLF1151PC1	4,8
CL Flat Elbow-600	MLF1428PC1	6,4

CL Equal Tee R3

Prefabricated standard horizontal tee, Standard Radius R300, R600 & R900 - Other Radius available Ladder Height 100 & 150
Material: FRP Polyester Class 1 (Other Resins are available)
Angle plates and fasteners SS316L as Standard
(GRP Angle Plates also available)



	LM100	
Product	Ref No	Kg
CL Equal Tee-200	MLF1154PC1	5,8
CL Equal Tee-300	MLF1454PC1	6,2
CL Equal Tee-400	MLF1155PC1	6,7
CL Equal Tee-600	MLF1456PC1	8

CL Flexi Riser Internal 90° R4

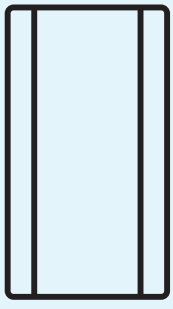
	LM100	
Product	Ref No	Kg
CL Flexi Riser-200	MLF1156PC1	2,1
CL Flexi Riser-300	MLF1489PC1	2,2
CL Flexi Riser-400	MLF1157PC1	2,2
CL Flexi Riser-600	MLF1491PC1	2,3

CL Z Reducer

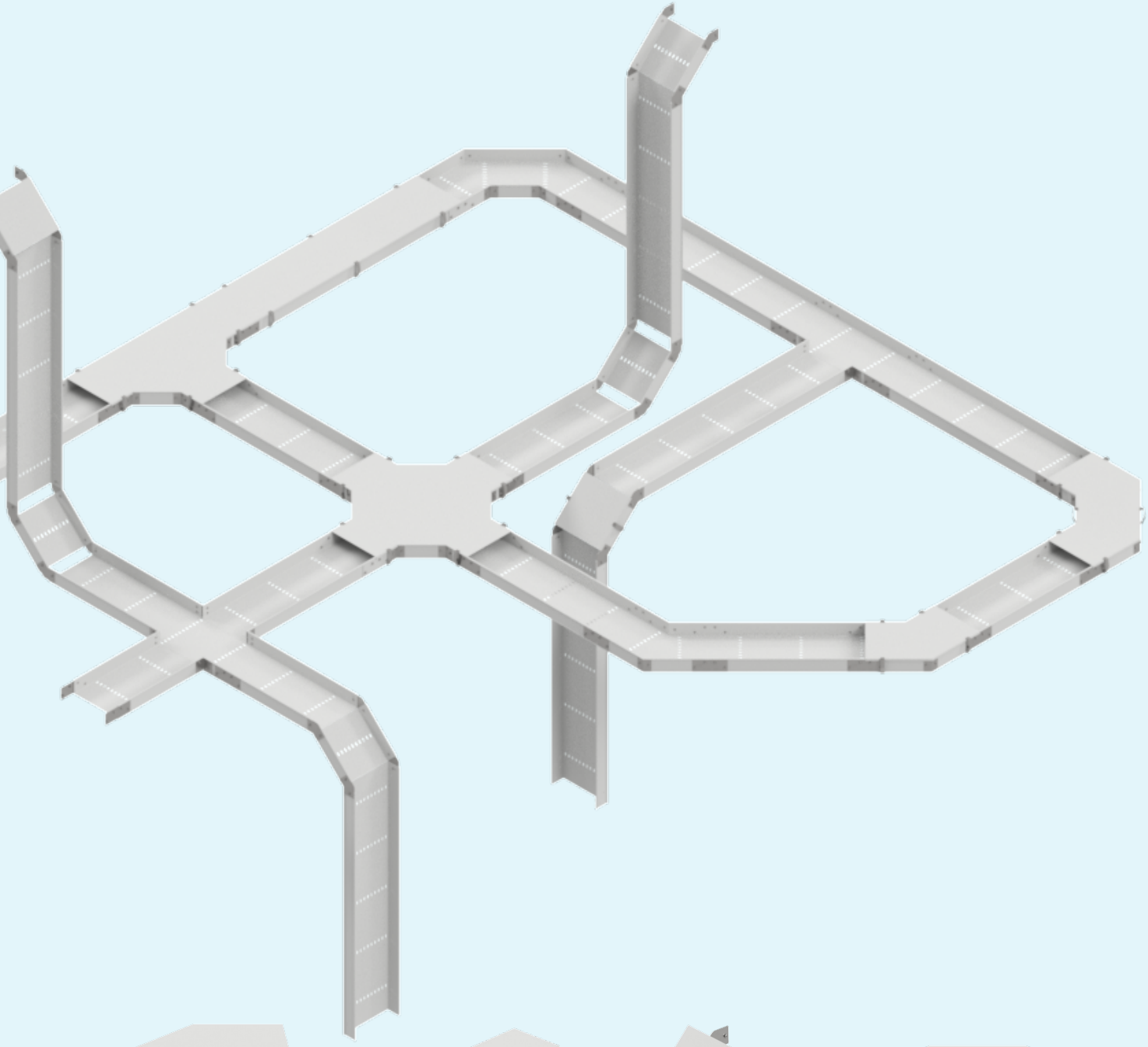
Prefabricated standard Reducer, Available Central/Straigh, Left or Right Hand
Height 100 & 150
Material: GRP Polyester Class 1 (Other Resins are available)
Angle plates and fasteners SS316L are included.
(GRP Angle Plates also available)

