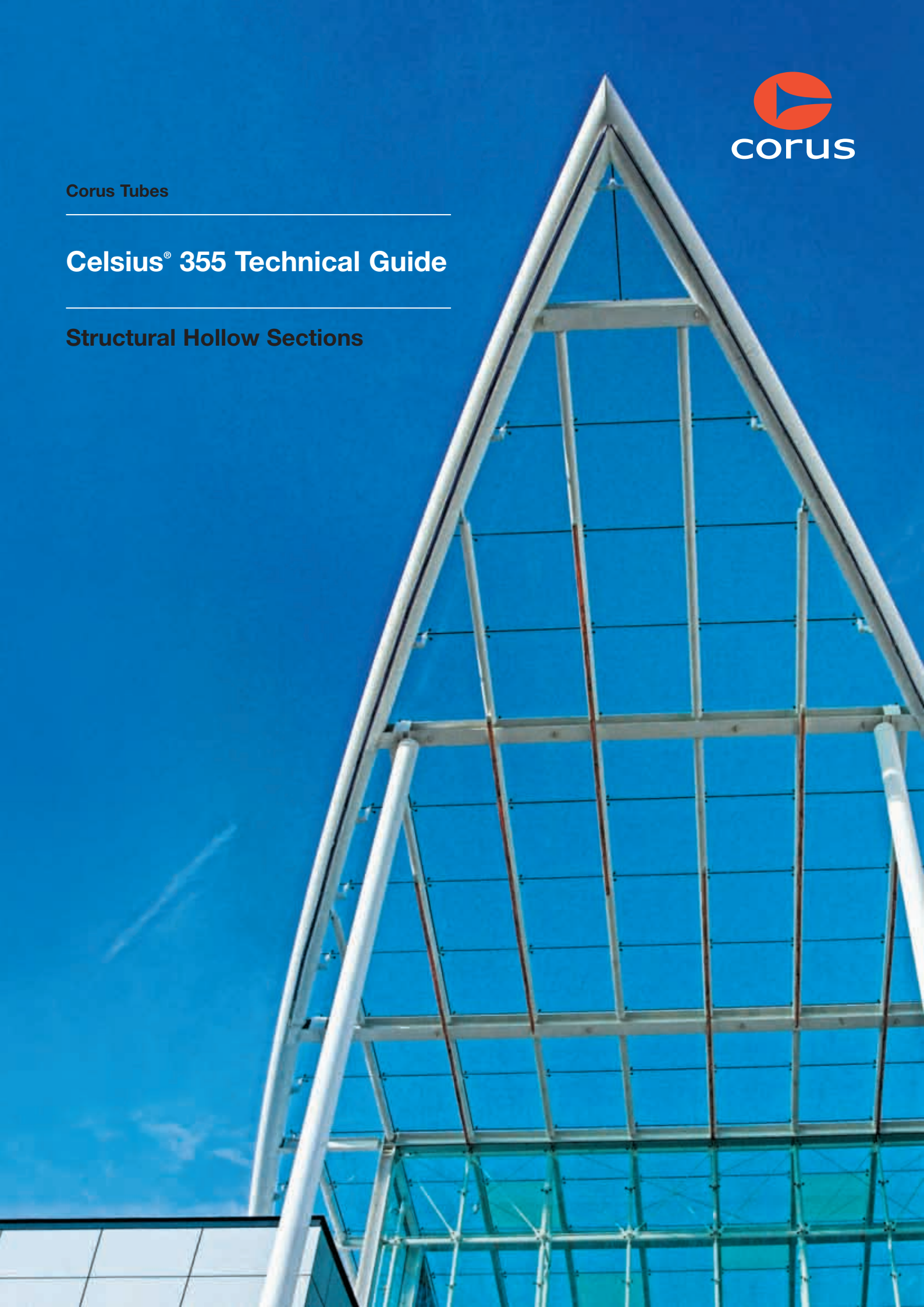



Corus Tubes

Celsius® 355 Technical Guide

Structural Hollow Sections





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Celsius® 355

The brand name for Corus Tubes hot finished structural hollow sections (SHS)

Celsius® 355 Structural Hollow Sections

- Formed at normalising temperature
- High sectional properties
- Fine grain structure
- Uniform mechanical properties
- Weldable in corner regions
- Higher compression capacity
- Negligible residual stress
- Tighter corner profile
- Suitability for galvanising
- Fire resistance capability
- Proven dynamic performance
- CPD with CE marking

Standard product features

- All hot finished to EN10210: 2006
- Full profile range – now includes ovals
- Min yield strength 355 N/mm²
- Min average impact strength 27J at -20°C
- Tighter RHS corner profile of 2T compared to EN10210 limit

Technical data

Celsius® 355 SHS Specification

Corus Tubes manufactures its Celsius® 355 SHS in a standard grade of S355 J2H in accordance with the European Standard for hot finished structural hollow sections EN 10210 (technical delivery requirements – EN10210-1: 2006, dimensions and tolerances – EN10210-2: 2006) plus an improved corner profile of 2T maximum.

Celsius® S355J2H is suitable for all internal and external applications to BS5950-1:2000, BS5400, EN 1993, and all equivalent national and international steel design standards.

Celsius® hot finished structural hollow sections are produced by a High Frequency Induction weld (HFI) process in sizes up to and including 508mm outside diameter, 500 x 250mm ovals, 400 x 400mm square, 500 x 300mm rectangular. Details of the regular and non regular production sizes, thicknesses and grades are shown on pages 6 and 8.

A range of large Celsius® 355 CHS up to 2134mm are available as listed in the Corus Tubes publication CT22 'Celsius® 355 LCHS'.

Sizes, thicknesses and grades other than those shown in this publication may be available on request.

Chemical Composition and Mechanical Properties

Chemical composition – ladle analysis

	Celsius® 355
Specification	EN10210 S355J2H Part 1: 2006
	% max
Carbon	0.22
Silicon	0.55
Manganese	1.60
Sulphur	0.030
Phosphorus	0.030
Carbon equivalent (CEV) mat T≤16mm	0.45
Type of deoxidation	Fully killed steel

Mechanical properties

	Celsius® 355
Specification	EN10210 S355J2H Part 1: 2006
Tensile Strength R_m N/mm ² : 3 ≤ T ≤ 100mm	470 – 630
Yield Strength R_{eH} Min, N/mm ² : T ≤ 16mm	355
Min Elongation % T ≤ 40mm on gauge length 5.65. $\sqrt{S_0}$	22
Impact properties Minimum Ave energy (J) 10 x 10mm Specimen at -20°C	27

† Due to the fact that steel designations are the same across different product types it is essential, when specifying or ordering hot finished hollow sections that all references should include the Celsius® 355 brand name. Alternatively a full specification can be used, but it must include a manufacturing standard (i.e EN10210) along with steel grade and impact class.

Inspection and Testing

Celsius® 355 hot finished structural hollow sections are submitted to specific inspection and testing, and supplied with an inspection certificate to EN 10204 type 3.1.

Designation

Celsius® 355 hot finished structural hollow sections are designated by their product brand name[†], material grade, external dimensions and thickness in millimetres.

CE marking

All **Celsius® 355** material is CE marked and is fully compliant with the Construction Products Directive.

