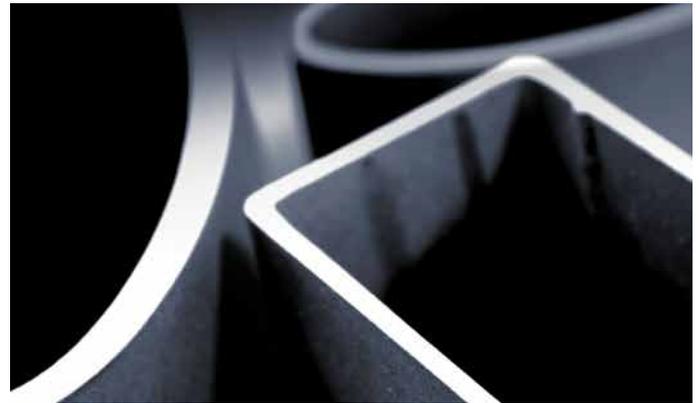


## Celsius® S460NH

### Fully normalised high strength hollow sections

Celsius® S460NH is a range of fully normalised structural hollow sections according to EN 10210 with minimum yield strength of 460 MPa. As with all Celsius® hollow sections, S460NH is fully normalised, so is essentially free of internal stresses, with tight corner radii, less than 2T.



The high yield strength of Celsius® S460NH delivers improved load-bearing capabilities in a multitude of applications. In all cases where yield strength is a limiting factor, a lighter-weight section can be used within the standard gauge range, compared to a standard equivalent S355 section. This can save at least 20% of steel weight based on standard gauges.

Celsius® S460NH also benefits from a uniquely low CEV of  $\leq 0.45$ . 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® S460NH 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® S460NH hollow sections are designated by their product name, outside dimensions and thickness in millimetres.

#### CE Marking

Celsius® S460NH is manufactured and CE marked according to EN 10210-1&2:2006 grade S460NH.

#### 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 <sup>2</sup>	Tensile strength $R_m$ N/mm <sup>2</sup>	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	
460	540-720	17	-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  $\leq 0.45$

### Availability

Celsius® S460NH 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® S460NH is available with internal weld bead trimmed where specified.

Celsius® S460NH is available in standard lengths from 6.0m to 14.5m for sizes up to 100/100 or 120/80 and up to 15.3m for all other sizes.

### 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® S460NH, 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.

### 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	■	■	■	■						
50/50	■	■	■	■						
60/60	■	■	■	■						
70/70	■	■	■	■						
80/80		■	■	■						
90/90		■	■	■						
100/100		■	■	■						
150/150							■	■	■	■
160/160				■	■	■	■	■	■	■
180/180				■	■	■	■	■	■	■
200/200				■	■	■	■	■	■	■
220/220				■	■	■	■	■	■	■
250/250				■	■	■	■	■	■	■
260/260				■	■	■	■	■	■	■
300/300				■	■	■	■	■	■	■
350/350				■	■	■	■	■	■	■
400/400				■	■	■	■	■	■	■

### 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	■	■	■	■						
60/40	■	■	■	■						
80/40	■	■	■	■						
90/50	■	■	■	■						
100/50	■	■	■	■						
100/60	■	■	■	■						
120/60		■	■	■						
120/80		■	■	■						
200/100							■	■	■	■
200/120				■	■	■	■	■	■	■
200/150				■	■	■	■	■	■	■
220/120					■	■	■	■	■	■
250/100				■	■	■	■	■	■	■
250/150				■	■	■	■	■	■	■
260/140				■	■	■	■	■	■	■
260/180					■	■	■	■	■	■
300/100				■	■	■	■	■	■	■
300/200				■	■	■	■	■	■	■
300/250				■	■	■	■	■	■	■
350/150				■	■	■	■	■	■	■
350/250				■	■	■	■	■	■	■
400/200						■	■	■	■	■
400/300						■	■	■	■	■
450/250						■	■	■	■	■
500/200						■	■	■	■	■
500/300						■	■	■	■	■

### Circular hollow sections (CHS)

mm	5.0	6.3	8.0	10.0	12.5	14.2	16.0
219.1	■	■	■	■	■	■	■
244.5	■	■	■	■	■	■	■
273.0	■	■	■	■	■	■	■
323.9	■	■	■	■	■	■	■
355.6	■	■	■	■	■	■	■
406.4		■	■	■	■	■	■
457.0		■	■	■	■	■	■
508.0		■	■	■	■	■	■

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