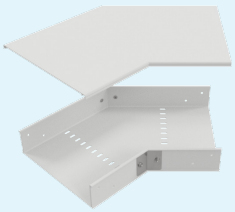
	LM100	
Product	Ref No	Kg
CL Z Reducer-200	MLM2227PC1	0,9
CL Z Reducer-300	MLM2260PC1	1

A complete range of composite perforated Cable Trays with fittings & accessories

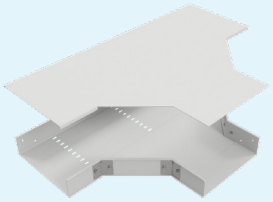


Available in two series, CT50 and CT80, the FRP/GRP cable trays are light, yet strong and corrosion resistant. They are designed to deliver high performance, maximum load capacity with reduced weight and improved handling, allowing easy and quick installation. The cable trays are available in a variety of resin types.

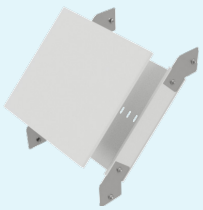




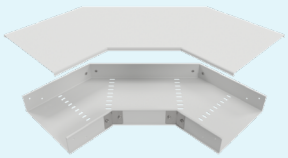
Flexi Riser



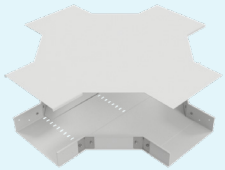
Tee R300



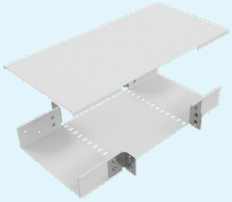
Combi Riser



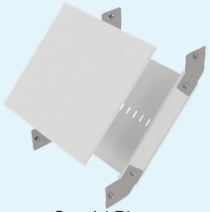
45° Flat Elbow



Cross R300

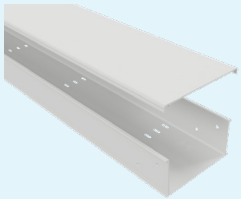


Tee

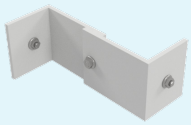


Combi Riser

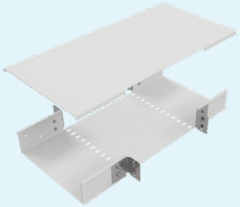
End Plate



Straight Length



Z Reducer

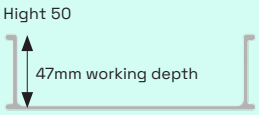


Cross

Splice Connector

Cable Trays and fitting selection

Cable Tray
CT50



Product	Ref No	Kg
CT50-50-3000	MCT3105PC1	2,9
CT50-100-3000	MCT3106PC1	3,7
CT50-150-3000	MCT3107PC1	4,5
CT50-200-3000	MCT3108PC1	5,5
CT50-300-3000	MCT3109PC1	7,8

Return Flange type profile design for added strength.

→ For Electrical & Instrumentation Applications.