Examples:

(a) circular hollow section:

Celsius® 355 114.3 x 6.3

or

114.3 x 6.3 CHS EN10210:2006: Part 1: S355J2H

(b) rectangular hollow section:

Celsius® 355 100 x 50 x 5.0

or

100 x 50 x 5.0 RHS EN10210: 2006: Part 1: S355J2H

(c) oval hollow section:

Celsius® 355 oval 400 x 200 x 8.0

or

100 x 50 x 5.0 OHS EN10210: 2006: Part 1: S355J2H

or simply

Celsius® 355 OHS 100 x 50 x 5.0



Celsius® 355 SHS

Dimensional tolerances EN10210: 2006 Part 2

	Square/Rectangular	Circular/Ovals
Outside dimension (D B and H)	±1% with a min of ±0.5mm	Circular ±1% with a min of ±0.5mm and maximum of ±10mm Ovals ±1% with a min of ±0.5mm (The permitted tolerance is twice the value for H<250)
Thickness (T)	-10% Note. Positive deviation limited by mass tolerance	-10% Note. Positive deviation limited by mass tolerance
Squareness of side	90 degrees ±1 degree	-
External corner profile	2T max at each corner* (EN10210 has 3T max).	-
Concavity/convexity (x)	±1% of the side, measured independently of the tolerance on the outside dimension	-
Twist (V)	2mm plus 0.5mm/m max. Section is placed on a flat surface with one end held flat. At the other end the height difference of the two lower corners is taken.	Ovals: 2mm plus 0.5mm/m max. (The permitted tolerance is twice the value for H<250) -
Mass (M)	±6% on individual lengths	±6% on individual lengths
Straightness	Max 0.2% of total length & 3mm over every 1m length	Maximum 0.2% of the total length & 3mm over every 1m length. (The permitted tolerance is twice the value for H<250)
Length	+150mm/-0mm	+150mm/-0mm

* Excludes RHS 250 x 200, which is 3T max at each corner in line with EN10210

Celsius® Rectangular hollow sections – length and tolerances

Size mm	Welded				Tolerance mm
	Rectangles mm	Standard mill lengths m	Special mill lengths m*		
40 x 40 uti 100 x 100	50 x 30 uti 120 x 80	6.0, 6.4, 7.5, 10.0 & 12.0	5.4 – 14.60		+150-0
120 x 120 uti 150 x 150 x 12.5	150 x 100 uti 200 x 100 x 12.5	6.0, 6.4, 7.5, 10.0 & 12.0	6.0 – 14.50		+150-0
150 x 150 x 16.0	200 x 100 x 16.0	Check Availability	6.0 – 13.50		
160 x 160 to 400 x 400 x 16.0	200 x 120 to 500 x 300 x 16.0	10.0 & 12.0	6.0 – 15.30		+150-0
400 x 400 x 20.0	500 x 300 x 20.0	12.0 – 12.7 subject to availability	-		-

* Also available in 100mm increments (uti – up to and including)

Celsius® Circular hollow sections – length and tolerances

Outside dia. mm	Welded Thickness mm	Standard mill			Tolerance mm
		Standard mill lengths m	Special mill lengths m*		
21.3 – 42.4	All	6.0, 6.4, 7.5	5.4 – 7.5		+150-0
48.3	All	6.0, 6.4, 7.5 & 10.0	5.4 – 14.6		+150-0
60.3 – 114.3	All	6.0, 6.4, 7.5 & 10.0	5.0 – 14.6		+150-0
139.7	All	7.5 & 10.0	6.0 – 14.5		+150-0
168.3 – 193.7	All	7.5, 10.0 & 12.0	6.0 – 14.6		+150-0
219.1 – 508.0	All	10.0 & 12.0	6.0 – 14.6		+150-0

* Also available in 100mm increments

Celsius® Oval hollow sections – length and tolerances

Size mm	Welded Thickness mm	Standard mill		Tolerance mm
		Standard mill lengths m*		
150 x 75	All	7.5 & 10.0		+150-0
200 x 100	All	7.5, 10.0 & 12.0		+150-0
250 x 125	All	7.5, 10.0 & 12.0		+150-0
300 x 150	All	10.0 & 12.0		+150-0
400 x 200	All	10.0 & 12.0		+150-0
500 x 250	All	10.0 & 12.0		+150-0

* Special mill lengths in 100mm increments also available



Celsius® 355

Production range charts

Celsius® 355 circular hollow sections

Outside diameter mm	Thickness mm										
	2.6	2.9	3.2	3.6	4.0	5.0	6.3	8.0	10.0	12.5	16.0
21.3											
26.9											
33.7											
42.4											
48.3											
60.3											
76.1											
88.9											
114.3											
139.7											
168.3											
193.7											
219.1											
244.5											
273.0											
323.9											
355.6											
406.4											
457.0											
508.0											

Celsius® 355 oval hollow sections

Size mm	Thickness mm						
	4.0	5.0	6.3	8.0	10.0	12.5	16.0
150 x 75							
200 x 100							
250 x 125							
300 x 150							
400 x 200							
500 x 250							



Regular production sections:

Basis priced and manufactured on regular rolling cycles. Sections are produced ex mill in standard lengths/bundles, self-colour finish and in Celsius® 355 as shown in the tables.



Non-Regular production sections:

Are rolled to order. Minimum quantities, extended lead times and price extras may apply.



Special production sections:

Other grades, sizes and thicknesses than those shown as regular/non-regular and within the bold lines on the Celsius® 355 tables.

Celsius® 355 square hollow sections

Size mm	Thickness mm										
	3.0	3.2	3.6	4.0	5.0	6.3	8.0	10.0	12.5	16.0	20.0
40 x 40	Yellow	Red		Red	Red						
50 x 50	Yellow	Red		Red	Red	Red					
60 x 60	Red	Red		Red	Red	Red	Yellow				
70 x 70	White		Red	White	Red	Red	Red				
80 x 80	White		Red	Yellow	Red	Red	Red				
90 x 90			Red	Red	Red	Red	Red				
100 x 100				Red	Red	Red	Red	Red			
120 x 120				White	Red	Red	Red	Red	Red		
140 x 140					Red	Red	Red	Red	Red		
150 x 150					Red	Red	Red	Red	Red	White	
160 x 160					Red	Red	Red	Red	Yellow	White	
180 x 180					White	Red	Red	Red	Red	Red	
200 x 200					Red	Red	Red	Red	Red	Red	
250 x 250					White	Red	Red	Red	Red	Red	
300 x 300						Yellow	Red	Red	Red	Red	
350 x 350							White	Red	Red	Red	
400 x 400							White	Red	Red	Red	White

Celsius® 355 rectangular hollow sections

Size mm	Thickness mm										
	3.0	3.2	3.6	4.0	5.0	6.3	8.0	10.0	12.5	16.0	20.0
50 x 30	White	Red		White	White						
60 x 40	Red	White		Yellow	Yellow	White					
80 x 40	White	Red		Red	Red	Yellow	Yellow				
90 x 50	White		Red	White	Red	Yellow	White				
100 x 50	Red	Red		Red	Red	Red	Red	White			
100 x 60	White		Red		Red	Red	Red				
120 x 60			Red		Red	Red	Red				
120 x 80					Red	Red	Red	Red			
150 x 100				White	Red	Red	Red	Red	Red		
160 x 80				Red	Red	Red	Red	Red	White		
200 x 100					Red	Red	Red	Red	Red	Yellow	
200 x 120					Red	Red	Red	Red	White	White	
200 x 150					White	White	Red	Red			
250 x 100							White	Yellow	Yellow		
250 x 150					Red	Red	Red	Red	Red	Red	
260 x 140					White		Red	Red		White	
300 x 100							Red	Red	Yellow	White	
300 x 150								White			
300 x 200					White	Red	Red	Red	Red	Red	
300 x 250						White					
350 x 150							Yellow	Yellow	Yellow	Yellow	
350 x 250											
400 x 150						White					
400 x 200							Red	Red	Red	Red	
400 x 300							White	White	White	White	
450 x 250							Red	Red	Red	Red	
500 x 200							White	White	White	White	
500 x 300							Yellow	Red	Yellow	Red	White

