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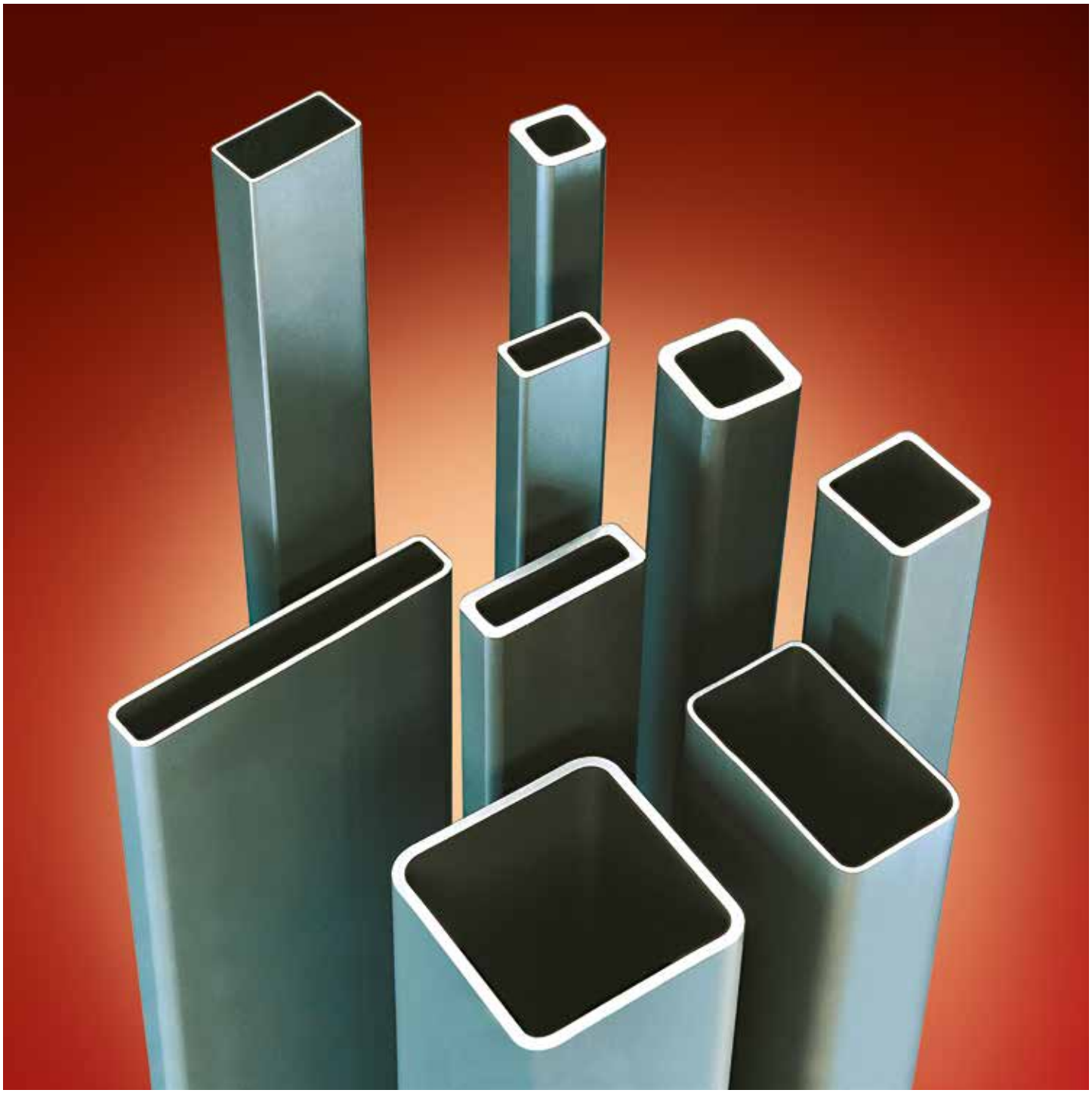

SQUARE AND RECTANGULAR HOLLOW SECTIONS

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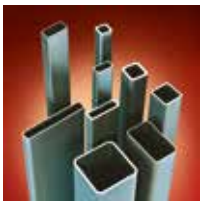
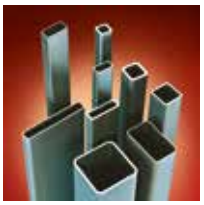


SQUARE AND RECTANGULAR HOLLOW SECTIONS



SQUARE AND RECTANGULAR HOLLOW SECTIONS

GENERAL FEATURES

The square and rectangular hollow sections for structures are available in the following forms, according to the manufacturing method:

- **HOT FINISHED SEAMLESS SQUARE AND RECTANGULAR HOLLOW SECTIONS ACCORDING TO EN 10210**
  These hollow sections are manufactured through hot forming process, using round seamless tubes as base material.

- **HOT FINISHED WELDED SQUARE AND RECTANGULAR HOLLOW SECTIONS ACCORDING TO EN 10210**
  These hollow sections are manufactured through coil forming and welding. This process could be performed by hot forming, or cold forming followed by heat treatment.

- **COLD FINISHED WELDED SQUARE AND RECTANGULAR HOLLOW SECTIONS ACCORDING TO EN 10219**
  These hollow sections are manufactured through coil forming and welding, without any further heat treatment.

CE MARK FOR CONSTRUCTION PRODUCTS

All square and rectangular hollow sections on our stock belong to manufacturers adopting a Factory Production Control complying with the European Regulation 305/2011 for construction products, with approval of a third party notified body. Therefore the material is endorsed by relevant CE mark and is accompanied by the Declaration of Performance of the manufacturer.
SICAM has also implemented a Factory Production Control on the cutting process, which is certified by a third party notified body according to the norm EN 1090-1. Upon request, tubes cut to required length by band saw machines (with ends not finished for immediate welding) can be supplied in compliance with class EXC3 of the norm EN 10901-1, delivering them with a specific Declaration of Performance.

STEEL DESIGNATIONS

The alphanumeric designations are according to EN 10027/1 and to ECISS IC 10. Their description is detailed here below:

- **Capital letter "S" stands for "STEEL FOR STRUCTURAL APPLICATIONS".**
- **The successive number stands for the minimum yield value required for wall thickness ≤ 16 mm.**
- **Abbreviations JR, J0, J2 and K2 stands for impact properties: JR at +20°C; J0 at 0°C; J2 and K2 at -20°C.**
- **Capital letter "N" stands for "NORMALIZED STEEL".**
- **Capital letter "M" stands for "THERMOMECHANICAL ROLLING".**
- **Capital letter "L" stands for the specific impact properties at – 50°C.**
- **Capital letter "H" stands for "HOLLOW SECTION".**

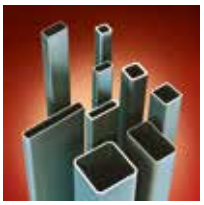


TABLE OF STEELS FOR WELDED AND SEAMLESS HOLLOW SECTIONS

The following steelgrades, codified by the European norms EN 10210 and EN 10219, are available for hot finished and cold finished seamless and welded hollow sections.

CHEMICAL ANALYSIS

Steelgrade	Chemical elements (% on mass)													
	C max.	Si	Mn	P max.	S max.	Nb max.	V max.	Al min.	Ti max.	Cr max.	Ni max.	Mo max.	Cu max.	N max.
S235JRH	0.17	-	max. 1.40	0.040	0.040	-	-	-	-	-	-	-	-	0.009
S275J0H	0.20	-	max. 1.50	0.035	0.035	-	-	-	-	-	-	-	-	0.009
S275J2H	0.20	-	max. 1.50	0.030	0.030	-	-	-	-	-	-	-	-	-
S355J0H	0.22	max. 0.55	max. 1.60	0.035	0.035	-	-	-	-	-	-	-	-	0.009
S355J2H	0.22	max. 0.55	max. 1.60	0.030	0.030	-	-	-	-	-	-	-	-	-
S355K2H	0.22	max. 0.55	max. 1.60	0.030	0.030	-	-	-	-	-	-	-	-	-
S275NH	0.20	max. 0.40	0.50 – 1.40	0.035	0.030	0.050	0.08	0.020	0.03	0.30	0.30	0.10	0.35	0.015
S275NLH				0.030	0.025									
S355NH	0.20	max. 0.50	0.90 – 1.65	0.035	0.030	0.050	0.12	0.020	0.03	0.30	0.50	0.10	0.35	0.020
S355NLH	0.18			0.030	0.025									
S420NH	0.22	max. 0.60	1.00 – 1.70	0.035	0.030	0.050	0.20	0.020	0.03	0.30	0.80	0.10	0.70	0.025
S420NLH				0.030	0.025									
S460NH	0.22	max. 0.60	1.00 – 1.70	0.035	0.030	0.050	0.20	0.020	0.03	0.30	0.80	0.10	0.70	0.025
S460NLH				0.030	0.025									
S275MH	0.13	max. 0.50	max. 1.50	0.035	0.030	0.050	0.08	0.020	0.05	-	0.30	0.20	-	0.020
S275MLH				0.030	0.025									
S355MH	0.14	max. 0.50	max. 1.50	0.035	0.030	0.050	0.10	0.020	0.050	-	0.30	0.20	-	0.020
S355MLH				0.030	0.025									
S420MH	0.16	max. 0.50	max. 1.70	0.035	0.030	0.050	0.12	0.020	0.050	-	0.30	0.20	-	0.020
S420MLH				0.030	0.025									
S460MH	0.16	max. 0.60	max. 1.70	0.035	0.030	0.050	0.12	0.020	0.050	-	0.30	0.20	-	0.025
S460MLH				0.030	0.025									

Steels according to EN 10210 for hot finished hollow sections.

Steels according to EN 10210 and EN 10219 for hot finished and cold finished hollow sections.

Steels according to EN 10219 for cold finished hollow sections.

STEELS TABLE

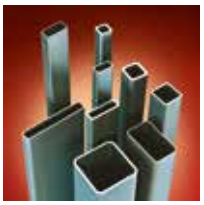
MECHANICAL PROPERTIES

Steel grade	Delivery condition	Yield strength min. (ReH) (N/mm^2 = Mpa)						Tensile strength min./max. (Rm) (N/mm^2 = Mpa)			Longitudinal elongation min. %				Longitudinal impact value (J min.)			
		For nominal w.t. in mm													Temperature °C			
		≤ 16	> 16 ≤ 40	> 40 ≤ 63	> 63 ≤ 80	> 80 ≤ 100	> 100 ≤ 120	≤ 3	> 3 ≤ 100	> 100 ≤ 120	≤ 40	> 40 ≤ 63	> 63 ≤ 100	> 100 ≤ 120	- 50	- 20	0	+20
S235JRH	Untreated	235	225	215	215	215	195	360-510	360-510	350-500	26 (24)[1]	25	24	22	-	-	-	27
S275J0H	Untreated	275	265	255	245	235	225	430-580	410-560	400-540	23 (20)[1]	22	21	19	-	-	27	-
S275J2H															-	27	-	-
S355J0H	Untreated	355	345	335	325	315	295	510-680	470-630	450-600	22(20)[1]	21	20	18	-	-	27	-
S355J2H															-	27	-	-
S355K2H															-	40	-	-
S275NH	Normalized	275	265	255	-	-	-	370-510	370-510	-	24	24	-	-	-	40	-	-
S275NLH															27	-	-	-
S355NH	Normalized	355	345	335	-	-	-	470-630	470-630	-	22	22	-	-	-	40	-	-
S355NLH															27	-	-	-
S420NH	Normalized	420	400	390	-	-	-	520-680	520-680	-	19	19	-	-	-	40	-	-
S420NLH															27	-	-	-
S460NH	Normalized	460	440	430	-	-	-	540-720	540-720	-	17	17	-	-	-	40	-	-
S460NLH															27	-	-	-
S275MH	Thermomechanically rolled	275	265	-	-	-	-	360-510	360-510	-	24	-	-	-	-	40	-	-
S275MLH															27	-	-	-
S355MH	Thermomechanically rolled	355	345	-	-	-	-	450-610	450-610	-	22	-	-	-	-	40	-	-
S355MLH															27	-	-	-
S420MH	Thermomechanically rolled	420	400	-	-	-	-	500-660	500-660	-	19	-	-	-	-	40	-	-
S420MLH															27	-	-	-
S460MH	Thermomechanically rolled	460	440	-	-	-	-	530-720	530-720	-	17	-	-	-	-	40	-	-
S460MLH															27	-	-	-

() [1] According to EN 10219.

The impact test for steelgrades JR and J0 is optional according to the norm, if required, it has to be explicitly stated in the order sheet.

Note: in case of cold finished sections, the heat treatments are effected on the base coil, not on the finished sections.



STEELS COMPARISON TABLE

This table contains steelgrades which are known but no longer up to date or are present only in manufacturers' specifications. For each of them, an alternative steelgrade, among the ones codified by EN 10210 and EN 10219, with similar features is suggested.