→ Length 3000mm

Cable Tray Type	Resin Selection	Rail Height (mm)	Working Depth	SWL 1,5m(kg/m)	Length (m)
CT50	PC1 – Polyester Class 1 AS – Polyester Antistatic VE – Vinyl ester AC – Acrylic	50	47	70	3 *

SWL according to IEC61537, test type 3.

* Alternative lengths available on request

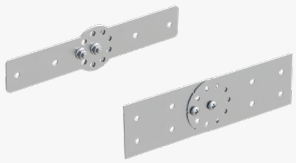
CT Splice Plates

Fasterners not included.
Use M6 x 16 for Splice plate GRP.
Use M6 x 12 SS for Splice plate SS.

	CT50	
Product	Ref No	Kg
Splice plate PC1	MCT3102PC1	
Splice plate SS	MCT3101SS	

CT Vertical Hinge

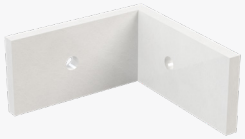
Fasterners not included.
Use M6 x 16 for Splice plate GRP.
Use M6 x 12 SS for Splice plate SS.



	CT50	
Product	Ref No	Kg
CT Vertical Hinge PC1	MCT3143PC1	

CT Horizontal Splice Angle Bracket 90°

Fasterners not included.
Use M6 x 16 for Splice plate GRP.
Use M6 x 12 SS for Splice plate SS.



	CT50	
Product	Ref No	Kg
CT Horizontal Splice Angle 90° PC1	MCT3144PC1	

CT Cover

Snap-Fit Covers provide an easy to install and positive fixing with additional clips available for most applications or Heavy duty cover clamps for harsh conditions
Length 3000mm

	CT50	
Product	Ref No	Kg
CT Cover-50-3000 PC1	MCT3206PC1	1,5
CT Cover-100-3000 PC1	MCT3207PC1	2,2
CT Cover-150-3000 PC1	MCT3208PC1	3
CT Cover-200-3000 PC1	MCT3209PC1	3,8
CT Cover-300-3000 PC1	MCT3210PC1	5,3

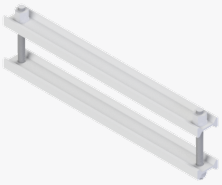
CT Grip Clip

The SS316L Grip Clip provides an easy to install solution to secure the tray cover
Tray heights 50mm & 80mm

	CT50	
Product	Ref No	Kg
CT grip clip SS	MCT3236SS	0,01

CT HD Clamp

Heavy Duty cover clamp for securing snap fit covers in exposed wind areas.
Tray heights 50mm & 80mm
Full GRP Construction



	CT50	
Product	Ref No	Kg
CT HD cover clamp-50	MCT2379PC1	
CT HD cover clamp-100	MCT2380PC1	
CT HD cover clamp-150	MCT2381PC1	
CT HD cover clamp-200	MCT2382PC1	
CT HD cover clamp-300	MCT2383PC1	

CT Divider

Divider for seperation of different cable types.
Tray heights 50mm & 80mm

	CT50	
Product	Ref No	Kg
CT Divider	MCT3755PC1	1,2

CT Flat Elbow 45° R3

Prefabricated standard flat elbow,
Tray heights 50mm & 80mm
Angle plates and fasteners SS316L as Standard (GRP Angle Plates also available)

	CT50	
Product	Ref No	Kg
CT Flat Elbow-50	MCT3117PC1	0,5
CT Flat Elbow-100	MCT3118PC1	0,7
CT Flat Elbow-150	MCT3119PC1	0,8
CT Flat Elbow-200	MCT3120PC1	1
CT Flat Elbow-300	MCT3121PC1	1,5

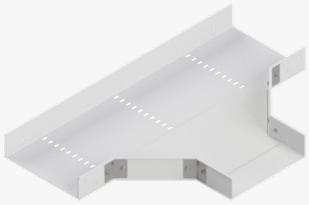
CT Flat Elbow 90° R3

Prefabricated standard flat elbow, (Other Radius available)
Tray heights 50mm & 80mm
Angle plates and fasteners SS316L as Standard (GRP Angle Plates also available)

	CT50	
Product	Ref No	Kg
CT Flat Elbow-50	MCT3111PC1	0,9
CT Flat Elbow-100	MCT3112PC1	1,1
CT Flat Elbow-150	MCT3113PC1	1,4
CT Flat Elbow-200	MCT3114PC1	1,7
CT Flat Elbow-300	MCT3115PC1	2,6

