EUROGRATE SONITS



EUROGRATE® PULTRUDED BEAMS AND STRUCTURES IN FIBERGLASS



COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV = ISO 9001:2008 =

FEATURES



MADE IN ITALY

Eurograte[®] structural beams are manufactured by the pultrusion process, (raw materials pulled through a resin bath and pre forming die) and contain up to 70% glass fibers which guarantees a high mechanical resistance. The beam structure, composed by continuous directional fibers, determines an excellent impact and fatigue resistance (permanent deformation does not occur in case of accidental over loading). Eurograte[®] FRP (Fiberglass Reinforced Plastic) structural beams present several benefits such as high rigidity, corrosion resistance, electrical and thermal insulation and lightweight. Designed by structural composite specialists, the internal composition is studied keeping in mind all the properties required by a structural section such as longitudinal strength, shear resistance, flange flexural resistance and transversal strength. Eurograte[®] FRP structural beams are designed to be used as structural supports with all the necessary guarantees of performance.



CORROSION RESISTANCE

The thermosetting isophthalic resin system normally used guarantees excellent corrosion resistance. (Other resin systems available on demand).

Ticomm & Promaco stabilizes the beams against U.V. ray exposure by adding a resin-rich external synthetic surfacing veil. This barrier increases the volume of resin and avoids fiber blooming.

EXAMPLES OF USE

Ideal for small-medium support systems normally carried out with traditional carpentry: platforms, catwalks, walkways mezzanines, pedestrian bridges, tank loading docks, maintenance platforms, basin covers, etc.



-BENEFITS:-

- corrosion resistance
- lightweight
- electrical insulation
- maintenance free
- ease of installation
- no grounding is necessary
- mass colouring
- radio transparency

Since 1982 ticomm & PROMACO is dedicated to the research, design and production of fiberglass gratings, handrails, ladders and structures.





VERSATILITY

EASY TO USE

Depending on the strength required, the choice of the structural shape to use is simple: it's similar to the choice of a steel shape. Easy to install, cut and fabricate using ready available tools. Furthermore our structural shapes can be assembled much faster and easier than traditional structural shapes.

LIGHTWEIGHT AND INSULATING

With the same rigidity, a Eurograte[®] structural beam weighs 3 times less than the equivalent steel beam.

This saving in weight leads to an appreciable saving in transportation, handling, assembly and maintenance costs of the structural parts that are subject to frequent maintenance.

Radio transparent and insulating, our pultruded shapes offer excellent electrical and thermal insulation.

FIBERGLASS RODS AND NUTS

The threaded rods and nuts in fiberglass reinforced epoxy resin possess excellent mechanical strength and chemical resistance. They permit the assembly of resistant structures without the use of metallic components. With standard ISO pitch, they are distinct from metal rods in that they have a specially profiled thread that maintains a continuous hold.









SPECIFICATION

CONCEPT

Manufactured in Italy, the beams are mechanically manufactured with the pultrusion process (raw materials pulled through a resin bath and pre forming die) and are composed by continuous glass fibers type Roving and thermosetting resin system.

THE COMPOSITION

The Matrix material, is based on an isophthalic polyester resin system which binds with the glass fibers and gives the chemical resistance to the final product. The resin system can be also vinyl ester or acrylic or with fire retardant self extinguishing with low smoke emission without the use of halogen additives. The Eurograte[®] resin systems are tested and certified according to ASTM or AFNOR norms.

The mechanical reinforcement is achieved using continuous unidirectional fiberglass strands type E Roving.

Additional reinforcements and protection: (a distinction of quality by Eurograte®)

Every Eurograte[®] pultruded beam includes, as a standard in the manufacturing process, the use of continuous multidirectional glass mats which increase the transverse mechanical resistance. Furthermore all profiles are manufactured with the implementation of an external synthetic surfacing veil: this increases the chemical protection and avoids fiber blooming as well as adding further protection to possible deterioration caused by UV exposure and environmental attack.