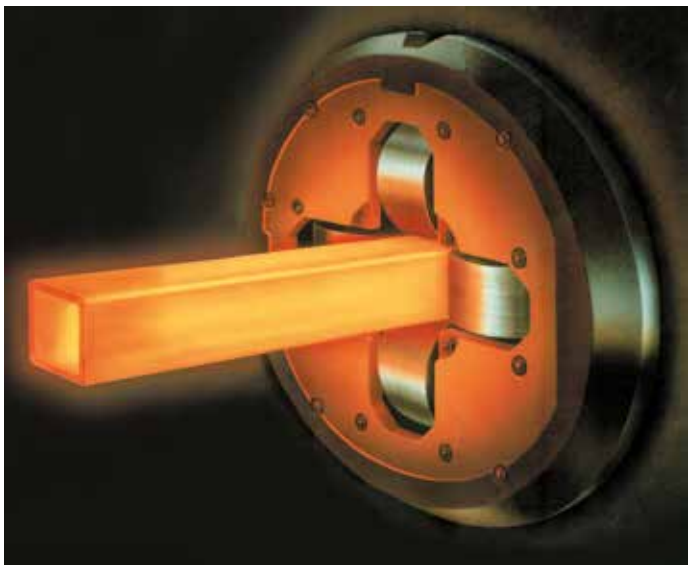
EN 10210 / EN 10219 Steelgrade		UNI Norm	DIN Norm	BS Norm	AFNOR Norm	Special steels*
S235JRH	EN 10210	7806 Fe 360 B	St 37.2 DIN 17100 USt 37.2 RSt 37.2		E 24-2	
	EN 10219	7810 Fe 360 B				
S275J0H	EN 10210	7806 Fe 430 C	DIN 17100 St 44.3	BS 4360 43 C	E 28-3	
	EN 10219	7810 Fe 430 C				
S275J2H	EN 10210	7806 Fe 430 D	DIN 17100 St 44.3	BS 4360 43 D	E 28-4	
	EN 10219	7810 Fe 430 D				
S355J0H	EN 10210	7806 Fe 510 C	DIN 17100 St 52.3	BS 4360 50 C	E 36-3	
	EN 10219	7810 Fe 510 C				
S355J2H	EN 10210	7806 Fe 510 D	DIN 17100 St 52.3	BS 4360 50 D	E 36-4	
	EN 10219	7810 Fe 510 D				
S355K2H	EN 10210					
	EN 10219					
S275NH	EN 10210 EN 10219					
S275NLH				BS 4360 43 EE		
S355NH					E 355 R	
S355NLH				BS 4360 50 EE		
S460NH					E 460 R	22MnV6 20MnV6
S460NLH				BS 4360 55 EE		
S420NH	EN 10210	7806 Fe E 420				
S420NLH						
S275MH	EN 10219					
S275MLH						
S355MH						
S355MLH						
S420MH						
S420MLH						
S460MH						
S460MLH						

*Steels according to manufacturers' specifications, neither foreseen by EN 10210 nor EN 10219.

HOT FINISHED SEAMLESS SQUARE AND RECTANGULAR HOLLOW SECTIONS EN 10210

MANUFACTURING PROCESS

Through the hot forming process starting from seamless round pipes, it is possible to get hollow sections with favourable static/dynamic features typical of the hot finished material. Moreover this process allows to avoid possible critical states given by a longitudinal welding and the welding beam.



DIMENSIONAL TOLERANCES

Shape

Outside dimension: ±1% with a minimum of ± 0.5 mm.
Wall thickness: – 10% (- 12.5% for max 25% of the perimeter).
For deviations above the nominal value, tolerances on mass rule.

Concavity and convexity of sides

On external sides: 1%.

Twist

Up to max 2 mm, plus 0.5 mm for each meter on the whole tube length.

Squareness of sides

90° ± 1°.

External corner radius

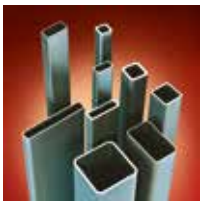
Max 3 times the w.t.

Straightness

The max. tolerance must be ≤ 0.20% on the whole tube length.
Deviations on the local straightness: max 3 mm on each meter length.

Mass

Seamless tubes: + 8% / - 6% on the single section.



SPECIFIC STEELGRADES AVAILABLE FOR SEAMLESS HOLLOW SECTIONS

Besides all the steelgrades codified by the norm EN 10210 (see steeltable p. 7-8), the seamless hollow sections can be supplied, upon request, in other steelgrades with high yield strength values, codified by the manufacturers' specifications.
These particular steelgrades can have high impact values and mechanical features, that can lead to a size reduction and a weight saving.
Seamless hollow sections in this kind of steelgrades can be supplied upon request.

CHEMICAL ANALYSIS

Steelgrade	Chemical elements (% on mass)																			
	C		Si		Mn		P	S	V + Nb	Cr	Mo	Ni	Cu	N	Al		V		Nb	Ti
	min.	max.	min.	max.	min.	max.	max.	max.	max.	max.	max.	max.	max.	max.	min.	max.	min.	max.	max.	max.
Forterior® 370 ImpactFIT 20	-	0.20	0.10	0.45	1.15	1.70	0.030	0.025	0.16	-	-	-	-	-	-	-	-	-	-	-
Forterior® 400	-	0.20	0.10	0.45	1.15	1.70	0.030	0.025	0.16	-	-	-	-	-	-	-	-	-	-	-
Forterior® 430 ImpactFIT 20	-	0.22	0.10	0.50	1.20	1.70	0.030	0.025	0.17	-	-	-	-	-	-	-	-	-	-	-
Forterior® 450	-	0.22	0.10	0.50	1.20	1.70	0.030	0.025	0.17	-	-	-	-	-	-	-	-	-	-	-
Forterior® 450 ImpactFIT 20	0.16	0.22	0.10	0.50	1.30	1.70	0.030	0.035	-	0.30	0.08	0.40	0.25	0.020	0.010	0.060	0.08	0.15	0.05	0.03
Forterior® 450 ImpactFIT 30	0.16	0.22	0.10	0.50	1.30	1.70	0.030	0.035	-	0.30	0.08	0.40	0.25	0.020	0.010	0.060	0.08	0.15	0.05	0.03
Forterior® 460 ImpactFIT 20[1]	-	0.22	0.10	0.50	1.30	1.70	0.030	0.025	0.21	-	-	-	-	-	-	-	-	-	-	-
Forterior® 470	0.16	0.22	0.10	0.50	1.30	1.70	0.030	0.035	-	0.30	0.08	0.40	0.25	0.020	0.010	0.060	0.08	0.15	0.05	0.03
Forterior® 490	0.16	0.22	0.10	0.50	1.30	1.70	0.030	0.035	-	0.30	0.08	0.40	0.25	0.020	0.010	0.060	0.08	0.15	0.05	0.03
Forterior® 500[1]	-	0.22	0.10	0.50	1.30	1.70	0.030	0.025	0.21	-	-	-	-	-	-	-	-	-	-	-
Forterior® 590 ImpactFIT 40	0.16	0.22	0.10	0.50	1.30	1.70	0.030	0.035	-	0.30	0.08	0.40	0.25	0.020	0.010	0.060	0.08	0.15	0.05	0.03
Forterior® 630 ImpactFIT 40[1]	0.16	0.22	0.10	0.50	1.30	1.70	0.030	0.035	-	0.30	0.08	0.40	0.25	0.020	0.010	0.060	0.08	0.15	0.05	0.03

[1] For w.t. > 12 mm the maximum carbon value is 0.23%

MECHANICAL PROPERTIES

Steelgrade	Delivery condition	Yield strength min. (ReH) (N/mm^2=Mpa)		Tensile strength (Rm) (N/mm^2=Mpa)		Longitudinal elongation min. %	Longitudinal impact value (J min.)			Equivalent steelgrades ^
		For nominal w.t. in mm					Temperature °C			
		≤12	>12 ≤25	min.	max.		-20	- 30	- 40	
Forterior® 370 ImpactFIT 20	Normalized	370	350	510	-	20	27	-	-	SG40+N
Forterior® 400	Untreated	400	380	510	-	19	-	-	-	SG40
Forterior® 430 ImpactFIT 20	Normalized	430	410	560	-	19	27			SG45+N
Forterior® 450	Untreated	450	430	560	-	18	-	-	-	SG45
Forterior® 450 ImpactFIT 20	Normalized	450	440	600	750	19	27	-	-	MW450+N 20MnV6+N
Forterior® 450 ImpactFIT 30	Normalized	450	440	600	750	19	-	27	-	20MnV6+N
Forterior® 460 ImpactFIT 20	Normalized	460	450	610	-	19	27	-	-	SG50+N
Forterior® 470	Untreated	470	470	650	800	17	-	-	-	20MnV6 E470
Forterior® 470 ImpactFIT 20	Normalized	470	450	620	770	19	27	-	-	MW500+N 21MnV6+N
Forterior® 490	Untreated	490	490	670	820	17	-	-	-	MW500 21MnV6+N
Forterior® 500	Untreated	500	480	610	-	17	-	-	-	SG50
Forterior® 590 ImpactFIT 40	Quenched and tempered	590	570	700	850	16	-	-	30	20MnV6+QT E590K2
Forterior® 630 ImpactFIT 40	Quenched and tempered	630	610	740	930	16	-	-	27	MW500+QT 21MnV6+QT

^ This comparison has been effected with manufacturers' specifications no longer in use or with current codifications according to the European regulations.

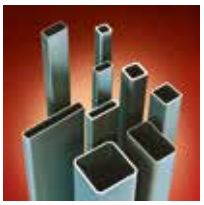
FINE GRAIN HIGH-STRENGTH STEELGRADES

These steelgrades are codified by manufacturers' specifications that foresee such a complex chemical composition and heat treatment that grant a "fine" grain structure, very high yield and tensile strength values, together with high impact properties at low temperatures.
These steelgrades have been conceived for the construction of buildings, cranes and lifting equipments, for which it is vital to reduce the weight of the structure without giving up to its resistance, even if subject to extreme loads.
Seamless hollow sections in this kind of steelgrades can be supplied upon request.

CHEMICAL ANALYSIS

Steelgrade	Chemical elements (% on mass)																						
	C		Si		Mn		P	S	Cr		Mo		Ni		W		V		Al		N	Ti	Nb
	min.	max.	min.	max.	min.	max.	max.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	max.	max.	max.
FineXcell® 690*	-	0.20	0.15	0.50	-	1.70	0.025	0.015	-	1.00	0.30	0.45	0.30	0.70	-	-	-	0.12	-	-	0.015	0.05	0.05
FineXcell® 690 ImpactFIT 40	0.14	0.18	0.20	0.50	1.20	1.70	0.025	0.015	-	0.80	0.20	0.40	-	0.40	0.10	0.35	0.05	0.12	0.015	0.050	0.020	0.05	0.05
FineXcell® 690 ImpactFIT 50[1]	-	0.20	-	0.60	-	1.70	0.025	0.015	-	1.50	-	0.70	-	1.50	-	1.50	-	0.14	-	0.060	0.020	0.05	0.05
FineXcell® 700*	-	0.15	0.10	0.50	-	1.40	0.020	0.010	0.40	0.60	0.20	0.60	1.00	1.50	-	-	-	0.10	-	-	0.015	0.05	0.05
FineXcell® 700 ImpactFIT40	0.14	0.18	0.20	0.50	1.20	1.70	0.025	0.015	-	0.80	0.20	0.40	-	0.40	0.10	0.70	0.05	0.12	0.015	0.050	0.020	0.05	0.05
FineXcell® 700 ImpactFIT 60	0.14	0.18	0.20	0.50	1.20	1.70	0.025	0.015	-	0.80	0.20	0.40	-	0.40	0.10	0.70	0.05	0.12	0.015	0.050	0.020	0.05	0.05
FineXcell® 700 TempFIT300	0.14	0.18	0.20	0.50	1.20	1.70	0.025	0.015	-	0.80	0.20	0.40	-	0.40	0.10	0.70	0.05	0.12	0.015	0.050	0.020	0.05	0.05
FineXcell® 700 TempFIT400*	-	0.15	0.10	0.50	-	1.40	0 .020	0.010	0.40	0.60	0.20	0.60	1.00	1.50	-	-	-	0.10	-	-	0.015	0.05	0.05
FineXcell® 770*	-	0.20	0.20	0.50	1.20	1.70	0.025	0.015	-	0.50	0.20	0.50	0.50	1.20	-	-	-	0.12	-	-	0.020	-	0.05
FineXcell® 780 ImpactFIT 40	0.14	0.18	0.20	0.50	1.20	1.70	0.025	0.015	-	0.80	0.20	0.40	-	0.40	0.10	0.70	0.05	0.12	0.015	0.050	0.020	0.05	0.05
FineXcell® 790*	-	0.18	0.20	0.50	1.20	1.70	0.020	0.010	0.40	1.00	0.20	0.50	0.50	1.70	-	-	-	0.10	-	-	0.020	-	0.05
FineXcell® 800 ImpactFIT 40[2]	0.10	0.18	0.20	0.50	1.20	1.70	0.025	0.015	0.40	0.90	0.20	0.50	-	0.40	0.10	0.80	0.03	0.12	0.015	0.050	0.020	0.05	0.06
FineXcell 890 *	-	0.18	0.20	0.50	-	1.60	0.020	0.010	0.50	0.80	0.20	0.70	1.00	1.70	-	-	-	0.10	-	-	0.020	-	0.05
FineXcell® 890 ImpactFIT 50[3]	-	0.18	-	0.50	-	1.50	0.020	0.010	-	0.90	-	0.50	-	0.40	-	1.50	-	0.08	-	0.050	0.020	0.05	0.06
FineXcell® 900 ImpactFIT 40[2]	0.14	0.18	0.20	0.50	1.20	1.70	0.020	0.010	0.40	0.90	0.30	0.70	-	0.40	0.40	0.80	0.03	0.12	0.015	0.050	0.020	0.05	0.06
FineXcell® 960 ImpactFIT 40	-	0.20	-	0.50	1.20	1.70	0.020	0.010	0.40	1.00	0.30	1.00	-	0.40	0.40	1.50	-	0.02	-	-	0.025	0.03	0.05

* Cu ≤ 0.25%; B ≤ 0.005%.
[1] Cu ≤ 0.50%; B ≤ 0.0008%; Zr ≤ 0.15%; if Cu>0.30% the Ni content must be at least half the content of Cu.
[2] Cu ≤ 0.30%.
[3] Cu ≤ 0.35%; B ≤ 0.0008%; Zr ≤ 0.15%.