CT Equal Tee R3

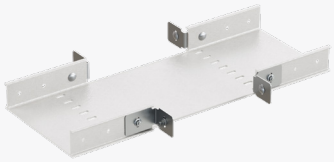
Prefabricated standard Equal Tee, available also as Radius 300mm
Tray heights 50mm & 80mm
Angle plates and fasteners SS316L as Standard (GRP Angle Plates also available)



	CT50	
Product	Ref No	Kg
CT Equal Tee-50	MCT3174R3PC1	1,4
CT Equal Tee-100	MCT3175R3PC1	1,8
CT Equal Tee-150	MCT3176R3PC1	2,3
CT Equal Tee-200	MCT3177R3PC1	2,8
CT Equal Tee-300	MCT3178R3PC1	4,0

CT Cross Piece

Prefabricated standard Cross Piece, available also as Radius 300mm
Tray heights 50mm & 80mm
Angle plates and fasteners SS316L as Standard (GRP Angle Plates also available)



	CT50	
Product	Ref No	Kg
CT Cross Piece-50	MCT3129PC1	0,4
CT Cross Piece-100	MCT3130PC1	0,6
CT Cross Piece-150	MCT3131PC1	0,7
CT Cross Piece-200	MCT3132PC1	0,9
CT Cross Piece-300	MCT3133PC1	1,5

CT Flat Elbow Cover 45° R3

Prefabricated Snap-Fit Covers

	CT50	
Product	Ref No	Kg
CT Flat Elbow Cover-50	MCT3218PC1	0,2
CT Flat Elbow Cover-100	MCT3219PC1	0,3
CT Flat Elbow Cover-150	MCT3220PC1	1,3
CT Flat Elbow Cover-200	MCT3221PC1	0,6
CT Flat Elbow Cover-300	MCT3222PC1	0,9

CT Flat Elbow Cover 90° R3

	CT50	
Product	Ref No	Kg
CT Flat Elbow Cover-50	MCT3212PC1	0,3
CT Flat Elbow Cover-100	MCT3213PC1	0,5
CT Flat Elbow Cover-150	MCT3214PC1	0,8
CT Flat Elbow Cover-200	MCT3215PC1	1
CT Flat Elbow Cover-300	MCT3216PC1	1,6

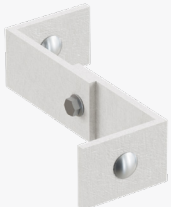
CT Combi Riser

Can be used as both inside or outside riser.

	CT50	
Product	Ref No	Kg
CT Combi Riser-50	MCT3135PC1	0,6
CT Combi Riser-100	MCT3136PC1	0,6
CT Combi Riser-150	MCT3137PC1	0,7
CT Combi Riser-200	MCT3138PC1	0,8
CT Combi Riser-300	MCT3139PC1	1,1

CT Reducer

Prefabricated reducer part, for jointing two trays of different width
Tray heights 50mm & 80mm
Fasteners SS316L are included.



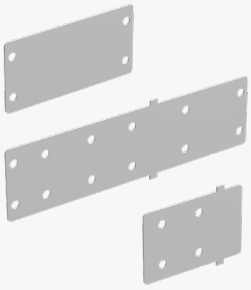
	CT50	
Product	Ref No	Kg
CT Reducer-50	MCT3350PC1	0,1
CT Reducer-100	MCT3351PC1	0,2
CT Reducer-150	MCT3352PC1	0,2
CT Reducer-200	MCT3353PC1	0,2

Accessories

Bolted Starter Bracket

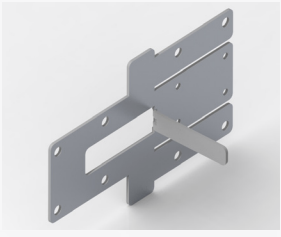
	CT50	
Product	Ref No	Kg
Bolted Starter Bracket HDG	MS4155S	
Bolted Starter Bracket SS	MS4157SS	

Channel Support Drill Template

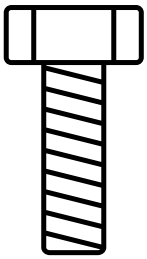


	CT50	
Product	Ref No	Kg
Channel Sup Drill Template -1 SS	MD2247SS	
Channel Sup Drill Template -2 SS	MD2248SS	
Channel Support Drill Template -3 SS	MD2249SS	

