

Celsius® S420NH

Fully normalised high strength hollow sections

Celsius® S420NH is a range of fully normalised structural hollow sections according to EN 10210 with minimum yield strength of 420 MPa. As with all Celsius® hollow sections, S420NH is fully normalised, so is essentially free of internal stresses, with tight corner radii, less than 2T.



The high yield strength of Celsius® S420NH delivers improved load-bearing capabilities in a multitude of applications, with potential for up to 17% weight saving compared to a standard equivalent S355 section. This, together with the inherent benefits of a fully normalised hollow section, helps deliver efficient design of steelwork.

Celsius® S420NH also benefits from a uniquely low CEV of ≤ 0.45 . Coupled with the lack of any internal stresses, this makes it the most weldable range of high strength hollow sections. The chemistry of steel used is also ideally suited for galvanizing and is highly resistant to fatigue.

Tolerances

Dimensional tolerances are to EN 10210: Part 2 except for corner radius which is max 2T (standard states max 3T).

Inspection and testing

Celsius® S420NH hollow sections are subject to specific inspection and testing and are supplied with an inspection certificate type 3.1 to EN 10204. All Celsius® sections undergo 100% weld line NDT inspection to either E4 or U5 standard.

Designation

Celsius® S420NH hollow sections are designated by their product name, outside dimensions and thickness in millimetres.

CE Marking

Celsius® S420NH is manufactured and CE marked according to EN 10210-1&2:2006 grade S420NH.

Sustainability

The essential properties of steel make it the sustainable choice for a wide range of applications. Steel is strong, durable, versatile, re-usable and most importantly, it is 100% recyclable. We take sustainability very seriously and as well as being a member of ResponsibleSteel™, we have BES 6001 certification for all our hollow section manufacture. Celsius® is also available with a product specific Environmental Product Declaration (EPD).



Mechanical properties

Yield strength R_{eH} min N/mm ²	Tensile strength R_m N/mm ²	Elongation % min $L_0 = 5,65 \sqrt{S_0}$ specimen	Impact strength 10mm x 10mm		Carbon equivalent (CEV) max
T \leq 16mm	3mm < T \leq 100mm	T	°C	J	
420	520-680	19	-20	40	0.45

Chemical composition % by mass

C max	Si max	Mn	P max	S max	Nb max	V max	Al total min	Ti max	Cr max	Ni max	Mo max	Cu max	N max
0.22	0.60	1.70	0.035	0.030	0.050	0.20	0.020	0.03	0.30	0.80	0.10	0.70	0.025

Note: CEV ≤ 0.45 compared to EN10210:S420 CEV ≤ 0.5

Availability

Celsius® S420NH is available across the size range indicated in the tables, minimum order quantities may apply. Intermediate sizes may also be available. For further information please contact your Tata Steel representative for details or our technical team on T: +44 (0) 1536 404561, E: technicalmarketing@tatasteeleurope.com

Celsius® S355NH is available with internal weld bead trimmed where specified. Celsius® S355NH is available in standard lengths from 6.0m to 15.3m. RHS & SHS <140mm to 14.5m >150mm to 15.3m. CHS <Ø193.7mm to 14.5m >Ø219.1mm to 14.5m

Technical support

We want you to get the best from Celsius® hollow sections. Our technical engineers and trained sales staff are always happy to answer your questions on steel selection and application. Our engineers are available to assist you with the application of Celsius® S420NH, including its use in construction and in light-weighting of machinery. We can also provide advice on welded joints, including software which can help in their design. For further technical/design assistance email technicalmarketing@tatasteeleurope.com

Square hollow sections (SHS)

mm	3.2	3.6	4.0	5.0	6.3	8.0	10.0	12.5	14.2	16.0
40/40	Blue	Blue	Blue	Blue	Blue	Blue				
50/50	Blue	Blue	Blue	Blue	Blue	Blue				
60/60	Blue	Blue	Blue	Blue	Blue	Blue				
70/70	Blue	Blue	Blue	Blue	Blue	Blue				
80/80	Blue	Blue	Blue	Blue	Blue	Blue				
90/90		Blue	Blue	Blue	Blue	Blue				
100/100		Blue	Blue	Blue	Blue	Blue				
120/120			Blue	Blue	Blue	Blue	Blue			
140/140				Blue	Blue	Blue	Blue	Blue		
150/150				Blue	Blue	Blue	Blue	Blue	Blue	
160/160				Blue	Blue	Blue	Blue	Blue	Blue	Blue
180/180				Blue	Blue	Blue	Blue	Blue	Blue	Blue
200/200				Blue	Blue	Blue	Blue	Blue	Blue	Blue
220/220				Blue	Blue	Blue	Blue	Blue	Blue	Blue
250/250				Blue	Blue	Blue	Blue	Blue	Blue	Blue
260/260				Blue	Blue	Blue	Blue	Blue	Blue	Blue
300/300				Blue	Blue	Blue	Blue	Blue	Blue	Blue
350/350				Blue	Blue	Blue	Blue	Blue	Blue	Blue
400/400				Blue	Blue	Blue	Blue	Blue	Blue	Blue