MECHANICAL PROPERTIES

Steelgrade	Delivery condition	Yield strength min. (ReH) (N/mm^2=Mpa)	Tensile strength (Rm) (N/mm^2=Mpa)		Longitudinal elongation min. %	Longitudinal impact value (J min.)					Equivalent steelgrades[1]
						Temperature °C					
			min.	max.		-20	-30	-40	-50	-60	
FineXcell® 690	Quenched and tempered	690	770	960	16	-	-	40	-	-	FGS70V S690QL
FineXcell® 690 ImpactFIT 40	Quenched and tempered	690	770	960	16	-	-	45	-	-	SG69Q
FineXcell® 690 ImpactFIT 50	Quenched and tempered	690 (650 if 16<T≤20)	700	960	14	-	-	-	27	-	S690G5QL
FineXcell® 700	Quenched and tempered	700 (690 if 12<T≤20)	770	960	16	-	-	-	-	40	FGS70CV FGP70CVT S690QL1
FineXcell® 700 ImpactFIT40	Quenched and tempered	700 (690 if 12<T≤20)	770	960	16	-	-	45	-	-	FGS70WV S690G5QL
FineXcell® 700 ImpactFIT 60	Quenched and tempered	700 (690 if 12<T≤20)	770	960	16	-	-	-	-	40	FGS70CWV S690G2QL1
FineXcell® 700 TempFIT300	Quenched and tempered	700 (690 if 12<T≤20) 510 at +300°C	770 620 at +300°C	960	16	-	-	-	-	40	FGP70CWV P690G1QL1
FineXcell® 700 TempFIT400	Quenched and tempered	700 (690 if 12<T≤20) 490 at +400°C	770 630 at +400°C	960	16	-	-	-	-	40	FGP70CVW P690QH
FineXcell® 770	Quenched and tempered	770 (750 if 12<T≤20)	820	1000	15	-	-	40	-	-	FGS78V S770QL
FineXcell® 780 ImpactFIT 40	Quenched and tempered	780 (770 if 12<T≤20)	820	1000	15	-	-	45	-	-	FGS78WV S770G1QL
FineXcell® 790	Quenched and tempered	790	850	1030	15	-	-	-	-	40	FGS80V S790QL1
FineXcell® 800 ImpactFIT 40	Quenched and tempered	800 (790 if 12<T≤20)	850	1030	15	-	-	40	-	-	FGS80WV S790QL
FineXcell® 890	Quenched and tempered	890	960	1110	14	-	-	-	-	30	FGS90CV S890QL1
FineXcell® 890 ImpactFIT 50	Quenched and tempered	890 (850 if 16<T≤20)	960	1110	14	-	-	-	27	-	SG89Q
FineXcell® 900 ImpactFIT 40	Quenched and tempered	900 (890 if 12<T≤20)	960	1110	14	-	-	45	-	-	FGS90WV S890G1QL
FineXcell® 960 ImpactFIT 40	Quenched and tempered	960	980	1150	10	-	-	27	-	-	FGS100WV S90G1QL

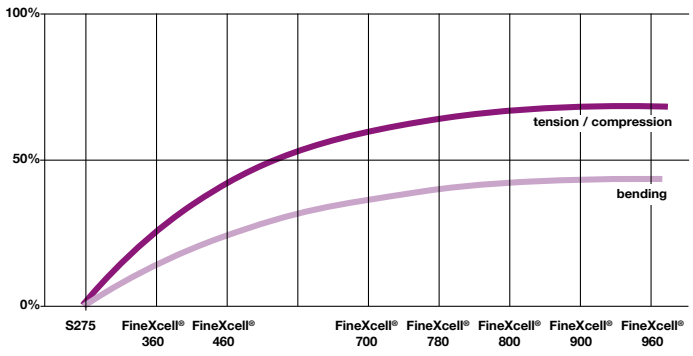
[1] This comparison has been effected with manufacturers' specifications no longer in use or with current codifications according to the European regulations.
T nominal tube wall thickness in mm.

ADVANTAGES OF FINE GRAINS HIGH-STRENGTH STEELGRADES COMPARED TO THE TRADITIONAL STEELGRADES

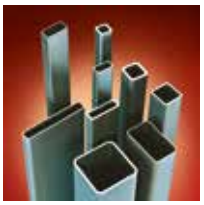
WEIGHT SAVING

When a steel structure subject to high loads has to be built, the weight of the structure itself is a critical issue as far as mobility and costs are concerned.
Therefore the high resistance features of the fine grain high-strength steelgrades are particularly profitable, as they allow to increase the load capability, reducing meanwhile the weight of the structure. These features are particularly favourable for the construction of cranes and self-moving lifting equipments. In such cases the resistance of the sections allows to increase the structure mobility without reducing the lifting capabilities.

Potential weight savings for construction high-strength fine-grain steels compared to S275

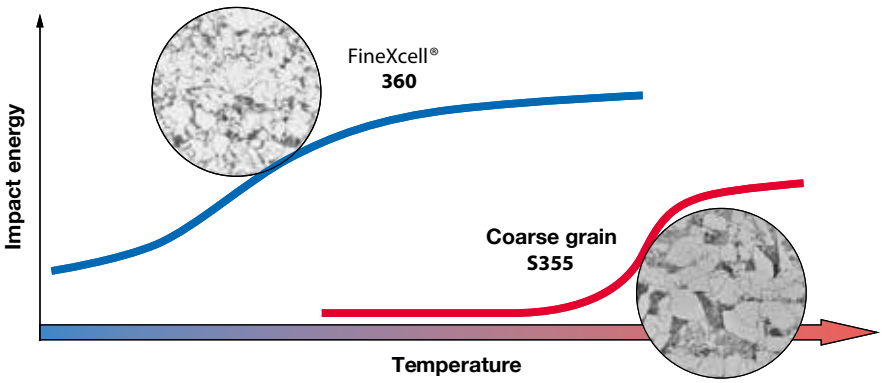


The chart on the left shows the percentage weight reduction that can be achieved through fine grain high-strength steelgrades, according to their different levels of resistance , in comparison to a traditional S275 steelgrade.



LOW TEMPERATURE IMPACT PROPERTIES

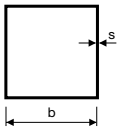
The fine grain high-strength steelgrades, thanks to their "fine" structure, give excellent impact properties at low temperatures and resistance to "brittle" crackings.
Thanks to their high impact values at temperatures up to -60°C, these steelgrades are an excellent choice also for applications in cold climates.



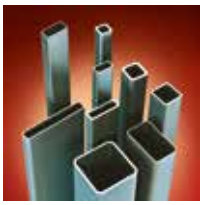
The chart on the left shows the difference in the impact values distribution between a fine grain high-strength steelgrade (FineXcell 360®) and a traditional S355 steelgrade.

SQUARE AND RECTANGULAR HOLLOW SECTIONS

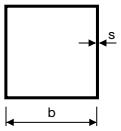
DIMENSIONAL TABLE



Size **b** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **I** cm^4	Radius of gyration **i** cm	Elastic section modulus **W** cm^3	Torsional inertia constant **J** cm^4	Torsional mudulus constant **C** cm^3
40	**2,9**	3,31	4,21	9,54	1,50	4,77	15,30	6,93
	3,2	3,61	4,60	10,20	1,49	5,11	16,50	7,42
	4,0	4,39	5,59	11,80	1,45	5,91	19,50	8,54
	5,0	5,28	6,73	13,40	1,41	6,68	22,50	9,60
	6,3	6,33	8,07	14,70	1,35	7,34	25,40	10,50
	7,1	6,91	8,80	15,10	1,31	7,57	26,50	10,80
50	**3,2**	4,62	5,88	21,20	1,90	8,49	33,80	12,40
	4,0	5,64	7,19	25,00	1,86	9,99	40,40	14,50
	5,0	6,85	8,73	28,90	1,82	11,60	47,60	16,70
	6,3	8,31	10,60	32,80	1,76	13,10	55,20	18,80
	7,1	9,14	11,60	34,50	1,72	13,80	58,90	19,80
	8,0	10,00	12,80	36,00	1,68	14,40	62,30	20,60
60	**3,2**	5,62	7,16	38,20	2,31	12,70	60,20	18,60
	4,0	6,90	8,79	45,40	2,27	15,10	72,50	22,00
	5,0	8,42	10,70	53,30	2,23	17,80	86,40	25,70
	6,3	10,30	13,10	61,60	2,17	20,50	102,00	29,60
	7,1	11,40	14,50	65,80	2,13	21,90	110,00	31,60
	8,0	12,50	16,00	69,70	2,09	23,20	118,00	33,40
	10,0	14,90	18,90	75,50	2,00	25,20	131,00	36,00
	12,5	17,30	22,10	78,00	1,88	26,00	139,00	37,00
70	**3,2**	6,63	8,44	62,30	2,72	17,80	97,60	26,10
	4,0	8,15	10,40	74,70	2,68	21,30	118,00	31,20
	5,0	9,99	12,70	88,50	2,64	25,30	142,00	36,80
	6,3	12,30	15,60	104,00	2,58	29,70	169,00	42,90
	7,1	13,60	17,30	112,00	2,54	32,00	185,00	46,10
	8,0	15,00	19,20	120,00	2,50	34,20	200,00	49,20
	10,0	18,00	22,90	133,00	2,41	38,00	227,00	54,40
	12,5	21,30	27,10	142,00	2,29	40,60	249,00	58,00



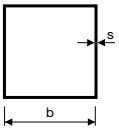
DIMENSIONAL TABLE



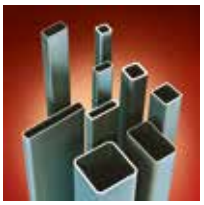
Size **b** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **I** cm^4	Radius of gyration **i** cm	Elastic section modulus **W** cm^3	Torsional inertia constant **J** cm^4	Torsional mudulus constant **C** cm^3
80	**3,6**	8,53	10,90	105,00	3,11	26,20	164,00	38,50
	4,0	9,41	12,00	114,00	3,09	28,60	180,00	41,90
	5,0	11,60	14,70	137,00	3,05	34,20	217,00	49,80
	6,3	14,20	18,10	162,00	2,99	40,50	262,00	58,70
	7,1	15,80	20,20	176,00	2,95	43,90	286,00	63,50
	8,0	17,50	22,40	189,00	2,91	47,30	312,00	68,30
	10,0	21,10	26,90	214,00	2,82	53,50	360,00	76,80
	11,0	22,80	29,10	223,00	2,77	55,80	380,00	80,10
	12,5	25,20	32,10	234,00	2,70	58,60	404,00	83,80
90	**3,6**	9,66	12,30	152,00	3,52	33,80	237,00	49,70
	4,0	10,70	13,60	166,00	3,50	37,00	260,00	54,20
	5,0	13,10	16,70	200,00	3,45	44,40	316,00	64,80
	6,3	16,20	20,70	238,00	3,40	53,00	382,00	77,00
	7,1	18,10	23,00	260,00	3,36	57,70	419,00	83,70
	8,0	20,10	25,60	281,00	3,32	62,60	459,00	90,50
	10,0	24,30	30,90	322,00	3,23	71,60	536,00	103,00
	12,5	29,10	37,10	359,00	3,11	79,80	612,00	114,00
100	**4,0**	11,90	15,20	232,00	3,91	46,40	361,00	68,20
	5,0	14,70	18,70	279,00	3,86	55,90	439,00	81,80
	6,3	18,20	23,20	336,00	3,80	67,10	534,00	97,80
	7,1	20,30	25,80	367,00	3,77	73,40	589,00	107,00
	8,0	22,60	28,80	400,00	3,73	79,90	646,00	116,00
	10,0	27,40	34,90	462,00	3,64	92,40	761,00	133,00
	11,0	29,70	37,90	488,00	3,59	97,70	812,00	141,00
	12,5	33,00	42,10	522,00	3,52	104,00	879,00	150,00
	14,2	36,60	46,60	553,00	3,44	111,00	943,00	158,00
110	**4,0**	13,20	16,80	313,00	4,32	56,80	485,00	83,70
	5,0	16,30	20,70	378,00	4,27	68,80	592,00	101,00
	6,3	20,20	25,70	456,00	4,21	83,00	722,00	121,00
	7,1	22,50	28,70	500,00	4,18	91,00	798,00	133,00
	8,0	25,10	32,00	547,00	4,14	99,40	878,00	144,00
	10,0	30,60	38,90	637,00	4,05	116,00	1040,00	168,00
	11,0	33,20	42,30	677,00	4,00	123,00	1110,00	178,00
	12,5	37,00	47,10	728,00	3,93	132,00	1210,00	191,00
	14,2	41,00	52,30	776,00	3,85	141,00	1310,00	203,00

SQUARE AND RECTANGULAR HOLLOW SECTIONS

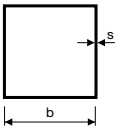
DIMENSIONAL TABLE



Size **b** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **I** cm^4	Radius of gyration **i** cm	Elastic section modulus **W** cm^3	Torsional inertia constant **J** cm^4	Torsional mudulus constant **C** cm^3
120	**5,0**	17,80	22,70	498,00	4,68	83,00	777,00	122,00
	6,3	22,20	28,20	603,00	4,62	100,00	950,00	147,00
	7,1	24,70	31,50	663,00	4,59	110,00	1050,00	161,00
	8,0	27,60	35,20	726,00	4,55	121,00	1160,00	176,00
	10,0	33,70	42,90	852,00	4,46	142,00	1380,00	206,00
	11,0	36,60	46,70	908,00	4,41	151,00	1480,00	219,00
	12,5	40,90	52,10	982,00	4,34	164,00	1620,00	236,00
	14,2	45,50	57,90	1050,00	4,26	176,00	1760,00	253,00
130	**5,0**	19,40	24,70	640,00	5,09	98,50	996,00	145,00
	6,3	24,10	30,70	778,00	5,03	120,00	1220,00	175,00
	7,1	27,00	34,40	857,00	4,99	132,00	1350,00	193,00
	8,0	30,10	38,40	941,00	4,95	145,00	1500,00	211,00
	10,0	36,80	46,90	1110,00	4,86	171,00	1790,00	248,00
	11,0	40,10	51,10	1190,00	4,82	182,00	1930,00	264,00
	12,5	44,80	57,10	1290,00	4,75	198,00	2110,00	286,00
	14,2	49,90	63,60	1390,00	4,67	214,00	2310,00	308,00
	16,0	55,10	70,20	1480,00	4,59	228,00	2490,00	327,00
140	**6,3**	26,10	33,30	984,00	5,44	141,00	1540,00	206,00
	7,1	29,20	37,20	1090,00	5,40	155,00	1710,00	227,00
	8,0	32,60	41,60	1200,00	5,36	171,00	1890,00	249,00
	10,0	40,00	50,90	1420,00	5,27	202,00	2270,00	294,00
	11,0	43,50	55,50	1520,00	5,23	217,00	2450,00	314,00
	12,5	48,70	62,10	1650,00	5,16	236,00	2700,00	342,00
	14,2	54,40	69,30	1790,00	5,08	256,00	2950,00	369,00
	16,0	60,10	76,60	1920,00	5,00	274,00	3200,00	394,00
	20,0	72,00	91,70	2130,00	4,82	304,00	3630,00	436,00
150	**6,3**	28,10	35,80	1220,00	5,85	163,00	1910,00	240,00
	8,0	35,10	44,80	1490,00	5,77	199,00	2350,00	291,00
	10,0	43,10	54,90	1770,00	5,68	236,00	2830,00	344,00
	11,0	47,00	59,90	1900,00	5,64	254,00	3060,00	368,00
	12,5	52,70	67,10	2080,00	5,57	277,00	3370,00	402,00
	14,2	58,90	75,00	2260,00	5,49	302,00	3710,00	436,00
	16,0	65,20	83,00	2430,00	5,41	324,00	4030,00	467,00
	20,0	78,30	99,70	2720,00	5,23	363,00	4620,00	521,00