Cable Ladder / Cable tray Drill Template



	CT50	
Product	Ref No	Kg
CL 100/150 Drill Template SS	MD2251SS	
CT 50/80 Drill Template SS	MD2252SS	



Bolt & Bolt sets

Product	Ref No	Kg
1. Bolt set M6 x 12 SS	M4820SS	0,01
1. Bolt set Square neck M6 x 16 SS	M4824SS	0.011
2. Bolt M8 x 25 pan SS	M4813SS	0.021
3. Bolt set M10 x 25 A4 SS	M4804SS	0.043
3. Bolt set M10 x 30 A4 SS	M4808SS	0.046
4. Bolt M10 x 25 SS	M4811SS	0.03
5. Hex Bolt M10 x 30 SS	M4809SS	0.03
6. Flange Nut M10 SS	M4810SS	0.015
7. Long Thread Hex Nut M10 PC1	M4816PC1	0.005
8. Bolt Stud M10 x 50 PC1	M4115PC1	0.01
9. Threaded rod M10 3m PC1	M4817PC1	0,55

MultiFlex support system bolt recomendation:

- → When bolting Mita flex support system standard bolt size is 10 mm.
- → For connections back to back use M10x25 boltset
- → For use with gusset plates use M10x30 boltset

Cable ladder system:

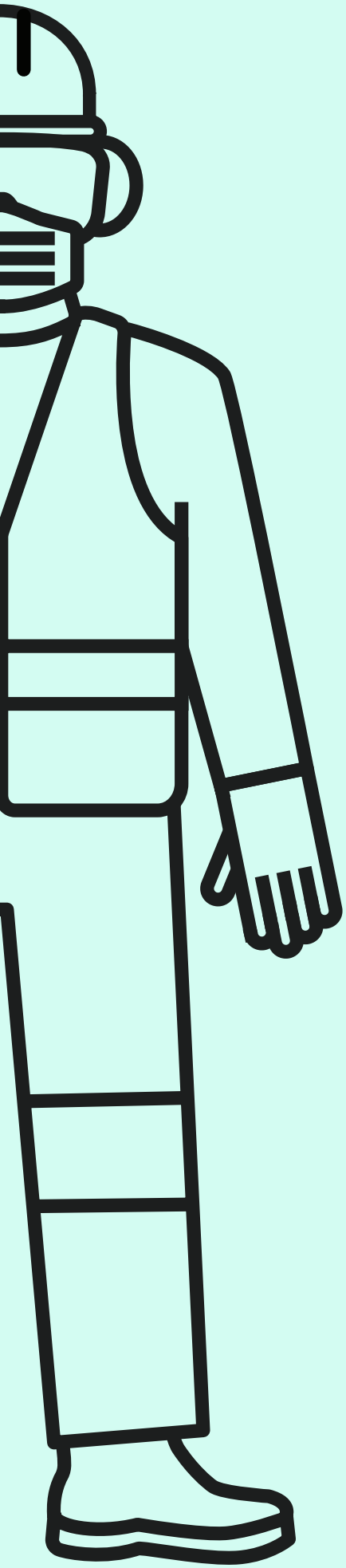
→ All bolts M10

When using stainless steel accessories (splice plates, hinges etc) standard bolt set is M10x20 mm, when using GRP accessories standard bolt set is M10x25mm

Cable tray system:

→ All bolts M6

When using stainless steel accessories (splice plates, hinges etc) use M6 x 12mm bolt set, for GRP accessories use M6 x 16mm bolt set



Safety first

Tool selection

On-site cutting is easily done with the use of portable circular power saws and drilling equipment. For best results a diamond or carbide edged saw blade and carbide tip drill bits are the best solution.

Cutting and drilling

When cutting, grinding or sanding FRP products it is important to wear suitable protective equipment. Safety glasses, dust mask rated at N94 or above is recommended and gloves are necessary.

We also recommend wearing long-sleeved shirt or overalls when working with FRP. In some cases non-toxic dust is created if you are not in a well ventilated environment and this can cause some small irritations so make sure you wear the right gear at all times.