Rectangular hollow sections (RHS)

mm	3.2	3.6	4.0	5.0	6.3	8.0	10.0	12.5	14.2	16.0
50/30	Blue	Blue	Blue	Blue	Blue	Blue				
60/40	Blue	Blue	Blue	Blue	Blue	Blue				
80/40	Blue	Blue	Blue	Blue	Blue	Blue				
90/50	Blue	Blue	Blue	Blue	Blue	Blue				
100/50	Blue	Blue	Blue	Blue	Blue	Blue				
100/60	Blue	Blue	Blue	Blue	Blue	Blue				
120/60		Blue	Blue	Blue	Blue	Blue				
120/80		Blue	Blue	Blue	Blue	Blue				
150/100			Blue	Blue	Blue	Blue	Blue			
160/80			Blue	Blue	Blue	Blue	Blue			
180/100			Blue	Blue	Blue	Blue	Blue			
200/100			Blue	Blue	Blue	Blue	Blue	Blue		
200/120			Blue	Blue	Blue	Blue	Blue	Blue		
200/150			Blue	Blue	Blue	Blue	Blue	Blue		
220/120			Blue	Blue	Blue	Blue	Blue	Blue		
250/100			Blue	Blue	Blue	Blue	Blue	Blue		
250/150			Blue	Blue	Blue	Blue	Blue	Blue		
260/140			Blue	Blue	Blue	Blue	Blue	Blue		
260/180			Blue	Blue	Blue	Blue	Blue	Blue		
300/100			Blue	Blue	Blue	Blue	Blue	Blue		
300/200			Blue	Blue	Blue	Blue	Blue	Blue	Blue	
300/250			Blue	Blue	Blue	Blue	Blue	Blue	Blue	
350/150			Blue	Blue	Blue	Blue	Blue	Blue	Blue	
350/250			Blue	Blue	Blue	Blue	Blue	Blue	Blue	
400/200			Blue	Blue	Blue	Blue	Blue	Blue	Blue	
400/300			Blue	Blue	Blue	Blue	Blue	Blue	Blue	
450/250			Blue	Blue	Blue	Blue	Blue	Blue	Blue	
500/200			Blue	Blue	Blue	Blue	Blue	Blue	Blue	
500/300			Blue	Blue	Blue	Blue	Blue	Blue	Blue	

Circular hollow sections (CHS)

mm	3.2	3.6	4.0	5.0	6.3	8.0	10.0	12.5	14.2	16.0
42.4	Blue	Blue	Blue	Blue	Blue	Blue				
48.3	Blue	Blue	Blue	Blue	Blue	Blue				
60.3	Blue	Blue	Blue	Blue	Blue	Blue				
76.1	Blue	Blue	Blue	Blue	Blue	Blue				
88.9	Blue	Blue	Blue	Blue	Blue	Blue				
114.3		Blue	Blue	Blue	Blue	Blue				
139.7		Blue	Blue	Blue	Blue	Blue				
168.3			Blue	Blue	Blue	Blue	Blue			
193.7			Blue	Blue	Blue	Blue	Blue			
219.1			Blue	Blue	Blue	Blue	Blue	Blue		
244.5			Blue	Blue	Blue	Blue	Blue	Blue	Blue	
273.0			Blue	Blue	Blue	Blue	Blue	Blue	Blue	
323.9			Blue	Blue	Blue	Blue	Blue	Blue	Blue	
355.6			Blue	Blue	Blue	Blue	Blue	Blue	Blue	
406.4			Blue	Blue	Blue	Blue	Blue	Blue	Blue	
457.0			Blue	Blue	Blue	Blue	Blue	Blue	Blue	
508.0			Blue	Blue	Blue	Blue	Blue	Blue	Blue	

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