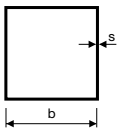


DIMENSIONAL TABLE

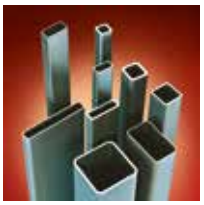


Size **b** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **I** cm^4	Radius of gyration **i** cm	Elastic section modulus **W** cm^3	Torsional inertia constant **J** cm^4	Torsional mudulus constant **C** cm^3
160	**6,3**	30,10	38,30	1500,00	6,26	187,00	2330,00	275,00
	8,0	37,60	48,00	1830,00	6,18	229,00	2880,00	335,00
	10,0	46,30	58,90	2190,00	6,09	273,00	3480,00	398,00
	12,5	56,60	72,10	2580,00	5,98	322,00	4160,00	467,00
	14,2	63,30	80,70	2810,00	5,90	351,00	4580,00	508,00
	16,0	70,20	89,40	3030,00	5,82	379,00	4990,00	546,00
	20,0	84,60	107,00	3420,00	5,64	428,00	5760,00	615,00
180	**6,3**	34,00	43,30	2170,00	7,07	241,00	3360,00	355,00
	8,0	42,70	54,40	2660,00	7,00	296,00	4160,00	434,00
	10,0	52,50	66,90	3190,00	6,91	355,00	5050,00	518,00
	12,5	64,40	82,10	3790,00	6,80	421,00	6070,00	613,00
	14,2	72,20	92,00	4150,00	6,72	462,00	6710,00	670,00
	16,0	80,20	102,00	4500,00	6,64	500,00	7340,00	724,00
	20,0	97,10	124,00	5160,00	6,46	573,00	8580,00	825,00
200	**6,3**	38,00	48,40	3010,00	7,89	301,00	4650,00	444,00
	8,0	47,70	60,80	3710,00	7,81	371,00	5780,00	545,00
	10,0	58,80	74,90	4470,00	7,72	447,00	7030,00	655,00
	12,5	72,30	92,10	5340,00	7,61	534,00	8490,00	778,00
	14,2	81,10	103,00	5870,00	7,54	587,00	9420,00	854,00
	16,0	90,30	115,00	6390,00	7,46	639,00	10340,00	927,00
	17,5	97,70	124,00	6790,00	7,39	679,00	11060,00	983,00
	20,0	110,00	140,00	7390,00	7,27	739,00	12180,00	1070,00
220	**6,3**	41,90	53,40	4050,00	8,71	368,00	6240,00	544,00
	8,0	52,70	67,20	5000,00	8,63	455,00	7760,00	669,00
	10,0	65,10	82,90	6050,00	8,54	550,00	9470,00	807,00
	12,5	80,10	102,00	7250,00	8,43	659,00	11480,00	963,00
	14,2	90,10	115,00	8010,00	8,35	728,00	12770,00	1060,00
	16,0	100,00	128,00	8750,00	8,27	795,00	14050,00	1160,00
	20,0	122,00	156,00	10200,00	8,09	927,00	16660,00	1340,00

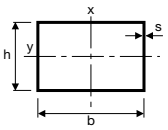
DIMENSIONAL TABLE



Size **b** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **I** cm^4	Radius of gyration **i** cm	Elastic section modulus **W** cm^3	Torsional inertia constant **J** cm^4	Torsional mudulus constant **C** cm^3
250	**6,3**	47,90	61,00	6010,00	9,93	481,00	9240,00	712,00
	8,0	60,30	76,80	7450,00	9,86	596,00	11530,00	880,00
	10,0	74,50	94,90	9060,00	9,77	724,00	14110,00	1060,00
	12,5	91,90	117,00	10920,00	9,66	873,00	17160,00	1280,00
	14,2	103,00	132,00	12090,00	9,58	967,00	19140,00	1410,00
	16,0	115,00	147,00	13270,00	9,50	1060,00	21140,00	1550,00
	17,5	125,00	159,00	14190,00	9,43	1130,00	22730,00	1650,00
	20,0	141,00	180,00	15610,00	9,32	1250,00	25240,00	1810,00
260	**6,3**	49,90	63,50	6790,00	10,30	522,00	10420,00	773,00
	8,0	62,80	80,00	8420,00	10,30	648,00	13010,00	956,00
	10,0	77,70	98,90	10240,00	10,20	788,00	15930,00	1160,00
	12,5	95,80	122,00	12360,00	10,10	951,00	19410,00	1390,00
	14,2	108,00	137,00	13710,00	9,99	1050,00	21660,00	1540,00
	16,0	120,00	153,00	15060,00	9,91	1160,00	23940,00	1690,00
	20,0	147,00	188,00	17770,00	9,73	1370,00	28650,00	1980,00
300	**12,5**	112,00	142,00	19440,00	11,70	1300,00	30330,00	1900,00
	14,2	126,00	160,00	21640,00	11,60	1440,00	33940,00	2110,00
	16,0	141,00	179,00	23850,00	11,50	1590,00	37620,00	2330,00
	17,5	153,00	194,00	25610,00	11,50	1710,00	40590,00	2490,00
	20,0	173,00	220,00	28370,00	11,40	1890,00	45320,00	2750,00



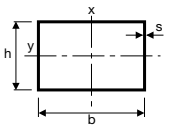
DIMENSIONAL TABLE



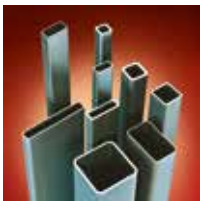
Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
50 x 30	**3,2**	3,61	4,60	14,20	6,20	1,76	1,16	5,68	4,13	14,20	6,80
	4,0	4,39	5,59	16,50	7,08	1,72	1,13	6,60	4,72	16,60	7,77
	5,0	5,28	6,73	18,70	7,89	1,67	1,08	7,49	5,26	19,00	8,67
	6,3	6,33	8,07	20,60	8,50	1,60	1,03	8,26	5,66	21,10	9,36
	7,1	6,91	8,80	21,30	8,66	1,56	0,99	8,54	5,78	21,80	9,56
60 x 40	**3,2**	4,62	5,88	27,80	14,60	2,18	1,57	9,27	7,29	30,80	11,70
	4,0	5,64	7,19	32,80	17,00	2,14	1,54	10,90	8,52	36,70	13,70
	5,0	6,85	8,73	38,10	19,50	2,09	1,50	12,70	9,77	43,00	15,70
	6,3	8,31	10,60	4,340	21,90	2,02	1,44	14,50	11,00	49,50	17,60
	7,1	9,14	11,60	45,90	22,90	1,98	1,40	15,30	11,50	52,70	18,50
	8,0	10,00	12,80	47,90	23,70	1,94	1,36	16,00	11,90	55,40	19,20
70 x 40	**3,2**	5,12	6,52	40,90	16,70	2,50	1,60	11,70	8,37	38,40	13,90
	4,0	6,27	7,99	48,50	19,60	2,46	1,57	13,90	9,82	45,80	16,30
	5,0	7,64	9,73	56,80	22,60	2,41	1,52	16,20	11,30	53,90	18,80
	6,3	9,30	11,80	65,40	25,50	2,35	1,47	18,70	12,80	62,40	21,20
	7,1	10,30	13,10	69,60	26,80	2,31	1,43	19,90	13,40	66,60	22,40
	8,0	11,30	14,40	73,40	27,90	2,26	1,39	21,00	14,00	70,40	23,30
	8,8	12,10	15,40	75,90	28,60	2,22	1,36	21,70	14,30	72,90	23,90
	10,0	13,30	16,90	78,50	29,00	2,15	1,31	22,40	14,50	75,30	24,30
70 x 50	**3,2**	5,62	7,16	48,00	28,20	2,59	1,99	13,70	11,30	56,50	18,00
	4,0	6,90	8,79	57,20	33,50	2,55	1,95	16,40	13,40	68,00	21,20
	5,0	8,42	10,70	67,30	39,00	2,50	1,91	19,20	15,60	80,80	24,80
	6,3	10,30	13,10	78,20	44,90	2,44	1,85	22,30	18,00	95,00	28,40
	7,1	11,40	14,50	83,70	47,70	2,40	1,82	23,90	19,10	102,00	30,20
	8,0	12,50	16,00	88,80	50,30	2,36	1,78	25,40	20,10	110,00	31,90
	8,8	13,50	17,20	92,50	52,10	2,32	1,74	26,40	20,80	115,00	33,00
	10,0	14,90	18,90	96,60	53,90	2,26	1,69	27,60	21,60	121,00	34,20
	12,5	17,30	22,10	100,00	55,00	2,13	1,58	28,60	22,00	127,00	34,90

SQUARE AND RECTANGULAR HOLLOW SECTIONS

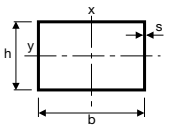
DIMENSIONAL TABLE



Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
80 x 40	**3,2**	5,62	7,16	57,20	18,90	2,83	1,63	14,30	9,46	46,20	16,10
	4,0	6,90	8,79	68,20	22,20	2,79	1,59	17,10	11,10	55,20	18,90
	5,0	8,42	10,70	80,30	25,70	2,74	1,55	2,010	12,90	65,10	21,90
	6,3	10,30	13,10	93,30	29,20	2,67	1,49	23,30	14,60	75,60	24,80
	7,1	11,40	14,50	99,80	30,70	2,63	1,46	25,00	15,40	80,90	26,20
	8,0	12,50	16,00	10,600	32,10	2,58	1,42	26,50	16,10	85,80	27,40
	8,8	13,50	17,20	110,00	33,00	2,53	1,38	27,60	16,50	89,10	28,20
	10,0	14,90	18,90	115,00	33,70	2,47	1,33	28,80	16,90	92,50	28,90
	12,5	17,30	22,10	119,00	33,60	2,32	1,23	29,80	16,80	93,70	28,70
80 x 50	**3,2**	6,12	7,80	66,60	31,80	2,92	2,02	16,70	12,70	68,50	20,80
	4,0	7,53	9,59	79,80	37,70	2,88	1,98	19,90	15,10	82,60	24,60
	5,0	9,21	11,70	94,40	44,10	2,84	1,94	23,60	17,70	98,40	28,80
	6,3	11,30	14,40	110,00	50,90	2,77	1,88	27,60	20,40	116,00	33,20
	7,1	12,50	15,90	119,00	54,30	2,73	1,85	29,70	21,70	125,00	35,50
	8,0	13,80	17,60	127,00	57,40	2,69	1,81	31,70	23,00	135,00	37,50
	8,8	14,90	19,00	133,00	59,60	2,65	1,77	33,20	23,90	142,00	39,00
	10,0	16,40	20,90	140,00	62,10	2,59	1,72	35,00	24,80	150,00	40,60
	12,5	19,30	24,60	148,00	64,10	2,45	1,61	37,00	25,60	159,00	42,00
80 x 60	**3,2**	6,63	8,44	76,10	48,50	3,00	2,40	19,00	16,20	93,30	25,50
	4,0	8,15	10,40	91,30	58,00	2,97	2,36	22,80	19,30	113,00	30,40
	5,0	9,99	12,70	108,00	68,40	2,92	2,32	27,10	22,80	135,00	35,80
	6,3	12,30	15,60	128,00	79,90	2,86	2,26	31,90	26,60	161,00	41,70
	7,1	13,60	17,30	138,00	85,80	2,82	2,23	34,40	28,60	175,00	44,80
	8,0	15,00	19,20	148,00	91,50	2,78	2,19	36,90	30,50	189,00	47,70
	8,8	16,30	20,70	155,00	95,80	2,74	2,15	38,80	31,90	201,00	49,90
	10,0	18,00	22,90	165,00	101,00	2,68	2,10	41,10	33,60	215,00	52,60
	12,5	21,30	27,10	177,00	107,00	2,55	1,99	44,20	35,60	234,00	55,80
90 x 50	**3,2**	6,63	8,44	89,10	35,30	3,25	2,04	19,80	14,10	80,90	23,60
	4,0	8,15	10,40	107,00	41,90	3,21	2,01	23,80	16,80	97,50	28,00
	5,0	9,99	12,70	127,00	49,20	3,16	1,97	28,30	19,70	116,00	32,90
	6,3	12,30	15,60	150,00	57,00	3,10	1,91	33,30	22,80	138,00	38,10
	7,1	13,60	17,30	162,00	60,90	3,06	1,88	36,00	24,40	149,00	40,70
	8,0	15,00	19,20	174,00	64,60	3,01	1,84	38,60	25,80	160,00	43,20
	8,8	16,30	20,70	183,00	67,20	2,97	1,80	40,60	26,90	169,00	45,00
	10,0	18,00	22,90	194,00	70,20	2,91	1,75	43,00	28,10	179,00	47,10
	12,5	21,30	27,10	208,00	73,20	2,77	1,64	46,20	29,30	192,00	49,20