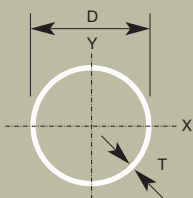
Celsius® 355

EN10210: 2006: S355J2H Circular Section

Celsius® EN10210: 2006: S355J2H Hot Finished CHS Properties

Outside Diameter	Thickness	Mass	Area	Moment of inertia	Radius of gyration	Elastic modulus	Plastic modulus	Torsional constants		Superficial area/m	Approx. length /tonne
D	T	M	A	I	i	W _{el}	W _{pl}	I _t	C _t	A _s	
mm	mm	kg/m	cm ²	cm ⁴	cm	cm ³	cm ³	cm ⁴	cm ³	m ² /m	m
21.3	3.2	1.43	1.82	0.768	0.650	0.722	1.06	1.54	1.44	0.067	700
26.9	3.2	1.87	2.38	1.70	0.846	1.27	1.81	3.41	2.53	0.085	535
33.7	2.6	1.99	2.54	3.09	1.10	1.84	2.52	6.19	3.67	0.106	501
	2.9	2.20	2.81	3.36	1.09	1.99	2.76	6.71	3.98	0.106	454
	3.2	2.41	3.07	3.60	1.08	2.14	2.99	7.21	4.28	0.106	415
	3.6	2.67	3.40	3.91	1.07	2.32	3.28	7.82	4.64	0.106	374
	4.0	2.93	3.73	4.19	1.06	2.49	3.55	8.38	4.97	0.106	341
42.4	2.6	2.55	3.25	6.46	1.41	3.05	4.12	12.9	6.10	0.133	392
	3.2	3.09	3.94	7.62	1.39	3.59	4.93	15.2	7.19	0.133	323
	4.0	3.79	4.83	8.99	1.36	4.24	5.92	18.0	8.48	0.133	264
	5.0	4.61	5.87	10.5	1.33	4.93	7.04	20.9	9.86	0.133	217
48.3	3.2	3.56	4.53	11.6	1.60	4.80	6.52	23.2	9.59	0.152	281
	4.0	4.37	5.57	13.8	1.57	5.70	7.87	27.5	11.4	0.152	229
	5.0	5.34	6.80	16.2	1.54	6.69	9.42	32.3	13.4	0.152	187
60.3	3.2	4.51	5.74	23.5	2.02	7.78	10.4	46.9	15.6	0.189	222
	4.0	5.55	7.07	28.2	2.00	9.34	12.7	56.3	18.7	0.189	180
	5.0	6.82	8.69	33.5	1.96	11.1	15.3	67.0	22.2	0.189	147
76.1	2.9	5.24	6.67	44.7	2.59	11.8	15.5	89.5	23.5	0.239	191
	3.2	5.75	7.33	48.8	2.58	12.8	17.0	97.6	25.6	0.239	174
	4.0	7.11	9.06	59.1	2.55	15.5	20.8	118	31.0	0.239	141
	5.0	8.77	11.2	70.9	2.52	18.6	25.3	142	37.3	0.239	114
88.9	3.2	6.76	8.62	79.2	3.03	17.8	23.5	158	35.6	0.279	148
	4.0	8.38	10.7	96.3	3.00	21.7	28.9	193	43.3	0.279	119
	5.0	10.3	13.2	116	2.97	26.2	35.2	233	52.4	0.279	96.7
	6.3	12.8	16.3	140	2.93	31.5	43.1	280	63.1	0.279	77.9
114.3	3.2	8.77	11.2	172	3.93	30.2	39.5	345	60.4	0.359	114
	3.6	9.83	12.5	192	3.92	33.6	44.1	384	67.2	0.359	102
	4.0	10.9	13.9	211	3.90	36.9	48.7	422	73.9	0.359	91.9
	5.0	13.5	17.2	257	3.87	45.0	59.8	514	89.9	0.359	74.2
	6.3	16.8	21.4	313	3.82	54.7	73.6	625	109	0.359	59.6
139.7	5.0	16.6	21.2	481	4.77	68.8	90.8	961	138	0.439	60.2
	6.3	20.7	26.4	589	4.72	84.3	112	1177	169	0.439	48.2
	8.0	26.0	33.1	720	4.66	103	139	1441	206	0.439	38.5
168.3	5.0	20.1	25.7	856	5.78	102	133	1712	203	0.529	49.7
	6.3	25.2	32.1	1053	5.73	125	165	2107	250	0.529	39.7
	8.0	31.6	40.3	1297	5.67	154	206	2595	308	0.529	31.6
	10.0	39.0	49.7	1564	5.61	186	251	3128	372	0.529	25.6
	12.5	48.0	61.2	1868	5.53	222	304	3737	444	0.529	20.8
193.7	5.0	23.3	29.6	1320	6.67	136	178	2640	273	0.609	43.0
	6.3	29.1	37.1	1630	6.63	168	221	3260	337	0.609	34.3
	8.0	36.6	46.7	2016	6.57	208	276	4031	416	0.609	27.3
	10.0	45.3	57.7	2442	6.50	252	338	4883	504	0.609	22.1
	12.5	55.9	71.2	2934	6.42	303	411	5869	606	0.609	17.9

Non-regular
 Special



Celsius® EN10210: 2006: S355J2H Hot Finished CHS Properties (continued)

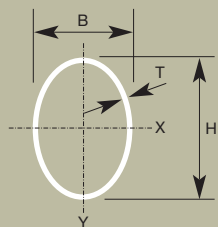
Outside Diameter	Thickness	Mass	Area	Moment of inertia	Radius of gyration	Elastic modulus	Plastic modulus	Torsional constants		Superficial area/m	Approx. length /tonne
D	T	M	A	I	i	W _{el}	W _{pl}	I _t	C _t	A _s	
mm	mm	kg/m	cm ²	cm ⁴	cm	cm ³	cm ³	cm ⁴	cm ³	m ² /m	m
219.1	5.0	26.4	33.6	1928	7.57	176	229	3856	352	0.688	37.9
	6.3	33.1	42.1	2386	7.53	218	285	4772	436	0.688	30.2
	8.0	41.6	53.1	2960	7.47	270	357	5919	540	0.688	24.0
	10.0	51.6	65.7	3598	7.40	328	438	7197	657	0.688	19.4
	12.5	63.7	81.1	4345	7.32	397	534	8689	793	0.688	15.7
	16.0	80.1	102	5297	7.20	483	661	10593	967	0.688	12.5
244.5	5.0	29.5	37.6	2699	8.47	221	287	5397	441	0.768	33.9
	6.3	37.0	47.1	3346	8.42	274	358	6692	547	0.768	27.0
	8.0	46.7	59.4	4160	8.37	340	448	8321	681	0.768	21.4
	10.0	57.8	73.7	5073	8.30	415	550	10146	830	0.768	17.3
	12.5	71.5	91.1	6147	8.21	503	673	12295	1006	0.768	14.0
	16.0	90.2	115	7533	8.10	616	837	15066	1232	0.768	11.1
273.0	5.0	33.0	42.1	3781	9.48	277	359	7562	554	0.858	30.3
	6.3	41.4	52.8	4696	9.43	344	448	9392	688	0.858	24.1
	8.0	52.3	66.6	5852	9.37	429	562	11703	857	0.858	19.1
	10.0	64.9	82.6	7154	9.31	524	692	14308	1048	0.858	15.4
	12.5	80.3	102	8697	9.22	637	849	17395	1274	0.858	12.5
	16.0	101	129	10707	9.10	784	1058	21414	1569	0.858	9.86
323.9	5.0	39.3	50.1	6369	11.3	393	509	12739	787	1.02	25.4
	6.3	49.3	62.9	7929	11.2	490	636	15858	979	1.02	20.3
	8.0	62.3	79.4	9910	11.2	612	799	19820	1224	1.02	16.0
	10.0	77.4	98.6	12158	11.1	751	986	24317	1501	1.02	12.9
	12.5	96.0	122	14847	11.0	917	1213	29693	1833	1.02	10.4
	16.0	121	155	18390	10.9	1136	1518	36780	2271	1.02	8.23
355.6	6.3	54.3	69.1	10547	12.4	593	769	21094	1186	1.12	18.4
	8.0	68.6	87.4	13201	12.3	742	967	26403	1485	1.12	14.6
	10.0	85.2	109	16223	12.2	912	1195	32447	1825	1.12	11.7
	12.5	106	135	19852	12.1	1117	1472	39704	2233	1.12	9.45
	16.0	134	171	24663	12.0	1387	1847	49326	2774	1.12	7.46
406.4	6.3	62.2	79.2	15849	14.1	780	1009	31699	1560	1.28	16.1
	8.0	78.6	100	19874	14.1	978	1270	39748	1956	1.28	12.7
	10.0	97.8	125	24476	14.0	1205	1572	48952	2409	1.28	10.2
	12.5	121	155	30031	13.9	1478	1940	60061	2956	1.28	8.24
	16.0	154	196	37449	13.8	1843	2440	74898	3686	1.28	6.49
457.0	6.3	70.0	89.2	22654	15.9	991	1280	45308	1983	1.44	14.3
	8.0	88.6	113	28446	15.9	1245	1613	56893	2490	1.44	11.3
	10.0	110	140	35091	15.8	1536	1998	70183	3071	1.44	9.07
	12.5	137	175	43145	15.7	1888	2470	86290	3776	1.44	7.30
	16.0	174	222	53959	15.6	2361	3113	107919	4723	1.44	5.75
508.0	6.3	77.9	99.3	31246	17.7	1230	1586	62493	2460	1.60	12.8
	8.0	98.6	126	39280	17.7	1546	2000	78560	3093	1.60	10.1
	10.0	123	156	48520	17.6	1910	2480	97040	3820	1.60	8.14
	12.5	153	195	59755	17.5	2353	3070	119511	4705	1.60	6.55
	16.0	194	247	74909	17.4	2949	3874	149818	5898	1.60	5.15