Mechanical Properties	ASTM	Units	Value	Units	Value
Tensile Stress, LW	D-638	psi	30,000	MPa	206.8
Tensile Stress, CW	D-638	psi	7,000	MPa	48.2
Tensile Modulus, LW	D-638	106 psi	2.5	GPa	17.2
Tensile Modulus, CW	D-638	106 psi	0.8	GPa	5.5
Compressive Stress, LW	D-695	psi	30,000	MPa	206.8
Compressive Stress, CW	D-695	psi	15,000	MPa	103.4
Compressive Modulus, LW	D-695	106 psi	2.5	GPa	17.2
Compressive Modulus, CW	D-695	106 psi	1.0	GPa	6.9
Flexural Stress, LW	D-790	psi	30,000	MPa	206.8
Flexural Stress, CW	D-790	psi	10,000	MPa	68.9
Flexural Modulus, LW	D-790	106 psi	1.8	GPa	12.4
Flexural Modulus, CW	D-790	106 psi	0.8	GPa	5.5
Modulus of Elasticity	Full Section	106 psi	2.8	GPa	19.3
Shear Modulus	----	106 psi	0.45	GPa	3.1
Short Beam Shear	D-2344	psi	4,500	MPa	31.0
Punch Shear	D-732	psi	10,000	MPa	68.9
Notched Izod Impact, LW	D-256	ft - lbs/in	25	J/mm	1.33
Notched Izod Impact, CW	D-256	ft - lbs/in	4	J/mm	0.21
Bearing Strength	D-953	psi	30,000	MPa	206.8
Physical Properties	**ASTM**	**Units**	**Value**	**Units**	**Value**
Bar Hardness	D-2583	----	45	----	45
24 Hour Water Absorption	D-570	% Max	0.45	% Max	0.45
Density	D-792	lbs/in3	0.062 - 0.070	g/cm3	1.72 - 1.94
Coefficient of Thermal Expansion, LW	D-696	106in/in/°F	7	10-6cm/ cm/°C	12
Electrical Properties	**ASTM**	**Units**	**Value**	**Units**	**Value**
Arc Resistance, LW	D-495	seconds	120	seconds	120
Dielectric Strength, LW	D-149	kv/in	35	kv/mm	1.37
Dielectric Strength, PF	D-149	volts/mil	200	volts/mil	200
Dielectric Constant, PF	D-150	@60hz	5	@60hz	5
Flammability Properties	**ASTM**		**Units**	**Value**	
Tunnel Test	E-84		Flame Spread	25 max	
Flammability	D-635		----	Non-Burning	
NBS Smoke Chamber	E-662		Smoke Density	600 - 700	

Effect on strength with temperature

The strength properties of reinforced plastics are reduced when the material is continually exposed to high temperatures. Loading shall be reduced based on the below table. Percentages shown are approximates.

When high temperatures are present please consult the manufacturer for application advice. Freezing temperatures do not effect the load rating of cable ladders and the cable management system as the FRP material does not be-come fragile. Special consideration is required when service temperatures are over 200° Fahrenheit/ 94° Celsius. Please contact us for expert consultation for special requirements.

Temperature	Polyester Resin % of Strength	Vinyl Ester % of Strength
75°F (24°C)	100%	100%
100°F (38°C)	90%	100%
125°F (52°C)|	78%	100%
150°F (66°C)	68%	90%
175°F (79°C)	60%	90%
200°F (93°C)|	52%	75%

The test values in this chart are obtained from laboratory testing

Thermal Contraction and Expansion

The table to the below compares the thermal contraction and expansion based on various temperature differentials for fiberglass, steel and aluminium cable trays. The values shown represent the length of cable tray that will produce a 16 mm (5-B*) movement between expansion connectors for the indicated temperature differential. Fiberglass has the least movement and requires least expansion joints. This simplifies the design and installation and minimizes expansion dynamic forces on the structure.

Temperature Differential	FRP Ft.(m)	Steel Ft. (m)	Aluminium Ft. (m)
25°F (14°C)	417 (126)|	320 (97)	162 (49)
50°F (28°C)	208 (63)	160 (48)	81 (25)
(42°C)	138 (42)	106 (48	54 (16)
100°F (56°C)	104 (32)	80 (24)	40 (12)
125°F (69°C)	83 (25)	63 (19)	32 (10)
150°F (83°C)	69 (21)	53 (16)	26 (8)
175°F (83°C)	59 (17)	45 (13)	23 (6)

Material & Product Standards and Certifications

Fire performance

BS 476 PART 7: CLASS 1
This is a vertical flame spread test and its one of the most requested certificates.