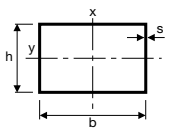
DIMENSIONAL TABLE



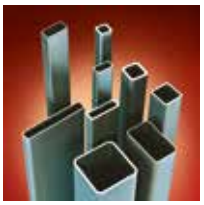
Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
100 x 50	**4,0**	8,78	11,20	140,00	46,20	3,53	2,03	27,90	18,50	113,00	31,40
	5,0	10,80	13,70	167,00	54,30	3,48	1,99	33,30	21,70	135,00	36,90
	6,3	13,30	16,90	197,00	63,00	3,42	1,93	39,40	25,20	160,00	42,90
	8,0	16,30	20,80	230,00	71,70	3,33	1,86	46,00	28,70	186,00	48,90
	8,8	17,60	22,50	243,00	74,80	3,29	1,82	48,50	29,90	197,00	51,00
	10,0	19,60	24,90	259,00	78,40	3,22	1,77	51,80	31,40	209,00	53,60
	12,5	23,20	29,60	281,00	82,30	3,08	1,67	56,30	32,90	226,00	56,40
100 x 60	**4,0**	9,41	12,00	158,00	70,50	3,63	2,43	31,60	23,50	156,00	38,70
	5,0	11,60	14,70	189,00	83,60	3,58	2,38	37,80	27,90	188,00	45,90
	6,3	14,20	18,10	225,00	98,10	3,52	2,33	45,00	32,70	224,00	53,80
	8,0	17,50	22,40	264,00	113,00	3,44	2,25	52,80	37,80	265,00	62,20
	8,8	19,00	24,20	279,00	119,00	3,40	2,22	55,90	39,70	282,00	65,40
	10,0	21,10	26,90	299,00	126,00	3,33	2,16	59,90	42,10	304,00	69,30
	12,5	25,20	32,10	329,00	136,00	3,21	2,06	65,90	45,20	336,00	74,80
100 x 80	**4,0**	10,70	13,60	195,00	138,00	3,79	3,18	39,00	34,40	253,00	53,40
	5,0	13,10	16,70	234,00	165,00	3,74	3,14	46,90	41,20	307,00	63,80
	6,3	16,20	20,70	280,00	196,00	3,68	3,08	56,00	49,00	371,00	75,80
	8,0	20,10	25,60	332,00	231,00	3,60	3,01	66,30	57,70	445,00	89,00
	8,8	21,80	27,80	353,00	245,00	3,57	2,97	70,60	61,20	477,00	94,30
	10,0	24,30	30,90	381,00	263,00	3,51	2,92	76,20	65,80	519,00	101,00
	12,5	29,10	37,10	426,00	292,00	3,39	2,81	85,20	73,00	591,00	112,00
110 x 60	**4,0**	10,00	12,80	200,00	76,80	3,96	2,45	36,40	25,60	178,00	42,90
	5,0	12,30	15,70	240,00	91,20	3,91	2,41	43,70	30,40	214,00	50,90
	6,3	15,20	19,40	287,00	107,00	3,84	2,35	52,10	35,80	257,00	59,90
	8,0	18,80	24,00	338,00	124,00	3,76	2,28	61,50	41,40	305,00	69,40
	8,8	20,40	26,00	359,00	131,00	3,72	2,24	65,30	43,60	324,00	73,10
	10,0	22,70	28,90	387,00	139,00	3,66	2,19	70,30	46,30	349,00	77,70
	12,5	27,10	34,60	429,00	150,00	3,52	2,08	78,10	50,00	389,00	84,30

SQUARE AND RECTANGULAR HOLLOW SECTIONS

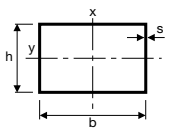
DIMENSIONAL TABLE



Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
120 x 60	**4,0**	10,70	13,60	249,00	83,10	4,28	2,47	41,50	27,70	201,00	47,10
	5,0	13,10	16,70	299,00	98,80	4,23	2,43	49,90	32,90	242,00	56,00
	6,3	16,20	20,70	358,00	116,00	4,16	2,37	59,70	38,80	290,00	65,90
	7,1	18,10	23,00	391,00	126,00	4,12	2,34	65,20	41,90	317,00	71,30
	8,0	20,10	25,60	425,00	135,00	4,08	2,30	70,80	45,00	344,00	76,60
	8,8	21,80	27,80	452,00	142,00	40,4	2,27	75,30	47,50	366,00	80,80
	10,0	24,30	30,90	488,00	152,00	3,97	2,21	81,40	50,50	396,00	86,10
	12,5	29,10	37,10	546,00	165,00	3,84	2,10	91,10	54,90	442,00	93,80
120 x 80	**4,0**	11,90	15,20	303,00	161,00	4,46	3,25	50,40	40,20	330,00	65,00
	5,0	14,70	18,70	365,00	193,00	4,42	3,21	60,90	48,20	401,00	77,90
	6,3	18,20	23,20	440,00	230,00	4,36	3,15	73,30	57,60	487,00	92,90
	7,1	20,30	25,80	482,00	251,00	4,32	3,12	80,30	62,80	535,00	101,00
	8,0	22,60	28,80	525,00	273,00	4,27	3,08	87,50	68,10	587,00	110,00
	8,8	24,50	31,30	561,00	290,00	4,24	3,04	93,50	72,40	629,00	117,00
	10,0	27,40	34,90	609,00	313,00	4,18	2,99	102,00	78,10	688,00	126,00
	12,5	33,00	42,10	692,00	349,00	4,05	2,88	115,00	87,40	789,00	141,00
	14,2	36,60	46,60	734,00	367,00	3,97	2,81	122,00	91,80	843,00	148,00
140 x 70	**4,0**	12,60	16,00	404,00	136,00	5,02	2,91	57,70	38,80	325,00	66,00
	5,0	15,50	19,70	488,00	163,00	4,98	2,87	69,80	46,50	394,00	79,00
	6,3	19,20	24,40	589,00	194,00	4,91	2,81	84,20	55,30	477,00	94,00
	7,1	21,40	27,30	647,00	211,00	4,87	2,78	92,40	60,20	523,00	102,00
	8,0	23,80	30,40	707,00	228,00	4,82	2,74	101,00	65,10	572,00	111,00
	8,8	25,90	33,00	756,00	242,00	4,78	2,71	108,00	69,10	613,00	118,00
	10,0	29,00	36,90	823,00	260,00	4,72	2,65	118,00	74,30	668,00	127,00
	12,5	35,00	44,60	939,00	289,00	4,59	2,55	134,00	82,60	761,00	141,00
	14,2	38,80	49,40	1000,00	302,00	4,50	2,47	143,00	86,40	809,00	148,00
140 x 80	**5,0**	16,30	20,70	534,00	221,00	5,08	3,27	76,30	55,30	499,00	91,90
	6,3	20,20	25,70	646,00	265,00	50,1	3,21	92,30	66,20	607,00	110,00
	7,1	22,50	28,70	709,00	289,00	4,97	3,17	101,00	72,30	668,00	120,00
	8,0	25,10	32,00	776,00	314,00	4,93	3,14	111,00	78,50	733,00	130,00
	8,8	27,30	34,80	832,00	335,00	4,89	3,10	119,00	83,60	787,00	139,00
	10,0	30,60	38,90	908,00	362,00	4,83	3,05	130,00	90,50	862,00	150,00
	12,5	37,00	47,10	1040,00	407,00	4,70	2,94	149,00	102,00	994,00	169,00
	14,2	41,00	52,30	1110,00	430,00	4,62	2,87	159,00	107,00	1070,00	178,00



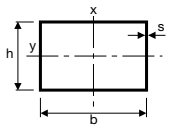
DIMENSIONAL TABLE



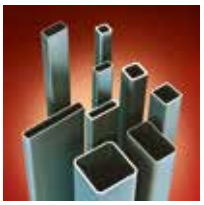
Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
150 x 50	**4,0**	11,90	15,20	394,0	67,40	5,09	2,11	52,50	27,00	192,00	48,40
	5,0	14,70	18,70	476,00	79,70	5,04	2,06	63,40	31,90	230,00	57,20
	6,3	18,20	23,20	572,00	93,30	4,97	2,01	76,30	37,30	273,00	67,10
	7,1	20,30	25,80	627,00	100,00	4,92	1,97	83,60	40,20	2,9700	72,30
	8,0	22,60	28,80	683,00	107,00	4,87	1,93	91,10	43,00	321,00	77,40
	10,0	27,40	34,90	792,00	119,00	4,76	1,85	106,00	47,70	364,00	86,10
150 x 100	**5,0**	18,60	23,70	739,00	392,00	5,58	4,07	98,50	78,50	807,00	127,00
	6,3	23,10	29,50	898,00	474,00	5,52	4,01	120,00	94,80	986,00	153,00
	7,1	25,90	32,90	990,00	520,00	5,48	3,97	132,00	104,00	1090,00	168,00
	8,0	28,90	36,80	1090,00	569,00	5,44	3,94	145,00	114,00	1200,00	183,00
	8,8	31,50	40,10	1170,00	610,00	5,40	3,90	156,00	122,00	1300,00	196,00
	10,0	35,30	44,90	1280,00	665,00	5,34	3,85	171,00	133,00	1430,00	214,00
	12,5	42,80	54,60	1490,00	763,00	5,22	3,74	198,00	153,00	1680,00	246,00
	14,2	47,70	60,80	1600,00	816,00	5,14	3,66	214,00	163,00	1820,00	263,00
	16,0	52,60	67,00	1710,00	862,00	5,05	3,59	228,00	172,00	1950,00	278,00
160 x 80	**5,0**	17,80	22,70	744,00	249,00	5,72	3,31	93,00	62,30	600,00	106,00
	6,3	22,20	28,20	903,00	299,00	5,66	3,26	113,00	74,80	730,00	127,00
	7,1	24,70	31,50	994,00	327,00	5,62	3,22	124,00	81,70	804,00	139,00
	8,0	27,60	35,20	1090,00	356,00	5,57	3,18	136,00	89,00	883,00	151,00
	8,8	30,10	38,30	1170,00	379,00	5,53	3,15	147,00	94,90	949,00	161,00
	10,0	33,70	42,90	1280,00	411,00	5,47	3,10	161,00	103,00	1040,00	175,00
	12,5	40,90	52,10	1490,00	465,00	5,34	2,99	186,00	116,00	1200,00	198,00
	14,2	45,50	57,90	1600,00	492,00	5,25	2,91	200,00	123,00	1290,00	210,00
	16,0	50,10	63,80	1700,00	514,00	5,16	2,84	212,00	128,00	1370,00	220,00
160 x 90	**5,0**	18,60	23,70	804,00	326,00	5,82	3,71	101,00	72,50	738,00	121,00
	6,3	23,10	29,50	978,00	393,00	5,76	3,65	122,00	87,30	901,00	146,00
	7,1	25,90	32,90	1080,00	431,00	5,72	3,62	135,00	95,70	995,00	160,00
	8,0	28,90	36,80	1180,00	470,00	5,68	3,58	148,00	105,00	1100,00	174,00
	8,8	31,50	40,10	1270,00	503,00	5,64	3,54	159,00	112,00	1180,00	186,00
	10,0	35,30	44,90	1400,00	547,00	5,58	3,49	175,00	122,00	1300,00	203,00
	12,5	42,80	54,60	1620,00	624,00	5,45	3,38	203,00	139,00	1520,00	231,00
	14,2	47,70	60,80	1750,00	665,00	5,36	3,31	219,00	148,00	1640,00	247,00
	16,0	52,60	67,00	1860,00	700,00	5,27	3,23	233,00	155,00	1750,00	260,00

SQUARE AND RECTANGULAR HOLLOW SECTIONS

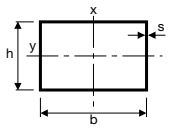
DIMENSIONAL TABLE



Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
180 x 60	**5,0**	17,80	22,70	846,00	144,00	6,10	2,52	94,00	48,10	411,00	86,30
	6,3	22,20	28,20	1030,00	171,00	6,03	2,46	114,00	57,00	495,00	102,00
	7,1	24,70	31,50	1130,00	186,00	5,99	2,43	126,00	61,90	542,00	111,00
180 x 80	**5,0**	19,40	24,70	1000,00	277,00	6,36	3,35	111,00	69,40	703,00	120,00
	6,3	24,10	30,70	1220,00	333,00	6,29	3,29	135,00	83,40	855,00	144,00
	7,1	27,00	34,40	1340,00	365,00	6,25	3,26	149,00	91,20	943,00	158,00
	8,0	30,10	38,40	1480,00	397,00	6,20	3,22	164,00	99,40	1040,00	172,00
	8,8	32,80	41,80	1590,00	424,00	6,16	3,18	177,00	106,00	1110,00	184,00
	10,0	36,80	46,90	1750,00	461,00	6,10	3,13	194,00	115,00	1220,00	199,00
	12,5	44,80	57,10	2030,00	522,00	5,97	3,03	226,00	131,00	1420,00	227,00
180 x 100	**5,0**	21,00	26,70	1150,00	460,00	6,57	4,15	128,00	92,00	1040,00	154,00
	6,3	26,10	33,30	1410,00	557,00	6,50	4,09	156,00	111,00	1280,00	186,00
	7,1	29,20	37,20	1560,00	613,00	6,47	4,06	173,00	123,00	1410,00	205,00
	8,0	32,60	41,60	1710,00	671,00	6,42	4,02	190,00	134,00	1560,00	224,00
	8,8	35,60	45,40	1850,00	720,00	6,38	3,98	205,00	144,00	1690,00	240,00
	10,0	40,00	50,90	2040,00	787,00	6,32	3,93	226,00	157,00	1860,00	263,00
	12,5	48,70	62,10	2385,00	908,00	6,20	3,82	265,00	182,00	2190,00	303,00
	14,2	54,40	69,30	2590,00	974,00	6,11	3,75	288,00	195,00	2390,00	326,00
	16,0	60,10	76,60	2780,00	1030,00	6,02	3,67	309,00	207,00	2560,00	346,00
200 x 100	**6,3**	28,10	35,80	1830,00	613,00	7,15	4,14	183,00	123,00	1470,00	208,00
	8,0	35,10	44,80	2234,00	739,00	7,06	4,06	223,00	148,00	1800,00	251,00
	10,0	43,10	54,90	2664,00	869,00	6,96	3,98	266,00	174,00	2160,00	295,00
	12,5	52,70	67,10	3140,00	1000,00	6,84	3,87	314,00	201,00	2540,00	341,00
	14,2	58,90	75,00	3420,00	1080,00	6,75	3,80	342,00	216,00	2770,00	368,00
	16,0	65,20	83,00	3680,00	1150,00	6,66	3,72	368,00	229,00	2980,00	391,00
	17,5	70,20	89,50	3870,00	1190,00	6,58	3,65	387,00	239,00	3140,00	407,00
	20,0	78,30	100,00	4140,00	1250,00	6,44	3,54	414,00	250,00	3350,00	429,00