Celsius® 355

EN10210: 2006: S355J2H Oval Section

Celsius® EN10210: 2006: S355J2H Hot Finished OHS Properties

Size	Thickness	Mass	Sectional area	Moment of inertia		Radius of gyration		Elastic modulus		Plastic modulus		Torsional constants		Superficial area/m	Approx. length
H x B	T	M	A	I _{xx}	I _{yy}	i _{xx}	i _{yy}	W _{el,xx}	W _{el,yy}	W _{pl,xx}	W _{pl,yy}	I _t	C _t	A _s	/tonne
mm	mm	kg/m	cm ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	cm ⁴	cm ³	m ² /m	m
150 x 75	4.0	10.7	13.6	301	101	4.70	2.72	40.1	26.9	56.1	34.4	303	60.1	0.363	93.4
	5.0	13.3	16.9	367	122	4.66	2.69	48.9	32.5	68.9	42.0	367	72.2	0.363	75.4
	6.3	16.5	21.0	448	147	4.62	2.64	59.7	39.1	84.9	51.5	443	86.3	0.363	60.6
200 x 100	5.0	17.9	22.8	897	302	6.27	3.64	89.7	60.4	125	76.8	905	135	0.484	55.9
	6.3	22.3	28.4	1103	368	6.23	3.60	110	73.5	155	94.7	1105	163	0.484	44.8
	8.0	28.0	35.7	1358	446	6.17	3.54	136	89.3	193	117	1347	197	0.484	35.7
	10.0	34.5	44.0	1637	529	6.10	3.47	164	106	235	141	1605	232	0.484	29.0
	12.5	42.4	54.0	1954	619	6.02	3.39	195	124	284	169	1889	269	0.484	23.6
250 x 125	6.3	28.2	35.9	2205	742	7.84	4.55	176	119	246	151	2224	265	0.605	35.5
	8.0	35.4	45.1	2732	909	7.78	4.49	219	145	307	188	2734	323	0.605	28.2
	10.0	43.8	55.8	3316	1090	7.71	4.42	265	174	376	228	3288	385	0.605	22.8
	12.5	53.9	68.7	3996	1292	7.63	4.34	320	207	458	276	3918	453	0.605	18.5
300 x 150	8.0	42.8	54.5	4813	1616	9.39	5.44	321	215	449	275	4846	481	0.726	23.4
	10.0	53.0	67.5	5872	1950	9.32	5.37	391	260	551	336	5867	577	0.726	18.9
	12.5	65.5	83.4	7120	2334	9.24	5.29	475	311	674	409	7047	686	0.726	15.3
	16.0	82.5	105	8731	2809	9.12	5.17	582	374	837	503	8529	818	0.726	12.1
400 x 200	8.0	57.6	73.4	11689	3966	12.6	7.35	584	397	811	500	11858	890	0.969	17.4
	10.0	71.5	91.1	14348	4829	12.5	7.28	717	483	1001	615	14473	1079	0.969	14.0
	12.5	88.6	113	17531	5843	12.5	7.19	877	584	1232	753	17558	1299	0.969	11.3
	16.0	112	143	21734	7143	12.3	7.07	1087	714	1541	936	21551	1577	0.969	8.92
500 x 250	10.0	90.0	115	28539	9682	15.8	9.19	1142	775	1585	976	28950	1739	1.210	11.1
	12.5	112	142	35030	11791	15.7	9.10	1401	943	1956	1201	35333	2108	1.210	8.95
	16.0	142	180	43709	14549	15.6	8.98	1748	1164	2459	1501	43737	2586	1.210	7.06



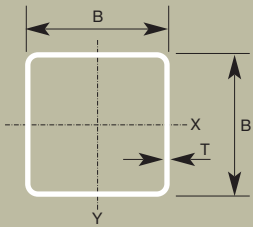
Celsius® 355

EN10210: 2006: S355J2H Square Section

Celsius® EN10210: 2006: S355J2H Hot Finished SHS Properties

Size	Thickness	Mass	Area	Moment of inertia	Radius of gyration	Elastic modulus	Plastic modulus	Torsional constants		Superficial area/m	Approx. length
B x B mm	T mm	M kg/m	A cm ²	I cm ⁴	i cm	W _{el} cm ³	W _{pl} cm ³	I _t cm ⁴	C _t cm ³	A _s m ² /m	/tonne m
40 x 40	3.0	3.41	4.34	9.78	1.50	4.89	5.97	15.7	7.10	0.152	293
	3.2	3.61	4.60	10.2	1.49	5.11	6.28	16.5	7.42	0.152	277
	4.0	4.39	5.59	11.8	1.45	5.91	7.44	19.5	8.54	0.150	228
	5.0	5.28	6.73	13.4	1.41	6.68	8.66	22.5	9.60	0.147	189
50 x 50	3.0	4.35	5.54	20.2	1.91	8.08	9.70	32.1	11.8	0.192	230
	3.2	4.62	5.88	21.2	1.90	8.49	10.2	33.8	12.4	0.192	217
	4.0	5.64	7.19	25.0	1.86	9.99	12.3	40.4	14.5	0.190	177
	5.0	6.85	8.73	28.9	1.82	11.6	14.5	47.6	16.7	0.187	146
	6.3	8.31	10.6	32.8	1.76	13.1	17.0	55.2	18.8	0.184	120
60 x 60	3.0	5.29	6.74	36.2	2.32	12.1	14.3	56.9	17.7	0.232	189
	3.2	5.62	7.16	38.2	2.31	12.7	15.2	60.2	18.6	0.232	178
	4.0	6.90	8.79	45.4	2.27	15.1	18.3	72.5	2.20	0.230	145
	5.0	8.42	10.7	53.3	2.23	17.8	21.9	86.4	25.7	0.227	119
	6.3	10.3	13.1	61.6	2.17	20.5	26.0	102	29.6	0.224	97.2
	8.0	12.5	16.0	69.7	2.09	23.2	30.4	118	33.4	0.219	79.9
70 x 70	3.0	6.24	7.94	59.0	2.73	16.9	19.9	92.2	24.8	0.272	160
	3.6	7.40	9.42	68.6	2.70	19.6	23.3	108	28.7	0.271	135
	5.0	9.99	12.7	88.5	2.64	25.3	30.8	142	36.8	0.267	100
	6.3	12.3	15.6	104	2.58	29.7	36.9	169	42.9	0.264	81.5
	8.0	15.0	19.2	120	2.50	34.2	43.8	200	49.2	0.259	66.5
80 x 80	3.0	7.18	9.14	89.8	3.13	22.5	26.3	140	33.0	0.312	139
	3.6	8.53	10.9	105	3.11	26.2	31.0	164	38.5	0.311	117
	4.0	9.41	12.0	114	3.09	28.6	34.0	180	41.9	0.310	106
	5.0	11.6	14.7	137	3.05	34.2	41.1	217	49.8	0.307	86.5
	6.3	14.2	18.1	162	2.99	40.5	49.7	262	58.7	0.304	70.2
	8.0	17.5	22.4	189	2.91	47.3	59.5	312	68.3	0.299	57.0
90 x 90	3.6	9.66	12.3	152	3.52	33.8	39.7	237	49.7	0.351	104
	4.0	10.7	13.6	166	3.50	37.0	43.6	260	54.2	0.350	93.7
	5.0	13.1	16.7	200	3.45	44.4	53.0	316	64.8	0.347	76.1
	6.3	16.2	20.7	238	3.40	53.0	64.3	382	77.0	0.344	61.6
	8.0	20.1	25.6	281	3.32	62.6	77.6	459	90.5	0.339	49.9
100 x 100	4.0	11.9	15.2	232	3.91	46.4	54.4	361	68.2	0.390	83.9
	5.0	14.7	18.7	279	3.86	55.9	66.4	439	81.8	0.387	68.0
	6.3	18.2	23.2	336	3.80	67.1	80.9	534	97.8	0.384	54.9
	8.0	22.6	28.8	400	3.73	79.9	98.2	646	116	0.379	44.3
	10.0	27.4	34.9	462	3.64	92.4	116	761	133	0.374	36.5