TECHNICAL PROPERTIES











"R" section



"L" section

"H" wide flange

"I" section

"C" section

"Q" section

STANDARD SECTIONS

BEAM TYPE (mm)	A mm	B mm	T mm	S mm	S mm²	kg/m	lxx mm⁴	Wxx mm ³	r mm	lyy mm⁴	Wyy mm³	r mm	J mm⁴
H - 200x200x15x10	200	200	10	15	6.700	11,7	43.423.333	434.233	81	13.383.958	133.840	45	358.333
I - 200x100x10x10	200	100	10	10	3.800	6,5	22.926.667	229.267	78	1.681.667	33.633	21	133.333
l - 150x75x8x8	150	75	8	8	2.272	3,9	7.659.669	102.129	58	568.217	15.152	16	51.200
I - 120x60x8x8	120	60	8	8	1.792	3,2	3.765.589	62.780	46	292.430	9.748	13	40.960
l - 100x50x8x8	100	50	8	8	1.472	2,6	2.092.203	41.844	38	170.251	6.810	11	34.133
C - 300x100x15x15	300	100	15	15	7.050	12,5	85.579.000	570.525	110	5.688.800	75.850	28	562.500
C - 200x60x10x10	200	60	10	10	3.000	6,1	15.700.000	157.000	72	825.000	18.333	17	106.667
C - 150x45x8x8	150	45	8	8	1.792	3,5	5.237.429	69.832,4	8,6	274.629	8.181	12	40.960
C - 90x35x8x8	90	35	8	8	1.152	2,13	1.214.496	26.989	32	112.772	4.622	10	27.307
Q - 90x90x8x8	90	90	8	8	2.624	4,64	2.968.619	37.774	34	2.968.619	37.774	34	46.080
Q - 50x50x5x5	50	50	5	5	900	1,66	307.500	12.300	18	307.500	12.300	18	6.250
Q - 50x50x3x3	50	50	3	3	564	1,0	208.490	8.340	19	208.490	8.340	19	1.350
R - 85x25x3x4	85	25	4	3	1.300	2,4	920.833	26.310	27	920.833	26.833	27	8.750
L - 100x100x8x8	100	100	8	8	1.536	2,6	1.486.046	20.158	31	12.983.858	176.127	10,7	17.066
L - 75x50x8x8	75	50	8	8	936	1,5	526.235	10.362	18,5	2.623.191	51.656	5,8	8.533
L - 65x60x5x5	65	60	5	5	600	1,2	304.888	8.329	14	91.499	24.997	4	2.500
L - 50x45x5x5	50	45	5	5	450	0,83	133.689	4.851	9	244.921	8.888	2,4	1.875
L - 35x35x5x5	35	35	5	5	325	0,55	43.623	2.215	5,3	38.605	1.960	1,1	1.458

Other sections available on demand

- MARKET SECTORS: -

- chemical plants
- desalination
- power plants
- tanneries
- marine & naval
- oil & gas
- electrical substations
- pulp & paper
- waste treatment
- telecommunication
- mass transit
- water treatment

TECHNICAL SPECIFICATIONS

MECHANICAL PROPERTIES

PROPERTY	LONGITUDINAL VALUE	TRANSVERSAL VALUE	UNITS	TEST
Tensile strength	280 ~ 400	30 ~ 50	MPa	ASTM D 638
Tensile modulus	20 ~ 30	5~7	GPa	ASTM D 638
Flexural strength	280 ~ 400	70 ~ 100	MPa	ASTM D 790
Flexural modulus	18 ~ 20	7~10	GPa	ASTM D 790
Flexural E - modulus FULL BENDING	23 ~ 28	-	GPa	ISO 14125
Compressive strength	210 ~ 280	80 ~ 100	MPa	ASTM D 695
Compressive modulus	18 ~ 20	3~5	GPa	ASTM D 695
Interlaminar shear strength	25 ~ 35	-	MPa	ASTM D 2344
Interlaminar shear modulus	2~3	-	GPa	ASTM D 2344
Poisson's ratio	0,3	0,1	-	ASTM D 3039
Pin bearing strength	150	70	MPa	ASTM D 953
Impact strength	> 1	daN cm/cm ²	UNI 6062-67	

CHEMICAL-PHYSICAL PROPERTIES

PROPERTY	VALUE	UNITS	TEST
Density	1,65 ~ 1,85	kg/dm²	UNI 7092-72
Glass content in weight	50~70	%	-
Water absorption	0,5 ~ 1,0	% in peso	UNI ISO 62
Dielectric strength	3~7	kV/mm	UNI 4291-72
Surface insulation resistance	10 ¹⁰ ~ 10 ¹³	Ω	UNI 4288-72
Dielectric constant at 50 Hz	4~6	-	UNI 4289
Loss factor at 50 Hz	0,03 ~ 0,04	Tg δ	UNI 4289
Insulating class	F / H	-	-
Coefficient of thermal expansion	15 ~ 17	1/°Cx10 ⁶	UNI 6061-67
Thermal conductivity	0,2 ~ 0,3	Kcal/m H°C	UNI 7891

The values above indicated are average values and can change depending on the beam section, type of reinforcement and resin matrix. Ticomm & Promaco srl does not assume any responsability regarding the use of the above indicated values, which are given in good faith.



EUROGRATE[®] gratings



Fences



Fences



Vertical ladders

Eurograte[®] is a registered mark and manufactured by: ticomm & PROMACO s.r.l.

20064 Gorgonzola (Mi) - ITALY Via Parini, 111/e Tel. +39 02 95091.1 Fax +39 02 9514897

E-mail: info@eurograte.com Internet: www.eurograte.com