BS 476 P6
Specifies a method of test, the result is expressed as a fire propagation index.

ASTM E84 (from UL 0568)
Tests the rate of flame spread and smoke emissions of materials.

ASTM D635
Standard test method for measuring the rate of burning and duration of burning in plastic products. / Class HB

ISO 5659-2
Specifies a method of measuring smoke production from the exposed surface of specimens of materials or composites.

ISO 4589-2
Determination of burning behavior by oxygen index

ANSI/UL94
Plastics flammability standard for horizontal and vertical class.

IEC 61537:
Non-flame propagating system component class - Contribution to fire test IEC60695-2-11 (GWT) / Spread of fire 1kW test IEC60695-11-2

ISO 6721-11
Methods for determining a value of the glass transition temperature from the dynamic mechanical properties

EN14582-2016
This standard specifies a combustion method for the determination of halogen and sulfur contents in waste materials by combustion.

IEC 60754-series
Halogen contents determination only on materials for cables.

IEC 63355:2022
“New” Standard to determine the Halogen content specially for “Cable Management Systems.”

Weathering / Chemical corrosion

ASTM G154-16
Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials. (Color DeltaE measurement)

ISO 4892-2
Plastics- Methods of exposure to laboratory light sources - Part2- xenon-arc lamps (preferred test for “Cable Management Systems.”)

ASTM D 4329 (from UL 0568)
Ultraviolet light exposure or ASTM G 155 Arc xenon light exposure (evaluating mechanical acc. to ASTM D 790)

ISO 4582
Methods to determine changes in colour and other appearance properties, and variations in mechanical or other properties

ASTM B-117
Tests a materials ability to resist the corrosive effect of salt water.

ASTM D570
Determine the rate of absorption of water by immersing the specimen in water for a specific period of time.

ASTM C581
Determining Chemical Resistance of Thermosetting Resins Used in Glass-Fiber-Reinforced Structures

Isolation / Electrical properties

Electrically non-conductive system component -resistivity values of 100 MΩ or greater.

ASTM D257-14
This test measures the volume and surface resistivity of a material.

ASTM D149 (from UL 0568)
Dielectric Strength

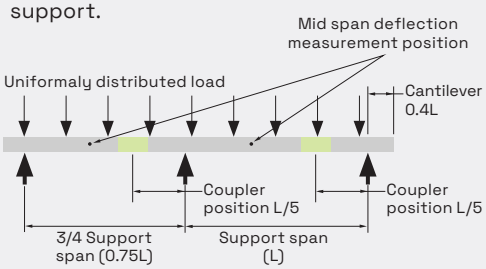
IEC60079-0
General requirements for construction, testing and marking of Ex Equipment and Ex Com-ponents (for Antistatic resin)

Mechanical performance

UL 0568
Nonmetallic Cable Tray Systems

Nema FG-1
Standard that defines the construction and testing standards for nonmetallic cable tray systems

IEC 61537
International Standard specifies requirements and tests for cable tray systems and cable ladder systems intended for the Cable support.



IEC 61914 (Short Circuit test)
Cable cleats for electrical installations_ 9.5 Test for resistance to electromechanical force.

FRP Cable ladders, trays and accessories have been designed to withstand 25 years or more service life. Nevertheless, this cannot be achieved by product alone, Actual service of 25 years can only be achieved if cable ladders, trays and accessories are:

→ NOT subjected to any abnormal mechanical loads or mechanical impacts that would have long term effect on the performance of the product.

→ NOT subjected to abnormal corrosive atmosphere or subjected to direct contact with corrosive sub-stance.

→ NOT subjected to any major alteration to the structure of the product or cut away areas or drill holes outside of the recommended installation guidelines.