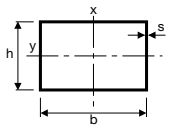
DIMENSIONAL TABLE



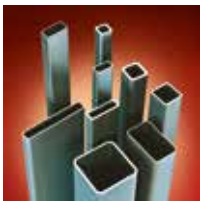
Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
200 x 120	**6,3**	30,10	38,30	2070,00	929,00	7,34	4,92	207,00	155,00	2030,00	255,00
	8,0	37,60	48,00	2529,00	1130,00	7,26	4,85	253,00	188,00	2490,00	310,00
	10,0	46,30	58,90	3030,00	1340,00	7,17	4,76	303,00	223,00	3000,00	367,00
	12,5	56,60	72,10	3576,00	1560,00	7,04	4,66	358,00	260,00	3570,00	428,00
	14,2	63,30	80,70	3910,00	1690,00	6,96	4,58	391,00	282,00	3920,00	464,00
	16,0	70,20	89,40	4222,00	1810,00	6,87	4,50	422,00	302,00	4250,00	497,00
	17,5	75,70	96,50	4460,00	1900,00	6,80	4,44	446,00	317,00	4500,00	521,00
	20,0	84,60	108,00	4790,00	2020,00	6,67	4,33	479,00	337,00	4860,00	555,00
200 x 150	**6,3**	33,00	42,10	2420,00	1550,00	7,58	6,07	242,00	207,00	2950,00	326,00
	8,0	41,40	52,80	2970,00	1890,00	7,50	5,99	297,00	253,00	3640,00	398,00
	10,0	51,00	64,90	3570,00	2260,00	7,41	5,91	357,00	302,00	4410,00	475,00
	12,5	62,50	79,60	4240,00	2670,00	7,30	5,80	424,00	356,00	5290,00	559,00
	14,2	70,00	89,20	4640,00	2920,00	7,22	5,72	464,00	389,00	5830,00	610,00
	16,0	77,70	99,00	5040,00	3150,00	7,13	5,64	504,00	420,00	6370,00	658,00
	17,5	84,00	107,00	5330,00	3330,00	7,06	5,58	533,00	444,00	6780,00	694,00
	20,0	94,00	120,00	5770,00	3580,00	6,94	5,47	577,00	477,00	7400,00	746,00
220 x 120	**6,3**	32,00	40,80	2610,00	1010,00	8,00	4,98	237,00	168,00	2320,00	283,00
	8,0	40,20	51,20	3200,00	1230,00	7,91	4,90	291,00	205,00	2850,00	343,00
	10,0	49,40	62,90	3840,00	1460,00	7,82	4,81	349,00	243,00	3430,00	407,00
	12,5	60,50	77,10	4560,00	1710,00	7,69	4,71	415,00	285,00	4090,00	476,00
	14,2	67,80	86,30	5000,00	1850,00	7,61	4,63	454,00	309,00	4490,00	517,00
	16,0	75,20	95,80	5410,00	1990,00	7,52	4,55	492,00	331,00	4870,00	555,00
	17,5	81,20	103,00	5730,00	2090,00	7,40	4,49	521,00	348,00	5160,00	583,00
	20,0	90,80	116,00	6180,00	2220,00	7,31	4,38	562,00	370,00	5590,00	622,00
250 x 100	**6,3**	33,00	42,10	3210,00	751,00	8,73	4,22	257,00	150,00	1980,00	264,00
	8,0	41,40	52,80	3940,00	909,00	8,64	4,15	315,00	182,00	2430,00	319,00
	10,0	51,00	64,90	4730,00	1070,00	8,54	4,06	379,00	214,00	2910,00	376,00
	12,5	62,50	79,60	5620,00	1240,00	8,41	3,96	450,00	249,00	3440,00	438,00
	14,2	70,00	89,20	6160,00	1340,00	8,31	3,88	493,00	269,00	3750,00	473,00
	16,0	77,70	99,00	6690,00	1430,00	8,22	3,80	535,00	287,00	4050,00	505,00
	17,5	84,00	107,00	7080,00	1500,00	8,14	3,74	566,00	300,00	4270,00	528,00
	20,0	94,00	120,00	7650,00	1580,00	7,99	3,63	612,00	316,00	4580,00	559,00

SQUARE AND RECTANGULAR HOLLOW SECTIONS

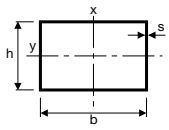
DIMENSIONAL TABLE



Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
250 x 150	**6,3**	38,00	48,40	4143,00	1874,00	9,25	6,20	331,00	250,00	4050,00	413,00
	8,0	47,70	60,80	5111,00	2300,00	9,17	6,15	409,00	306,00	5020,00	506,00
	10,0	58,80	74,90	6170,00	2750,00	9,08	6,06	494,00	367,00	6090,00	605,00
	12,5	72,30	92,10	7390,00	3270,00	8,96	5,96	591,00	435,00	7330,00	717,00
	14,2	81,10	103,00	8140,00	3580,00	8,87	5,88	651,00	477,00	8100,00	784,00
	16,0	90,30	115,00	8880,00	3870,00	8,79	5,80	710,00	516,00	8870,00	849,00
	17,5	97,70	124,00	9450,00	4100,00	8,71	5,74	756,00	547,00	9460,00	898,00
	20,0	110,00	140,00	10310,00	4430,00	8,59	5,63	825,00	591,00	10370,00	972,00
260 x 140	**6,3**	38,00	48,40	4350,00	1660,00	9,49	5,86	335,00	237,00	3800,00	399,00
	8,0	47,70	60,80	5370,00	2030,00	9,40	5,78	413,00	290,00	4700,00	488,00
	10,0	58,80	74,90	6490,00	2430,00	9,31	5,70	499,00	347,00	5700,00	584,00
	12,5	72,30	92,10	7770,00	2880,00	9,18	5,59	597,00	411,00	6840,00	690,00
	14,2	81,10	103,00	8560,00	3140,00	9,10	5,52	658,00	449,00	7560,00	754,00
	16,0	90,30	115,00	9340,00	3400,00	9,01	5,40	718,00	486,00	8260,00	815,00
	17,5	97,70	124,00	9940,00	3590,00	8,94	5,37	765,00	513,00	8800,00	862,00
	20,0	110,00	140,00	10840,00	3870,00	8,81	5,26	834,00	553,00	9620,00	930,00
260 x 180	**6,3**	41,90	53,40	5170,00	2930,00	9,83	7,40	397,00	325,00	5810,00	524,00
	8,0	52,70	67,20	6390,00	3610,00	9,75	7,33	492,00	401,00	7220,00	644,00
	10,0	65,10	82,90	7740,00	4350,00	9,66	7,24	595,00	483,00	8800,00	775,00
	12,5	80,10	102,00	9300,00	5200,00	9,54	7,13	715,00	577,00	10640,00	924,00
	14,2	90,10	115,00	10280,00	5720,00	9,46	7,06	791,00	635,00	11820,00	1020,00
	16,0	100,00	128,00	11240,00	6230,00	9,38	6,98	865,00	692,00	12990,00	1110,00
	17,5	109,00	138,00	12000,00	6620,00	9,31	6,91	923,00	736,00	13920,00	1180,00
	20,0	122,00	156,00	13150,00	7210,00	9,19	6,80	1010,00	801,00	15350,00	1280,00
300 x 100	**6,3**	38,00	48,40	5110,00	890,00	10,30	4,29	341,00	178,00	2500,00	319,00
	8,0	47,70	60,80	6310,00	1080,00	10,20	4,21	420,00	216,00	3070,00	387,00
	10,0	58,80	74,90	7610,00	1280,00	10,10	4,13	508,00	255,00	3680,00	458,00
	12,5	72,30	92,10	9100,00	1490,00	9,94	4,02	607,00	297,00	4350,00	534,00
	14,2	81,10	103,00	10030,00	1610,00	9,85	3,94	669,00	321,00	4750,00	578,00
	16,0	90,30	115,00	10930,00	1720,00	9,75	3,87	729,00	344,00	5140,00	619,00
	17,5	97,70	124,00	11620,00	1800,00	9,66	3,80	775,00	360,00	5420,00	650,00
	20,0	110,00	140,00	12660,00	1910,00	9,52	3,70	844,00	382,00	5830,00	689,00



DIMENSIONAL TABLE



Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
300 x 150	**6,3**	43,10	54,90	6521,00	2212,00	10,90	6,35	435,00	295,00	5200,00	500,00
	8,0	54,00	68,80	8010,00	2700,00	10,80	6,27	534,00	360,00	6450,00	613,00
	10,0	66,70	84,90	9720,00	3250,00	10,70	6,18	648,00	433,00	7840,00	736,00
	12,5	82,10	105,00	11690,00	3860,00	10,60	6,07	779,00	514,00	9450,00	874,00
	14,2	92,30	118,00	12930,00	4230,00	10,50	6,00	862,00	564,00	10460,00	959,00
	16,0	103,00	131,00	14160,00	4590,00	10,40	5,92	944,00	613,00	11460,00	1040,00
	17,5	111,00	142,00	15120,00	4870,00	10,30	5,86	1010,00	649,00	12250,00	1100,00
	20,0	125,00	160,00	16590,00	5280,00	10,20	5,75	1110,00	704,00	13450,00	1200,00
300 x 200	**6,3**	47,90	61,00	7830,00	4190,00	11,30	8,29	522,00	419,00	8480,00	681,00
	8,0	60,30	76,80	9720,00	5180,00	11,30	8,22	648,00	518,00	10560,00	840,00
	10,0	74,50	94,90	11820,00	6280,00	11,20	8,13	788,00	628,00	12910,00	1020,00
	12,5	91,90	117,00	14270,00	7450,00	11,00	8,02	952,00	754,00	15680,00	1220,00
	14,2	103,00	132,00	15380,00	8330,00	11,00	7,95	1060,00	833,00	17460,00	1340,00
	16,0	115,00	147,00	17390,00	9110,00	10,90	7,87	1160,00	911,00	19250,00	1470,00
	17,5	125,00	159,00	18620,00	9720,00	10,80	7,81	1240,00	972,00	20680,00	1570,00
	20,0	141,00	180,00	20520,00	10650,00	10,70	7,70	1370,00	1065,00	22910,00	1710,00

TABLES REPORT CALCULATIONS FROM MANUFACTURERS AND/OR FROM EN 10210-2 SPECIFICATIONS

HOT FINISHED WELDED SQUARE AND RECTANGULAR HOLLOW SECTIONS

THE NORM EN 10210

It defines the technical delivery conditions for hot finished (or cold finished followed by heat treatment) square, circular and rectangular hollow sections.

DIMENSIONAL TOLERANCES

Shape

Outside dimension: ±1% with a minimum of ± 0.5 mm
Wall thickness: – 10%
For deviations above the nominal value, tolerances on mass rule.

Concavity and convexity of sides

On external sides: 1%.

Twist

Up to max 2 mm, plus 0.5 mm for each meter on the whole tube length.

Squareness of sides

90° ± 1°.

External corner radius

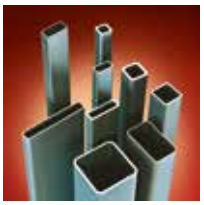
Max 3 times the w.t.

Straightness

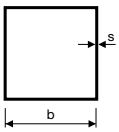
The max. tolerance must be ≤ 0.20% on the whole tube length.
Deviations on the local straightness: max 3 mm on each meter length.

Mass

Seamless tubes: + 8% / - 6% on the single section.

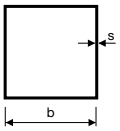


DIMENSIONAL TABLE

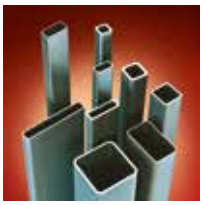


Size **b** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **I** cm^4	Radius of gyration **i** cm	Elastic section modulus **W** cm^3	Torsional inertia constant **J** cm^4	Torsional mudulus constant **C** cm^3
30	**2,0**	1,76	2,24	2,92	1,14	1,95	4,52	2,76
	3,0	2,47	3,14	3,74	1,09	2,50	6,16	3,60
	4,0	3,27	4,16	4,66	1,06	3,11	7,43	4,22
	5,0	3,93	5,00	5,17	1,02	3,45	8,35	4,59
	6,0	4,52	5,76	5,48	0,97	3,65	8,94	4,77
40	**3,0**	3,49	4,44	10,11	1,51	5,06	15,70	7,11
	3,2	3,61	4,60	10,20	1,49	5,11	16,50	7,42
	4,0	4,39	5,59	11,80	1,45	5,91	19,50	8,54
	5,0	5,28	6,73	13,40	1,41	6,68	22,50	9,60
	6,3	6,33	8,07	14,70	1,35	7,34	25,40	10,50
	8,0	8,04	10,24	17,32	1,30	8,66	28,25	11,32
50	**3,2**	4,62	5,88	21,20	1,90	8,49	33,80	12,40
	4,0	5,64	7,19	25,00	1,86	9,99	40,40	14,50
	5,0	6,85	8,73	28,90	1,82	11,60	47,60	16,70
	6,3	8,31	10,60	32,80	1,76	13,10	55,20	18,80
	7,1	9,14	11,60	34,50	1,72	13,80	58,90	19,80
	8,0	10,00	12,80	36,00	1,68	14,40	62,30	20,60
	10,0	12,60	16,00	42,28	1,63	16,91	68,97	22,10
55	**3,0**	4,90	6,24	28,10	2,12	10,22	43,19	14,60
	4,0	6,41	8,16	35,32	2,08	12,84	54,75	18,10
	5,0	7,85	10,00	41,57	2,04	15,12	64,98	21,03
	6,0	9,23	11,76	46,91	1,99	17,06	73,94	23,45
	8,0	11,80	15,04	55,07	1,91	20,02	88,18	26,95
	10,0	14,10	18,00	60,27	1,83	21,92	97,80	28,92

