

Structural Composite Profiles

Mechanical Properties

E23 – European Standard -recommended references for use of pultruded Profiles in structural applications:

- EN 13706 European standard for structural applications
- EN 12437 European standard for access structures
- DIN 18820 Reduction factors for long term loading
- DIN 18220 Chemical resistance tables
- Eurocomp design guide

Mechanical properties as specified in EN 13706

Property	Unit	E23	E17
Full section test	Gpa	23	17
Tension modulus – axial	Gpa	23	17
Tension modulus – transverse	Gpa	7	5
Tension strength – axial	MPa	240	170
Tension strength – transverse	MPa	50	30
Pin bearing strength – axial	MPa	150	90
Pin bearing strength – transverse	MPa	70	50
Flexural strength – axial	MPa	240	170
Flexural strength – transverse	MPa	100	70
Interlaminar shear strength - axial	MPa	25	15

Physical properties

Property	Method	Unit	Typical Value
Density	ISO 1183	G/cm ²	1.7-2.0
Barcol hardness	ASTM D2583	Barcol	50
Water absorption	ISO 62	%	0.7 max
Electrical strength	DIN 53481	kV/mm	5-10
Coefficient of linear thermal expansion *	BS 6319	^{10⁻⁶} /°k	6-10
Heat distortion temperature	ISO 75	°C	>150

* Tested in longitudinal direction

Chemical Resistances

Please ask for chemical resistance guide. Chemical resistance table represents the effects of various chemicals on standard profiles. The information is based upon test results and years of experience and is correct to the best of our knowledge.

Section Properties

Profile	Weight	Area	Moments of inertia		Torsional constant	Centre of gravity	
	kg/m	mm	10mm ⁴	10mm ⁴	10mm ⁴	x mm	y mm
Flat strip							
30 x 5							
80 x 3	0.43	240	128	0.2	0.7		
80 x 8	1.18	640	341	3.4	13.6		
150 x 3							
Angles							
30 x 30 x 3 (135°)							
50 x 50 x 3	0.53	291	71	71	0.9	13.61	13.61
50 x 50 x 5	0.89	4.75	113	113	4.0	14.34	14.34
60 x 60 x 8	1.63	896	297	297	19.1	17.93	17.93
100 x 100 x 8	2.76	1536	1480	1480	32.7	27.96	27.96
U profiles							
44.5 x 20 x 3.2	0.43	250	69	9	0.9	5.9	
70 x 30 x 5	1.08	600	408	46	5.0	8.75	
100 x 50 x 6	2.04	1128	1670	263	13.5	14.7	
120 x 60 x 8	3.23	1792	3770	594	38.2	17.93	
150 x 50 x 6	2.57	1428	4430	296	17.1	12.24	
200 x 80 x 8	5.15	2752	16000	1580	58.7	20.74	
Box sections							
25 x 25 x 3	0.50	264	21	21	32		
38 x 38 x 5	0.76	420	86	86	128		
44 x 44 x 6	1.64	912	225	225	329		
51 x 51 x 3.25	1.10	611	234	234	348		
60 x 60 x 4.5	1.86	999	516	516	769		
I beam							
150 x 75 x 6	3.11	1728	5980	424	20.7		
Handrail							
	1.31	728	90	550	3.4		
Tubes							
30 / 24	0.46	254	23	23	47		
38 / 32	0.59	330	51	51	101		
Ladder rung							
34.5 x 32 / 5.5	0.65	360	39	39	77		
Toe rail							
150 x 3 W section	1.14	605	1110	14	1.8	6.01	