Non-regular
 Special


Celsius® EN10210: 2006: S355J2H Hot Finished SHS Properties (continued)

Size	Thickness	Mass	Area	Moment of inertia	Radius of gyration	Elastic modulus	Plastic modulus	Torsional constants		Superficial area/m	Approx. length
B x B mm	T mm	M kg/m	A cm ²	I cm ⁴	i cm	W _{el} cm ³	W _{pl} cm ³	I _t cm ⁴	C _t cm ³	A _s m ² /m	/tonne m
120 x 120	4.0	14.4	18.4	410	4.72	68.4	79.7	635	101	0.470	69.3
	5.0	17.8	22.7	498	4.68	83.0	97.6	777	122	0.467	56.0
	6.3	22.2	28.2	603	4.62	100	120	950	147	0.464	45.1
	8.0	27.6	35.2	726	4.55	121	146	1160	176	0.459	36.2
	10.0	33.7	42.9	852	4.46	142	175	1382	206	0.454	29.7
	12.5	40.9	52.1	982	4.34	164	207	1623	236	0.448	24.5
140 x 140	5.0	21.0	26.7	807	5.50	115	135	1253	170	0.547	47.7
	6.3	26.1	33.3	984	5.44	141	166	1540	206	0.544	38.3
	8.0	32.6	41.6	1195	5.36	171	204	1892	249	0.539	30.7
	10.0	40.0	50.9	1416	5.27	202	246	2272	294	0.534	25.0
	12.5	48.7	62.1	1653	5.16	236	293	2696	342	0.528	20.5
150 x 150	5.0	22.6	28.7	1002	5.90	134	156	1550	197	0.587	44.3
	6.3	28.1	35.8	1223	5.85	163	192	1909	240	0.584	35.6
	8.0	35.1	44.8	1491	5.77	199	237	2351	291	0.579	28.5
	10.0	43.1	54.9	1773	5.68	236	286	2832	344	0.574	23.2
	12.5	52.7	67.1	2080	5.57	277	342	3375	402	0.568	19.0
	r 16.0	65.2	83.0	2430	5.41	324	411	4026	467	0.559	15.3
160 x 160	5.0	24.1	30.7	1225	6.31	153	178	1892	226	0.627	41.5
	6.3	30.1	38.3	1499	6.26	187	220	2333	275	0.624	33.3
	8.0	37.6	48.0	1831	6.18	229	272	2880	335	0.619	26.6
	10.0	46.3	58.9	2186	6.09	273	329	3478	398	0.614	21.6
	12.5	56.6	72.1	2576	5.98	322	395	4158	467	0.608	17.7
	16.0	70.2	89.4	3028	5.82	379	476	4988	546	0.599	14.2
180 x 180	5.0	27.3	34.7	1765	7.13	196	227	2718	290	0.707	36.7
	6.3	34.0	43.3	2168	7.07	241	281	3361	355	0.704	29.4
	8.0	42.7	54.4	2661	7.00	296	349	4162	434	0.699	23.4
	10.0	52.5	66.9	3193	6.91	355	424	5048	518	0.694	19.0
	12.5	64.4	82.1	3790	6.80	421	511	6070	613	0.688	15.5
	16.0	80.2	102	4504	6.64	500	621	7343	724	0.679	12.5
200 x 200	5.0	30.4	38.7	2445	7.95	245	283	3756	362	0.787	32.9
	6.3	38.0	48.4	3011	7.89	301	350	4653	444	0.784	26.3
	8.0	47.7	60.8	3709	7.81	371	436	5778	545	0.779	21.0
	10.0	58.8	74.9	4471	7.72	447	531	7031	655	0.774	17.0
	12.5	72.3	92.1	5336	7.61	534	643	8491	778	0.768	13.8
	16.0	90.3	115	6394	7.46	639	785	10340	927	0.759	11.1

r External corner radius >2T but ≤3T

Non-regular Special

Celsius® 355

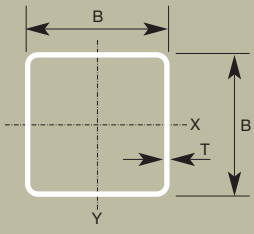
EN10210: 2006: S355J2H Square Section

Celsius® EN10210: 2006: S355J2H Hot Finished SHS Properties (continued)

Size	Thickness	Mass	Area	Moment of inertia	Radius of gyration	Elastic modulus	Plastic modulus	Torsional constants		Superficial area/m	Approx. length
B x B mm	T mm	M kg/m	A cm ²	I cm ⁴	i cm	W _{el} cm ³	W _{pl} cm ³	I _t cm ⁴	C _t cm ³	A _s m ² /m	/tonne m
250 x 250	6.3	47.9	61.0	6014	9.93	481	556	9238	712	0.984	20.9
	8.0	60.3	76.8	7455	9.86	596	694	11525	880	0.979	16.6
	10.0	74.5	94.9	9055	9.77	724	851	14106	1065	0.974	13.4
	12.5	91.9	117	10915	9.66	873	1037	17164	1279	0.968	10.9
	16.0	115	147	13267	9.50	1061	1280	21138	1546	0.959	8.67
300 x 300	6.3	57.8	73.6	10547	12.0	703	809	16136	1043	1.18	17.3
	8.0	72.8	92.8	13128	11.9	875	1013	20194	1294	1.18	13.7
	10.0	90.2	115	16026	11.8	1068	1246	24807	1575	1.17	11.1
	12.5	112	142	19442	11.7	1296	1525	30333	1904	1.17	8.97
	16.0	141	179	23850	11.5	1590	1895	37622	2325	1.16	7.12
350 x 350	8.0	85.4	109	21129	13.9	1207	1392	32384	1789	1.38	11.7
	10.0	106	135	25884	13.9	1479	1715	39886	2185	1.37	9.44
	12.5	131	167	31541	13.7	1802	2107	48934	2654	1.37	7.62
	16.0	166	211	38942	13.6	2225	2630	60990	3264	1.36	6.04
400 x 400	8.0	97.9	125	31857	16.0	1593	1830	48695	2363	1.58	10.2
	10.0	122	155	39128	15.9	1956	2260	60092	2895	1.57	8.22
	12.5	151	192	47839	15.8	2392	2782	73906	3530	1.57	6.63
	16.0	191	243	59344	15.6	2967	3484	92442	4362	1.56	5.24
	§ 20.0	235	300	71535	15.4	3577	4247	112489	5237	1.55	4.25