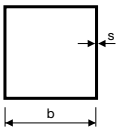
DIMENSIONAL TABLE



Size **b** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **I** cm^4	Radius of gyration **i** cm	Elastic section modulus **W** cm^3	Torsional inertia constant **J** cm^4	Torsional mudulus constant **C** cm^3
60	**3,2**	5,62	7,16	38,20	2,31	12,70	60,20	18,60
	4,0	6,90	8,79	45,40	2,27	15,10	72,50	22,00
	5,0	8,42	10,70	53,30	2,23	17,80	86,40	25,70
	6,3	10,30	13,10	61,60	2,17	20,50	102,00	29,60
	7,1	11,40	14,50	65,80	2,13	21,90	110,00	31,60
	8,0	12,50	16,00	69,70	2,09	23,20	118,00	33,40
	10,0	14,90	18,90	75,50	2,00	25,20	131,00	36,00
65	**3,0**	5,84	7,44	47,64	2,53	14,66	72,94	21,08
	4,0	7,66	9,76	60,46	2,49	18,60	93,24	26,44
	5,0	9,42	12,00	71,88	2,45	22,12	111,60	31,07
	6,3	11,65	14,87	86,06	2,53	26,48	191,31	36,80
	8,0	14,30	18,24	98,37	2,32	30,27	156,00	41,26
	10,0	17,30	22,00	110,20	2,24	33,92	177,10	45,44
70	**3,2**	6,63	8,44	62,30	2,72	17,80	97,60	26,10
	4,0	8,15	10,40	74,70	2,68	21,30	118,00	31,20
	5,0	9,99	12,70	88,50	2,64	25,30	142,00	36,80
	6,3	12,30	15,60	104,00	2,58	29,70	169,00	42,90
	7,1	13,60	17,30	112,00	2,54	32,00	185,00	46,10
	8,0	15,00	19,20	120,00	2,50	34,20	200,00	49,20
	10,0	18,00	22,90	133,00	2,41	38,00	227,00	54,40
	12,5	21,30	27,10	142,00	2,29	40,60	249,00	58,00
80	**3,6**	8,53	10,90	105,00	3,11	26,20	164,00	38,50
	4,0	9,41	12,00	114,00	3,09	28,60	180,00	41,90
	5,0	11,60	14,70	137,00	3,05	34,20	217,00	49,80
	6,3	14,20	18,10	162,00	2,99	40,50	262,00	58,70
	7,1	15,80	20,20	176,00	2,95	43,90	286,00	63,50
	8,0	17,50	22,40	189,00	2,91	47,30	312,00	68,30
	10,0	21,10	26,90	214,00	2,82	53,50	360,00	76,80
	11,0	22,80	29,10	223,00	2,77	55,80	380,00	80,10
	12,5	25,20	32,10	234,00	2,70	58,60	404,00	83,80

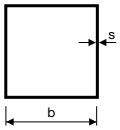


DIMENSIONAL TABLE

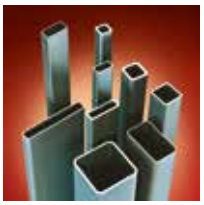


Size **b** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **I** cm^4	Radius of gyration **i** cm	Elastic section modulus **W** cm^3	Torsional inertia constant **J** cm^4	Torsional mudulus constant **C** cm^3
90	**3,6**	9,66	12,30	152,00	3,52	33,80	237,00	49,70
	4,0	10,70	13,60	166,00	3,50	37,00	260,00	54,20
	5,0	13,10	16,70	200,00	3,45	44,40	316,00	64,80
	6,3	16,20	20,70	238,00	3,40	53,00	382,00	77,00
	7,1	18,10	23,00	260,00	3,36	57,70	419,00	83,70
	8,0	20,10	25,60	281,00	3,32	62,60	459,00	90,50
	10,0	24,30	30,90	322,00	3,23	71,60	536,00	103,00
	12,5	29,10	37,10	359,00	3,11	79,80	612,00	114,00
100	**4,0**	11,90	15,20	232,00	3,91	46,40	361,00	68,20
	5,0	14,70	18,70	279,00	3,86	55,90	439,00	81,80
	6,3	18,20	23,20	336,00	3,80	67,10	534,00	97,80
	7,1	20,30	25,80	367,00	3,77	73,40	589,00	107,00
	8,0	22,60	28,80	400,00	3,73	79,90	646,00	116,00
	10,0	27,40	34,90	462,00	3,64	92,40	761,00	133,00
	11,0	29,70	37,90	488,00	3,59	97,70	812,00	141,00
	12,5	33,00	42,10	522,00	3,52	104,00	879,00	150,00
110	**4,0**	13,20	16,80	313,00	4,32	56,80	485,00	83,70
	5,0	16,30	20,70	378,00	4,27	68,80	592,00	101,00
	6,3	20,20	25,70	456,00	4,21	83,00	722,00	121,00
	8,0	25,10	32,00	547,00	4,14	99,40	878,00	144,00
	10,0	30,60	38,90	637,00	4,05	116,00	1040,00	168,00
	11,0	33,20	42,30	677,00	4,00	123,00	1110,00	178,00
	12,5	37,00	47,10	728,00	3,93	132,00	1210,00	191,00
120	**3,0**	11,00	14,04	320,30	4,78	53,38	485,70	78,19
	4,0	14,40	18,40	410,00	4,72	68,40	635,00	101,00
	5,0	17,80	22,70	498,00	4,68	83,00	777,00	122,00
	6,3	22,20	28,20	603,00	4,62	100,00	950,00	147,00
	7,1	24,70	31,50	663,00	4,59	110,00	1050,00	161,00
	8,0	27,60	35,20	726,00	4,55	121,00	1160,00	176,00
	10,0	33,70	42,90	852,00	4,46	142,00	1380,00	206,00
	11,0	36,60	46,70	908,00	4,41	151,00	1480,00	219,00
	12,5	40,90	52,10	982,00	4,34	164,00	1620,00	236,00

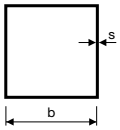
DIMENSIONAL TABLE



Size **b** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **I** cm^4	Radius of gyration **i** cm	Elastic section modulus **W** cm^3	Torsional inertia constant **J** cm^4	Torsional mudulus constant **C** cm^3
130	**5,0**	19,40	24,70	640,00	5,09	98,50	996,00	145,00
	6,3	24,10	30,70	778,00	5,03	120,00	1220,00	175,00
	8,0	30,10	38,40	941,00	4,95	145,00	1500,00	211,00
	10,0	36,80	46,90	1110,00	4,86	171,00	1790,00	248,00
	11,0	40,10	51,10	1190,00	4,82	182,00	1930,00	264,00
	12,5	44,80	57,10	1290,00	4,75	198,00	2110,00	286,00
	14,2	49,90	63,60	1390,00	4,67	214,00	2310,00	308,00
140	**4,0**	17,10	21,76	670,60	5,55	95,80	1019,00	139,90
	5,0	21,00	26,70	807,00	5,50	115,00	1250,00	170,00
	6,3	26,10	33,30	984,00	5,44	141,00	1540,00	206,00
	7,1	29,20	37,20	1090,00	5,40	155,00	1710,00	227,00
	8,0	32,60	41,60	1200,00	5,36	171,00	1890,00	249,00
	10,0	40,00	50,90	1420,00	5,27	202,00	2270,00	294,00
	11,0	43,50	55,50	1520,00	5,23	217,00	2450,00	314,00
	12,5	48,70	62,10	1650,00	5,16	236,00	2700,00	342,00
150	**4,0**	17,90	22,87	803,200	5,93	107,10	1268,00	161,60
	5,0	22,60	28,70	1002,00	5,90	134,00	1550,00	197,00
	6,3	28,10	35,80	1220,00	5,85	163,00	1910,00	240,00
	8,0	35,10	44,80	1490,00	5,77	199,00	2350,00	291,00
	10,0	43,10	54,90	1770,00	5,68	236,00	2830,00	344,00
	11,0	47,00	59,90	1900,00	5,64	254,00	3060,00	368,00
	12,5	52,70	67,10	2080,00	5,57	277,00	3370,00	402,00
	16,0	65,20	83,00	2430,00	5,41	324,00	4030,00	467,00
160	**5,0**	23,70	30,23	1194,00	6,29	149,30	1901,00	225,60
	6,3	30,10	38,30	1500,00	6,26	187,00	2330,00	275,00
	7,1	33,70	42,90	1660,00	6,22	207,00	2590,00	304,00
	8,0	37,60	48,00	1830,00	6,18	229,00	2880,00	335,00
	10,0	46,30	58,90	2190,00	6,09	273,00	3480,00	398,00
	12,5	56,60	72,10	2580,00	5,98	322,00	4160,00	467,00
	14,2	63,30	80,70	2810,00	5,90	351,00	4580,00	508,00
	16,0	70,20	89,40	3030,00	5,82	379,00	4990,00	546,00

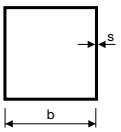


DIMENSIONAL TABLE

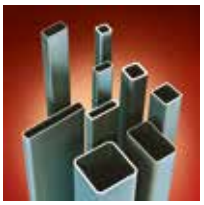


Size **b** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **I** cm^4	Radius of gyration **i** cm	Elastic section modulus **W** cm^3	Torsional inertia constant **J** cm^4	Torsional mudulus constant **C** cm^3
180	**5,0**	26,90	34,23	1726,00	7,10	191,80	2731,00	289,70
	6,3	34,00	43,30	2170,00	7,07	241,00	3360,00	355,00
	7,1	38,10	48,60	2400,00	7,04	267,00	3740,00	393,00
	8,0	42,70	54,40	2660,00	7,00	296,00	4160,00	434,00
	10,0	52,50	66,90	3190,00	6,91	355,00	5050,00	518,00
	12,5	64,40	82,10	3790,00	6,80	421,00	6070,00	613,00
	14,2	72,20	92,00	4150,00	6,72	462,00	6710,00	670,00
	16,0	80,20	102,00	4500,00	6,64	500,00	7340,00	724,00
200	**5,0**	30,00	38,23	2397,00	7,91	239,70	3772,00	361,70
	6,3	38,00	48,40	3010,00	7,89	301,00	4650,00	444,00
	7,1	42,60	54,20	3350,00	7,85	335,00	5190,00	493,00
	8,0	47,70	60,80	3710,00	7,81	371,00	5780,00	545,00
	10,0	58,80	74,90	4470,00	7,72	447,00	7030,00	655,00
	12,5	72,30	92,10	5340,00	7,61	534,00	8490,00	778,00
	14,2	81,10	103,00	5870,00	7,54	587,00	9420,00	854,00
	16,0	90,30	115,00	6390,00	7,46	639,00	10340,00	927,00
220	**5,0**	33,10	42,23	3222,00	8,73	292,90	5048,00	441,70
	6,3	41,90	53,40	4050,00	8,71	368,00	6240,00	544,00
	8,0	52,70	67,20	5000,00	8,63	455,00	7760,00	669,00
	10,0	65,10	82,90	6050,00	8,54	550,00	9470,00	807,00
	12,5	80,10	102,00	7250,00	8,43	659,00	11480,00	963,00
	16,0	100,00	128,00	8750,00	8,27	795,00	14050,00	1160,00
250	**5,0**	37,90	48,23	4785,00	9,96	382,80	7458,00	576,70
	6,3	47,90	61,00	6010,00	9,93	481,00	9240,00	712,00
	7,1	53,70	68,40	6700,00	9,90	536,00	10320,00	792,00
	8,0	60,30	76,80	7450,00	9,86	596,00	11530,00	880,00
	10,0	74,50	94,90	9060,00	9,77	724,00	14110,00	1060,00
	12,5	91,90	117,00	10920,00	9,66	873,00	17160,00	1280,00
	14,2	103,00	132,00	12090,00	9,58	967,00	19140,00	1410,00
	16,0	115,00	147,00	13270,00	9,50	1060,00	21140,00	1550,00

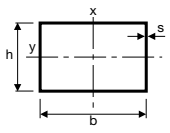
DIMENSIONAL TABLE



Size **b** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **I** cm^4	Radius of gyration **i** cm	Elastic section modulus **W** cm^3	Torsional inertia constant **J** cm^4	Torsional mudulus constant **C** cm^3
260	**6,3**	49,90	63,50	6790,00	10,30	522,00	10420,00	773,00
	8,0	62,80	80,00	8420,00	10,30	648,00	13010,00	956,00
	10,0	77,70	98,90	10240,00	10,20	788,00	15930,00	1160,00
	12,5	95,80	122,00	12360,00	10,10	951,00	19410,00	1390,00
	14,2	108,00	137,00	13710,00	9,99	1050,00	21660,00	1540,00
	16,0	120,00	153,00	15060,00	9,91	1160,00	23940,00	1690,00
300	**6,3**	57,80	73,60	10550,00	12,00	703,00	16140,00	1040,00
	8,0	72,80	92,80	13130,00	11,90	875,00	20190,00	1290,00
	10,0	90,20	115,00	16030,00	11,80	1070,00	24810,00	1580,00
	12,5	112,00	142,00	19440,00	11,70	1300,00	30330,00	1900,00
	14,2	126,00	160,00	21640,00	11,60	1440,00	33940,00	2110,00
	16,0	141,00	179,00	23850,00	11,50	1590,00	37620,00	2330,00
320	**6,3**	61,90	78,90	12920,00	12,80	807,00	19632,00	1193,00
	7,1	69,60	88,60	14440,00	12,80	902,00	21982,00	1331,00
	8,0	78,10	99,50	16120,00	12,70	1007,00	24588,00	1483,00
	10,0	97,00	124,00	19740,00	12,60	1234,00	30235,00	1807,00
	12,5	120,00	153,00	24040,00	12,50	1502,00	37019,00	2190,00
	14,2	136,00	173,00	26820,00	12,50	1676,00	41459,00	2435,00
	16,0	152,00	193,00	29650,00	12,40	1853,00	46010,00	2683,00
350	**6,3**	67,70	86,20	16920,00	14,00	967,00	25820,00	1440,00
	8,0	85,40	109,00	21130,00	13,90	1210,00	32380,00	1790,00
	10,0	106,00	135,00	25880,00	13,90	1480,00	39890,00	2190,00
	12,5	131,00	167,00	31540,00	13,70	1800,00	48930,00	2650,00
	14,2	148,00	189,00	35210,00	13,70	2010,00	54880,00	2960,00
	16,0	166,00	211,00	38940,00	13,60	2230,00	60990,00	3260,00
400	**8,0**	97,90	125,00	31860,00	16,00	1590,00	48690,00	2360,00
	10,0	122,00	155,00	39130,00	15,90	1960,00	60090,00	2900,00
	12,5	151,00	192,00	47840,00	15,80	2390,00	73910,00	3530,00
	14,2	170,00	217,00	53530,00	15,70	2680,00	83030,00	3940,00
	16,0	191,00	243,00	59340,00	15,60	2970,00	92440,00	4362,00
	20,0	235,00	300,00	71535,00	15,40	3577,00	112489,00	5237,00