Chemical Exposure Guide

CHEMICAL	Polyester Class 1 resin		Vinyl Ester Resin	
ENVIRONMENT	%Concentration	Max Op, Temp. F/C	% Concentration	Max Op, Temp. F/C
Acetic Acid	50	125/52	50	180/82
Aluminum Hydroxide	100	160/71	100	180/82
Ammonium Chloride	All	170/77	All	210/99
Ammonium Hydroxide	28	N/R	28	100/38
Ammonium Bicarbonate	15	125/52	15	160/70
Ammonium Sulfate	ALL	170/77	ALL	210/99
Benzene	N/R	N/R	N/R	N/R
Benzoic Acid	SAT	150/66	SAT	210/99
Borax	SAT	170/77	SAT	210/99
Callum Carbonate	ALL	170/77	ALL	180/82
Calcium Nitrate	ALL	180/82	ALL	210/99
Carbon Tetrachloride	N/R	N/R	N/R	150/65
Chlorine, Dry Gas	–	140/60	–	210/99
Chlorine Water	SAT	80/27	SAT	200/93
Chromic Acid	5	70/21	5	150/65
Citric Acid	ALL	170/77	ALL	210/99
Copper Chloride	ALL	170/77	ALL	210/99
Copper Cyanide	ALL	170/77	ALL	210/99
Copper Nitrate	ALL	170/77	ALL	210/99
Ethanol	50	75/24	50	100/38
Ethylene Glycol	100	90/32	100	200/93
Ferric Chloride	ALL	170/77	ALL	210/99

Ferrous Chloride	ALL	170/77	ALL	210/99
Formaldehyde	50	75/24	50	150/65
Gasoline	100	80/27	100	180/82
Glucose	100	170/77	100	210/99
Glycerine	100	150/66	100	210/99
Hydrobromic Acid	50	120/49	50	150/65
Hydrochloric Acid	37	75/24	37	150/65
Hydrogen Peroxide	5	100/38	5	150/65
Lactic Acid	ALL	170/77	ALL	210/99
Lithium Chloride	SAT	150/66	SAT	210/99
Magnesium Chloride	ALL	170/77	ALL	210/99
Magnesium Nitrate	ALL	140/60	ALL	210/99
Magnesium Sulfate	ALL	170/77	ALL	210/99
Mercuric Chloride	100	150/66	100	210/99
Mercurous Chloride	ALL	140/60	ALL	210/99
Nickel Chloride	ALL	170/77	ALL	210/99
Nickel Sulfate	ALL	170/77	ALL	210/99
Nitrate Acid	20	70/21	20	120/49
Oxalic Acid	ALL	75/24	ALL	210/99
Perchloric Acid	N/R	N/R	N/R	100/38
Phosphoric Acid	100	120/49	100	210/99
Potassium Chloride	ALL	170/77	ALL	210/99
Potassium Dichromate	ALL	170/77	ALL	210/99
Potassium Nitrate	ALL	170/77	ALL	210/99
Potassium Sulfate	ALL	170/77	ALL	210/99
Propylene Glycol	ALL	170/77	ALL	210/99
Sodium Acetate	ALL	160/71	ALL	210/99
Sodium Bisulfate	ALL	170/77	ALL	210/99
Sodium Bromide	ALL	170/77	ALL	210/99
Sodium Cyanide	ALL	170/77	ALL	210/99
Sodium Hydroxide	N/R	N/R	N/R	180/82
Sodium Nitrate	ALL	170/77	ALL	210/99
Sodium Sulfate	ALL	170/77	ALL	210/99
Stannic Chloride	ALL	160/71	ALL	210/99
Sulfuric Acid	25	75/24	25	100/38
Tartaric Acid	ALL	170/77	ALL	210/99
Vinegar	100	170/77	100	210/99
Water, Distilled	100	170/77	100	180/82
Zinc Nitrate	ALL	170/77	ALL	210/99
Zinc Sulfate	ALL	170/77	ALL	210/99

Responsible business

Wibe Group is a multinational company with operations in different parts of the world. We want to run a responsible business, by understanding and managing all effects in the value chain. We see it not only as a responsibility but also an opportunity to influence and drive sustainable development for our business and communities.

Our ambition is to take the lead in our industry. With a clear vison and long term commitment, we will get there.

In 2024, we received a Silver Sustainability Rating from EcoVadis, placing us in the top 15% of all companies in the world, and top 3% of our industry segment. Join us on our journey to create sustainable solutions for generations to come!

Read more about our sustainability work on wibe-group.com


SILVER | Top 15%
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FEB 2024

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