§ SAW process (single longitudinal seam weld, slightly proud)

Non-regular Special



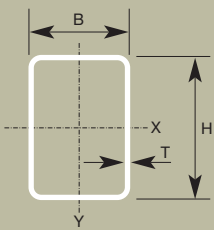
Celsius® 355

EN10210: 2006: S355J2H Rectangular Section

Celsius® EN10210: 2006: S355J2H Hot Finished RHS Properties

Size	Thickness	Mass	Sectional area	Moment of inertia		Radius of gyration		Elastic modulus		Plastic modulus		Torsional constants		Superficial area/m	Approx. length /tonne
H x B mm	T mm	M kg/m	A cm ²	I _{xx} cm ⁴	I _{yy} cm ⁴	i _{xx} cm	i _{yy} cm	W _{el,xx} cm ³	W _{el,yy} cm ³	W _{pl,xx} cm ³	W _{pl,yy} cm ³	I _t cm ⁴	C _t cm ³	A _s m ² /m	/tonne m
50 x 30	3.0	3.41	4.34	13.6	5.94	1.77	1.17	5.43	3.96	6.88	4.76	13.5	6.51	0.152	293
	3.2	3.61	4.60	14.2	6.20	1.76	1.16	5.68	4.13	7.25	5.00	14.2	6.80	0.152	277
	4.0	4.39	5.59	16.5	7.08	1.72	1.13	6.60	4.72	8.59	5.88	16.6	7.77	0.150	228
	5.0	5.28	6.73	18.7	7.89	1.67	1.08	7.49	5.26	10.0	6.80	19.0	8.67	0.147	189
	6.3	6.31	8.11	21.5	8.61	1.61	1.04	8.31	5.71	11.5	7.50	21.5	9.51	0.144	166
60 x 40	3.0	4.35	5.54	26.5	13.9	2.18	1.58	8.82	6.95	10.9	8.19	29.2	11.2	0.192	230
	3.2	4.62	5.88	27.8	14.6	2.18	1.57	9.27	7.29	11.5	8.64	30.8	11.7	0.192	217
	4.0	5.64	7.19	32.8	17.0	2.14	1.54	10.9	8.52	13.8	10.3	36.7	13.7	0.190	177
	5.0	6.85	8.73	38.1	19.5	2.09	1.50	12.7	9.77	16.4	12.2	43.0	15.7	0.187	146
	6.3	8.31	10.6	43.4	21.9	2.02	1.44	14.5	11.0	19.2	14.2	49.5	17.6	0.184	120
80 x 40	3.0	5.29	6.74	54.2	18.0	2.84	1.63	13.6	9.00	17.1	10.4	43.8	15.3	0.232	189
	3.2	5.62	7.16	57.2	18.9	2.83	1.63	14.3	9.46	18.0	11.0	46.2	16.1	0.232	178
	4.0	6.90	8.79	68.2	22.2	2.79	1.59	17.1	11.1	21.8	13.2	55.2	18.9	0.230	145
	5.0	8.42	10.7	80.3	25.7	2.74	1.55	20.1	12.9	26.1	15.7	65.1	21.9	0.227	119
	6.3	10.3	13.1	93.3	29.2	2.67	1.49	23.3	14.6	31.1	18.4	75.6	24.8	0.224	97.2
	8.0	12.5	16.0	106	32.1	2.58	1.42	26.5	16.1	36.5	21.2	85.8	27.4	0.219	79.9
90 x 50	3.0	6.24	7.94	84.4	33.5	3.26	2.05	18.8	13.4	23.2	15.3	76.5	22.4	0.272	160
	3.6	7.40	9.42	98.3	38.7	3.23	2.03	21.8	15.5	27.2	18.0	89.4	25.9	0.271	135
	5.0	9.99	12.7	127	49.2	3.16	1.97	28.3	19.7	36.0	23.5	116	32.9	0.267	100
	6.3	12.3	15.6	150	57.0	3.10	1.91	33.3	22.8	43.2	28.0	138	38.1	0.264	81.5
	8.0	15.0	19.2	174	64.6	3.01	1.84	38.6	25.8	51.4	32.9	160	43.2	0.259	66.5
100 x 50	3.0	6.71	8.54	110	36.8	3.58	2.08	21.9	14.7	27.3	16.8	88.4	25.0	0.292	149
	3.2	7.13	9.08	116	38.8	3.57	2.07	23.2	15.5	28.9	17.7	93.4	26.4	0.292	140
	4.0	8.78	11.2	140	46.2	3.53	2.03	27.9	18.5	35.2	21.5	113	31.4	0.290	114
	5.0	10.8	13.7	167	54.3	3.48	1.99	33.3	21.7	42.6	25.8	135	36.9	0.287	92.8
	6.3	13.3	16.9	197	63.0	3.42	1.93	39.4	25.2	51.3	30.8	160	42.9	0.284	75.4
	8.0	16.3	20.8	230	71.7	3.33	1.86	46.0	28.7	61.4	36.3	186	48.9	0.279	61.4
	10.0	19.6	24.9	259	78.4	3.22	1.77	51.8	31.4	71.2	41.4	209	53.6	0.274	51.1
100 x 60	3.0	7.18	9.14	124	55.7	3.68	2.47	24.7	18.6	30.2	21.2	121	30.7	0.312	139
	3.6	8.53	10.9	145	64.8	3.65	2.44	28.9	21.6	35.6	24.9	142	35.6	0.311	117
	5.0	11.6	14.7	189	83.6	3.58	2.38	37.8	27.9	47.4	32.9	188	45.9	0.307	86.5
	6.3	14.2	18.1	225	98.1	3.52	2.33	45.0	32.7	57.3	39.5	224	53.8	0.304	70.2
	8.0	17.5	22.4	264	113	3.44	2.25	52.8	37.8	68.7	47.1	265	62.2	0.299	57.0
120 x 60	3.6	9.66	12.3	227	76.3	4.30	2.49	37.9	25.4	47.2	28.9	183	43.3	0.351	104
	5.0	13.1	16.7	299	98.8	4.23	2.43	49.9	32.9	63.1	38.4	242	56.0	0.347	76.1
	6.3	16.2	20.7	358	116	4.16	2.37	59.7	38.8	76.7	46.3	290	65.9	0.344	61.6
	8.0	20.1	25.6	425	135	4.08	2.30	70.8	45.0	92.7	55.4	344	76.6	0.339	49.9

Non-regular
 Special


Celsius® EN10210: 2006: S355J2H Hot Finished RHS Properties (continued)

Size	Thickness	Mass	Sectional area	Moment of inertia		Radius of gyration		Elastic modulus		Plastic modulus		Torsional constants		Superficial area/m	Approx. length
H x B	T	M	A	I _{xx}	I _{yy}	i _{xx}	i _{yy}	W _{el,xx}	W _{el,yy}	W _{pl,xx}	W _{pl,yy}	I _t	C _t	A _s	/tonne
mm	mm	kg/m	cm ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	cm ⁴	cm ³	m ² /m	m
120 x 80	5.0	14.7	18.7	365	193	4.42	3.21	60.9	48.2	74.6	56.1	401	77.9	0.387	68.0
	6.3	18.2	23.2	440	230	4.36	3.15	73.3	57.6	91.0	68.2	487	92.9	0.384	54.9
	8.0	22.6	28.8	525	273	4.27	3.08	87.5	68.1	111	82.6	587	110	0.379	44.3
	10.0	27.4	34.9	609	313	4.18	2.99	102	78.1	131	97.3	688	126	0.374	36.5
150 x 100	4.0	15.1	19.2	607	324	5.63	4.11	81.0	64.8	97.4	73.6	660	105	0.490	66.4
	5.0	18.6	23.7	739	392	5.58	4.07	98.5	78.5	119	90.1	807	127	0.487	53.7
	6.3	23.1	29.5	898	474	5.52	4.01	120	94.8	147	110	986	153	0.484	43.2
	8.0	28.9	36.8	1087	569	5.44	3.94	145	114	180	135	1203	183	0.479	34.7
	10.0	35.3	44.9	1282	665	5.34	3.85	171	133	216	161	1432	214	0.474	28.4
	12.5	42.8	54.6	1488	763	5.22	3.74	198	153	256	190	1679	246	0.468	23.3
160 x 80	4.0	14.4	18.4	612	207	5.77	3.35	76.5	51.7	94.7	58.3	493	88.1	0.470	69.3
	5.0	17.8	22.7	744	249	5.72	3.31	93.0	62.3	116	71.1	600	106	0.467	56.0
	6.3	22.2	28.2	903	299	5.66	3.26	113	74.8	142	86.8	730	127	0.464	45.1
	8.0	27.6	35.2	1091	356	5.57	3.18	136	89.0	175	106	883	151	0.459	36.2
	10.0	33.7	42.9	1284	411	5.47	3.10	161	103	209	125	1041	175	0.454	29.7
	12.5	40.9	52.1	1485	465	5.34	2.99	186	116	247	146	1204	198	0.448	24.5
200 x 100	5.0	22.6	28.7	1495	505	7.21	4.19	149	101	185	114	1204	172	0.587	44.3
	6.3	28.1	35.8	1829	613	7.15	4.14	183	123	228	140	1475	208	0.584	35.6
	8.0	35.1	44.8	2234	739	7.06	4.06	223	148	282	172	1804	251	0.579	28.5
	10.0	43.1	54.9	2664	869	6.96	3.98	266	174	341	206	2156	295	0.574	23.2
	12.5	52.7	67.1	3136	1004	6.84	3.87	314	201	408	245	2541	341	0.568	19.0
	r 16.0	65.2	83.0	3678	1147	6.66	3.72	368	229	491	290	2982	391	0.559	15.3
200 x 120	5.0	24.1	30.7	1685	762	7.40	4.98	168	127	205	144	1648	210	0.627	41.5
	6.3	30.1	38.3	2065	929	7.34	4.92	207	155	253	177	2028	255	0.624	33.3
	8.0	37.6	48.0	2529	1128	7.26	4.85	253	188	313	218	2495	310	0.619	26.6
	10.0	46.3	58.9	3026	1337	7.17	4.76	303	223	379	263	3001	367	0.614	21.6
	12.5	56.6	72.1	3576	1562	7.04	4.66	358	260	455	314	3569	428	0.608	17.7
	16.0	70.2	89.4	4221	1813	6.87	4.50	422	302	550	377	4247	497	0.599	14.2
200 x 150	5.0	26.5	33.7	1970	1265	7.64	6.12	197	169	234	192	2386	267	0.687	37.8
	6.3	33.0	42.1	2420	1549	7.58	6.07	242	207	289	237	2947	326	0.684	30.3
	8.0	41.4	52.8	2971	1894	7.50	5.99	297	253	359	294	3643	398	0.679	24.1
	10.0	51.0	64.9	3568	2264	7.41	5.91	357	302	436	356	4409	475	0.674	19.6
	12.5	62.5	79.6	4236	2673	7.30	5.80	424	356	525	428	5287	559	0.668	16.0
	16.0	77.7	99.0	5036	3152	7.13	5.64	504	420	638	518	6370	658	0.659	12.9

r External corner radius >2T but ≤3T

Non-regular Special

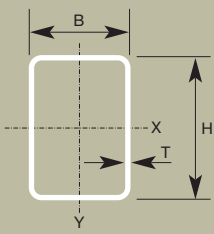
Celsius® 355

EN10210: 2006: S355J2H Rectangular Section

Celsius® EN10210: 2006: S355J2H Hot Finished RHS Properties (continued)

Size	Thickness	Mass	Sectional area	Moment of inertia		Radius of gyration		Elastic modulus		Plastic modulus		Torsional constants		Superficial area/m	Approx. length /tonne
H x B mm	T mm	M kg/m	A cm ²	I _{xx} cm ⁴	I _{yy} cm ⁴	i _{xx} cm	i _{yy} cm	W _{el,xx} cm ³	W _{el,yy} cm ³	W _{pl,xx} cm ³	W _{pl,yy} cm ³	I _t cm ⁴	C _t cm ³	A _s m ² /m	/tonne m
250 x 100	5.0	26.5	33.7	2610	618	8.80	4.28	209	124	263	138	1617	217	0.687	37.8
	6.3	33.0	42.1	3207	751	8.73	4.22	257	150	326	169	1983	264	0.684	30.3
	8.0	41.4	52.8	3940	909	8.64	4.15	315	182	404	209	2430	319	0.679	24.1
	10.0	51.0	64.9	4733	1072	8.54	4.06	379	214	491	251	2908	376	0.674	19.6
	12.5	62.5	79.6	5622	1245	8.41	3.96	450	249	592	299	3436	438	0.668	16.0
	16.0	77.7	99.0	6686	1433	8.22	3.80	535	287	719	358	4050	505	0.659	12.9
250 x 150	5.0	30.4	38.7	3360	1527	9.31	6.28	269	204	324	228	3278	337	0.787	32.9
	6.3	38.0	48.4	4143	1874	9.25	6.22	331	250	402	283	4054	413	0.784	26.3
	8.0	47.7	60.8	5111	2298	9.17	6.15	409	306	501	350	5021	506	0.779	21.0
	10.0	58.8	74.9	6174	2755	9.08	6.06	494	367	611	426	6090	605	0.774	17.0
	12.5	72.3	92.1	7387	3265	8.96	5.96	591	435	740	514	7326	717	0.768	13.8
	16.0	90.3	115	8879	3873	8.79	5.80	710	516	906	625	8868	849	0.759	11.1
260 x 140	5.0	30.4	38.7	3532	1354	9.55	5.91	272	193	331	216	3078	326	0.787	32.9
	6.3	38.0	48.4	4355	1660	9.49	5.86	335	237	411	267	3803	399	0.784	26.3
	8.0	47.7	60.8	5373	2032	9.40	5.78	413	290	511	331	4704	488	0.779	21.0
	10.0	58.8	74.9	6490	2432	9.31	5.70	499	347	624	402	5698	584	0.774	17.0
	12.5	72.3	92.1	7767	2876	9.18	5.59	597	411	756	485	6841	690	0.768	13.8
	16.0	90.3	115	9337	3400	9.01	5.44	718	486	925	588	8257	815	0.759	11.1
300 x 100	5.0	30.4	38.7	4146	731	10.3	4.34	276	146	354	161	2040	262	0.787	32.9
	6.3	38.0	48.4	5111	890	10.3	4.29	341	178	439	199	2504	319	0.784	26.3
	8.0	47.7	60.8	6305	1078	10.2	4.21	420	216	546	245	3069	387	0.779	21.0
	10.0	58.8	74.9	7613	1275	10.1	4.13	508	255	666	296	3676	458	0.774	17.0
	12.5	72.3	92.1	9103	1486	9.94	4.02	607	297	806	354	4350	534	0.768	13.8
	16.0	90.3	115	10931	1719	9.75	3.87	729	344	986	425	5138	619	0.759	11.1
300 x 150	10.0	66.7	84.9	9716	3246	10.7	6.18	648	433	811	496	7839	736	0.874	15.0
	12.5	82.1	105	11688	3858	10.6	6.07	779	514	986	600	9445	874	0.868	12.2
300 x 200	5.0	38.3	48.7	6322	3396	11.4	8.35	421	340	501	380	6824	552	0.987	26.1
	6.3	47.9	61.0	7829	4193	11.3	8.29	522	419	624	472	8476	681	0.984	20.9
	8.0	60.3	76.8	9717	5184	11.3	8.22	648	518	779	589	10562	840	0.979	16.6
	10.0	74.5	94.9	11819	6278	11.2	8.13	788	628	956	721	12908	1015	0.974	13.4
	12.5	91.9	117	14273	7537	11.0	8.02	952	754	1165	877	15677	1217	0.968	10.9
	16.0	115	147	17390	9109	10.9	7.87	1159	911	1441	1080	19252	1468	0.959	8.67

Non-regular
 Special

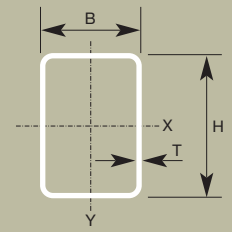

Celsius® EN10210: 2006: S355J2H Hot Finished RHS Properties (continued)

Size	Thickness	Mass	Sectional area	Moment of inertia		Radius of gyration		Elastic modulus		Plastic modulus		Torsional constants		Superficial area/m	Approx. length /tonne
H x B	T	M	A	I _{xx}	I _{yy}	i _{xx}	i _{yy}	W _{el,xx}	W _{el,yy}	W _{pl,xx}	W _{pl,yy}	I _t	C _t	A _s	/tonne
mm	mm	kg/m	cm ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	cm ⁴	cm ³	m ² /m	m
300 x 250	6.3	52.8	67.3	9188	6950	11.7	10.2	613	556	716	633	12155	862	1.08	18.9
	8.0	66.5	84.8	11422	8627	11.6	10.1	761	690	896	791	15187	1067	1.08	15.0
	10.0	82.4	105	13923	10496	11.5	10.0	928	840	1101	971	18620	1295	1.07	12.1
	12.5	102	130	16857	12680	11.4	9.89	1124	1014	1345	1185	22711	1560	1.07	9.83
	16.0	128	163	20620	15460	11.2	9.74	1375	1237	1668	1467	28064	1896	1.06	7.81
350 x 150	5.0	38.3	48.7	7655	2053	12.5	6.49	437	274	543	301	5161	477	0.987	26.1
	6.3	47.9	61.0	9481	2525	12.5	6.43	542	337	676	373	6389	586	0.984	20.9
	8.0	60.3	76.8	11770	3105	12.4	6.36	673	414	844	464	7926	721	0.979	16.6
	10.0	74.5	94.9	14320	3737	12.3	6.27	818	498	1035	566	9633	867	0.974	13.4
	12.5	91.9	117	17297	4450	12.2	6.17	988	593	1263	686	11619	1032	0.968	10.9
	16.0	115	147	21079	5317	12.0	6.01	1205	709	1561	840	14124	1233	0.959	8.67
350 x 250	6.3	57.8	73.6	13203	7885	13.4	10.4	754	631	892	709	15215	1011	1.18	17.3
	8.0	72.8	92.8	16449	9798	13.3	10.3	940	784	1118	888	19027	1254	1.18	13.7
	10.0	90.2	115	20102	11937	13.2	10.2	1149	955	1375	1091	23354	1525	1.17	11.1
	12.5	112	142	24419	14444	13.1	10.1	1395	1156	1685	1334	28526	1842	1.17	8.97
	16.0	141	179	30011	17654	12.9	9.93	1715	1412	2095	1655	35325	2246	1.16	7.12
400 x 150	6.3	52.8	67.3	13255	2851	14.0	6.51	663	380	836	418	7595	673	1.08	18.9
	8.0	66.5	84.8	16488	3509	13.9	6.43	824	468	1046	521	9424	828	1.08	15.0
	10.0	82.4	105	20111	4227	13.8	6.35	1006	564	1285	636	11460	998	1.07	12.1
	12.5	102	130	24369	5043	13.7	6.24	1218	672	1571	772	13831	1190	1.07	9.83
	16.0	128	163	29836	6038	13.5	6.09	1492	805	1948	947	16829	1426	1.06	7.81
400 x 200	6.3	57.8	73.6	15696	5376	14.6	8.55	785	538	960	594	12612	917	1.18	17.3
	8.0	72.8	92.8	19562	6660	14.5	8.47	978	666	1203	743	15735	1135	1.18	13.7
	10.0	90.2	115	23914	8084	14.4	8.39	1196	808	1480	911	19259	1376	1.17	11.1
	12.5	112	142	29063	9738	14.3	8.28	1453	974	1813	1111	23438	1656	1.17	8.97
	16.0	141	179	35738	11824	14.1	8.13	1787	1182	2256	1374	28871	2010	1.16	7.12
400 x 300	8.0	85.4	109	25709	16540	15.4	12.3	1285	1103	1517	1247	31014	1749	1.38	11.7
	10.0	106	135	31521	20233	15.3	12.2	1576	1349	1870	1536	38180	2135	1.37	9.44
	12.5	131	167	38451	24611	15.2	12.1	1923	1641	2298	1884	46810	2592	1.37	7.62
	16.0	166	211	47541	30309	15.0	12.0	2377	2021	2870	2349	58286	3184	1.36	6.04

Non-regular
 Special

Celsius® 355

EN10210: 2006: S355J2H Rectangular Section



Celsius® EN10210: 2006: S355J2H Hot Finished RHS Properties (continued)

Size	Thickness	Mass	Sectional area	Moment of inertia		Radius of gyration		Elastic modulus		Plastic modulus		Torsional constants		Superficial area/m	Approx. length /tonne
H x B	T	M	A	I _{xx}	I _{yy}	i _{xx}	i _{yy}	W _{el,xx}	W _{el,yy}	W _{pl,xx}	W _{pl,yy}	I _t	C _t	A _s	
mm	mm	kg/m	cm ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	cm ⁴	cm ³	m ² /m	m
450 x 250	8.0	85.4	109	30082	12142	16.6	10.6	1337	971	1622	1081	27083	1629	1.38	11.7
	10.0	106	135	36895	14819	16.5	10.5	1640	1185	2000	1331	33284	1986	1.37	9.44
	12.5	131	167	45026	17973	16.4	10.4	2001	1438	2458	1631	40719	2406	1.37	7.62
	16.0	166	211	55705	22041	16.2	10.2	2476	1763	3070	2029	50545	2947	1.36	6.04
500 x 200	8.0	85.4	109	34045	8135	17.7	8.65	1362	814	1707	896	21124	1430	1.38	11.7
	10.0	106	135	41755	9891	17.6	8.56	1670	989	2105	1101	25872	1737	1.37	9.44
	12.5	131	167	50956	11938	17.5	8.45	2038	1194	2586	1346	31514	2096	1.37	7.62
	16.0	166	211	63036	14539	17.3	8.30	2521	1454	3231	1669	38872	2552	1.36	6.04
500 x 300	8.0	97.9	125	43728	19951	18.7	12.6	1749	1330	2100	1480	42563	2203	1.58	10.2
	10.0	122	155	53762	24439	18.6	12.6	2150	1629	2595	1826	52450	2696	1.57	8.22
	12.5	151	192	65813	29780	18.5	12.5	2633	1985	3196	2244	64389	3281	1.57	6.63
	16.0	191	243	81783	36768	18.3	12.3	3271	2451	4005	2804	80329	4044	1.56	5.24
§ 20.0	235	300	98777	44078	18.2	12.1	3951	2939	4885	3408	97447	4842	1.55	4.25	

§ SAW process (single longitudinal seam weld, slightly proud)

Non-regular
 Special



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