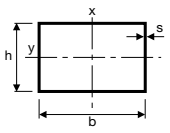
DIMENSIONAL TABLE



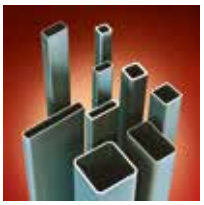
Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
50 x 30	**3,2**	3,61	4,60	14,20	6,20	1,76	1,16	5,68	4,13	14,20	6,80
	4,0	4,39	5,59	16,50	7,08	1,72	1,13	6,60	4,72	16,60	7,77
	5,0	5,28	6,73	18,70	7,89	1,67	1,08	7,49	5,26	19,00	8,67
	6,3	6,33	8,07	20,60	8,50	1,60	1,03	8,26	5,66	21,10	9,36
60 x 40	**3,2**	4,62	5,88	27,80	14,60	2,18	1,57	9,27	7,29	30,80	11,70
	4,0	5,64	7,19	32,80	17,00	2,14	1,54	10,90	8,52	36,70	13,70
	5,0	6,85	8,73	38,10	19,50	2,09	1,50	12,70	9,77	43,00	15,70
	6,3	8,31	10,60	43,40	21,90	2,02	1,44	14,50	11,00	49,50	17,60
	7,1	9,14	11,60	45,90	22,90	1,98	1,40	15,30	11,50	52,70	18,50
	8,0	10,00	12,80	47,90	23,70	1,94	1,36	16,00	11,90	55,40	19,20
70 x 40	**3,2**	5,12	6,52	40,90	16,70	2,50	1,60	11,70	8,37	38,40	13,90
	4,0	6,27	7,99	48,50	19,60	2,46	1,57	13,90	9,82	45,80	16,30
	5,0	7,64	9,73	56,80	22,60	2,41	1,52	16,20	11,30	53,90	18,80
	6,3	9,30	11,80	65,40	25,50	2,35	1,47	18,70	12,80	62,40	21,20
	7,1	10,30	13,10	69,60	26,80	2,31	1,43	19,90	13,40	66,60	22,40
	8,0	11,30	14,40	73,40	27,90	2,26	1,39	21,00	14,00	70,40	23,30
	10,0	13,30	16,90	78,50	29,00	2,15	1,31	22,40	14,50	75,30	24,30
70 x 50	**3,2**	5,62	7,16	48,00	28,20	2,59	1,99	13,70	11,30	56,50	18,00
	4,0	6,90	8,79	57,20	33,50	2,55	1,95	16,40	13,40	68,00	21,20
	5,0	8,42	10,70	67,30	39,00	2,50	1,91	19,20	15,60	80,80	24,80
	6,3	10,30	13,10	78,20	44,90	2,44	1,85	22,30	18,00	95,00	28,40
	7,1	11,40	14,50	83,70	47,70	2,40	1,82	23,90	19,10	102,00	30,20
	8,0	12,50	16,00	88,80	50,30	2,36	1,78	25,40	20,10	110,00	31,90
	10,0	14,90	18,90	96,60	53,90	2,26	1,69	27,60	21,60	121,00	34,20
80 x 40	**3,2**	5,62	7,16	57,20	18,90	2,83	1,63	14,30	9,46	46,20	16,10
	4,0	6,90	8,79	68,20	22,20	2,79	1,59	17,10	11,10	55,20	18,90
	5,0	8,42	10,70	80,30	25,70	2,74	1,55	20,10	12,90	65,10	21,90
	6,3	10,30	13,10	93,30	29,20	2,67	1,49	23,30	14,60	75,60	24,80
	7,1	11,40	14,50	99,80	30,70	2,63	1,46	25,00	15,40	80,90	26,20
	8,0	12,50	16,00	106,00	32,10	2,58	1,42	26,50	16,10	85,80	27,40
	10,0	14,90	18,90	115,00	33,70	2,47	1,33	28,80	16,90	92,50	28,90

SQUARE AND RECTANGULAR HOLLOW SECTIONS

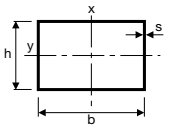
DIMENSIONAL TABLE



Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
80 x 50	**3,2**	6,12	7,80	66,60	31,80	2,92	2,02	16,70	12,70	68,50	20,80
	4,0	7,53	9,59	79,80	37,70	2,88	1,98	19,90	15,10	82,60	24,60
	5,0	9,21	11,70	94,40	44,10	2,84	1,94	23,60	17,70	98,40	28,80
	6,3	11,30	14,40	110,00	50,90	2,77	1,88	27,60	20,40	116,00	33,20
	7,1	12,50	15,90	119,00	54,30	2,73	1,85	29,70	21,70	125,00	35,50
	8,0	13,80	17,60	127,00	57,40	2,69	1,81	31,70	23,00	135,00	37,50
	10,0	16,40	20,90	140,00	62,10	2,59	1,72	35,00	24,80	150,00	40,60
80 x 60	**3,2**	6,63	8,44	76,10	48,50	3,00	2,40	19,00	16,20	93,30	25,50
	4,0	8,15	10,40	91,30	58,00	2,97	2,36	22,80	19,30	113,00	30,40
	5,0	9,99	12,70	108,00	68,40	2,92	2,32	27,10	22,80	135,00	35,80
	6,3	12,30	15,60	128,00	79,90	2,86	2,26	31,90	26,60	161,00	41,70
	7,1	13,60	17,30	138,00	85,80	2,82	2,23	34,40	28,60	175,00	44,80
	8,0	15,00	19,20	148,00	91,50	2,78	2,19	36,90	30,50	189,00	47,70
	10,0	18,00	22,90	165,00	101,00	2,68	2,10	41,10	33,60	215,00	52,60
90 x 50	**3,2**	6,63	8,44	89,10	35,30	3,25	2,40	19,80	14,10	80,90	23,60
	4,0	8,15	10,40	107,00	41,90	3,21	2,01	23,80	16,80	97,50	28,00
	5,0	9,99	12,70	127,00	49,20	3,16	1,97	28,30	19,70	116,00	32,90
	6,3	12,30	15,60	150,00	57,00	3,10	1,91	33,30	22,80	138,00	38,10
	7,1	13,60	17,30	162,00	60,90	3,06	1,88	36,00	24,40	149,00	40,70
	8,0	15,00	19,20	174,00	64,60	3,01	1,84	38,60	25,80	160,00	43,20
	8,8	16,30	20,70	183,00	67,20	2,97	1,80	40,60	29,60	169,00	45,00
	10,0	18,00	22,90	194,00	70,20	2,91	1,75	43,00	28,10	179,00	47,10
90 x 70	**3,0**	7,25	9,24	108,90	73,60	3,43	2,82	24,21	21,03	134,50	32,47
	4,0	9,55	12,16	139,90	94,04	3,39	2,78	31,09	26,87	173,30	41,15
	5,0	11,80	15,00	168,40	112,60	3,35	2,74	37,41	32,16	209,10	48,89
	6,0	13,90	17,76	194,40	129,30	3,30	2,69	43,19	36,94	242,10	55,75
	8,0	18,10	23,04	239,50	157,60	3,22	2,61	53,21	45,02	299,80	67,10
	10,0	22,00	28,00	275,80	179,60	3,13	2,53	61,30	51,30	347,00	75,64



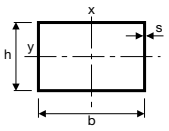
DIMENSIONAL TABLE



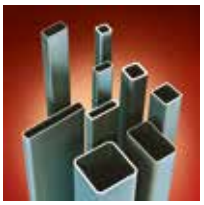
Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
100 x 40	**3,0**	6,31	8,04	97,78	22,46	3,49	1,67	19,56	11,23	58,79	19,43
	4,0	8,29	10,56	125,20	28,02	3,44	1,63	25,03	14,01	74,28	24,14
	5,0	10,20	13,00	150,10	32,73	3,39	1,59	30,02	16,37	87,86	28,09
	6,0	12,10	15,36	172,60	36,65	3,35	1,54	34,53	18,33	99,62	31,36
	8,0	15,60	19,84	210,90	42,41	3,26	1,46	42,18	21,20	118,00	36,13
	10,0	18,80	24,00	240,70	45,81	3,16	1,38	48,13	22,90	130,10	38,88
100 x 50	**3,0**	6,71	8,54	110,00	36,80	3,58	2,08	21,90	14,70	88,40	25,00
	4,0	8,78	11,20	140,00	46,20	3,53	2,03	27,90	18,50	113,00	31,40
	5,0	10,80	13,70	167,00	54,30	3,48	1,99	33,30	21,70	135,00	36,90
	6,3	13,30	16,90	197,00	63,00	3,42	1,93	39,40	25,20	160,00	42,90
	7,1	14,70	18,70	214,00	67,50	3,38	1,90	42,70	27,00	173,00	46,00
	8,0	16,30	20,80	230,00	71,70	3,33	1,86	46,00	28,70	186,00	48,90
	10,0	19,60	24,90	259,00	78,40	3,22	1,77	51,80	31,40	209,00	53,60
100 x 60	**3,0**	7,18	9,14	124,00	55,70	3,68	2,47	24,70	18,60	121,00	30,70
	4,0	9,41	12,00	158,00	70,50	3,63	2,43	31,60	23,50	156,00	38,70
	5,0	11,60	14,70	189,00	83,60	3,58	2,38	37,80	27,90	188,00	45,90
	6,3	14,20	18,10	225,00	98,10	3,52	2,33	45,00	32,70	224,00	53,80
	7,1	15,80	20,20	244,00	106,00	3,48	2,29	48,80	35,30	245,00	58,00
	8,0	17,50	22,40	264,00	113,00	3,44	2,25	52,80	37,80	265,00	62,20
	10,0	21,10	26,90	299,00	126,00	3,33	2,16	59,90	42,10	304,00	69,30
100 x 80	**3,0**	8,20	10,44	154,30	109,10	3,84	3,23	30,85	27,27	195,20	41,95
	4,0	10,70	13,60	195,00	138,00	3,79	3,18	39,00	34,40	253,00	53,40
	5,0	13,10	16,70	234,00	165,00	3,74	3,14	46,90	41,20	307,00	63,80
	6,3	16,20	20,70	280,00	196,00	3,68	3,08	56,00	49,00	371,00	75,80
	8,0	20,10	25,60	332,00	231,00	3,60	3,01	66,30	57,70	445,00	89,00
	10,0	24,30	30,90	381,00	263,00	3,51	2,92	76,20	65,80	519,00	101,00
120 x 50	**3,0**	7,72	9,84	176,50	43,97	4,23	2,11	29,42	17,59	112,40	30,36
	4,0	10,20	12,96	227,60	55,61	4,19	2,07	37,94	22,24	143,60	38,22
	5,0	12,60	16,00	275,10	65,87	4,14	2,03	45,85	26,35	171,90	45,11
	6,0	14,90	18,96	319,00	74,85	4,10	1,99	53,17	29,94	197,30	51,10
	8,0	19,30	24,64	369,50	89,25	4,01	1,90	66,09	35,70	240,10	60,63
	10,0	23,60	30,00	460,90	99,45	3,92	1,82	76,82	39,78	272,70	67,31

SQUARE AND RECTANGULAR HOLLOW SECTIONS

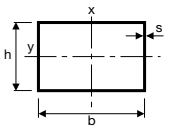
DIMENSIONAL TABLE



Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
120x60	**3,0**	8,20	10,44	197,00	66,28	4,34	2,52	32,84	22,09	155,60	37,18
	4,0	10,70	13,60	249,00	83,10	4,28	2,47	41,50	27,70	201,00	47,10
	5,0	13,10	16,70	299,00	98,80	4,23	2,43	49,90	32,90	242,00	56,00
	6,3	16,20	20,70	358,00	116,00	4,16	2,37	59,70	38,80	290,00	65,90
	7,1	18,10	23,00	391,00	126,00	4,12	2,34	65,20	41,90	317,00	71,30
	8,0	20,10	25,60	425,00	135,00	4,08	2,30	70,80	45,00	344,00	76,60
	10,0	24,30	30,90	488,00	152,00	3,97	2,21	81,40	50,50	396,00	86,10
	12,5	29,10	37,10	546,00	165,00	3,84	2,10	91,10	54,90	442,00	93,80
120x80	**4,0**	11,90	15,20	303,00	161,00	4,46	3,25	50,40	40,20	330,00	65,00
	5,0	14,70	18,70	365,00	193,00	4,42	3,21	60,90	48,20	401,00	77,90
	6,3	18,20	23,20	440,00	230,00	4,36	3,15	73,30	57,60	487,00	92,90
	7,1	20,30	25,80	482,00	251,00	4,32	3,12	80,30	62,80	535,00	101,00
	8,0	22,60	28,80	525,00	273,00	4,27	30,8	87,50	68,10	587,00	110,00
	10,0	27,40	34,90	609,00	313,00	4,18	2,99	102,00	78,10	688,00	126,00
	12,5	33,00	42,10	692,00	349,00	4,05	2,88	115,00	87,40	789,00	141,00
120x100	**3,0**	10,10	12,84	279,20	210,70	4,66	4,05	46,53	42,14	365,40	64,51
	4,0	13,30	16,96	362,30	272,70	4,62	4,01	60,38	54,54	475,40	82,92
	5,0	16,50	21,00	440,50	330,80	4,58	3,96	73,42	66,15	579,70	99,93
	6,0	19,60	24,96	514,10	385,00	4,54	3,92	85,69	77,00	678,30	115,60
	8,0	25,60	32,64	647,80	482,40	4,45	3,84	108,00	96,49	859,30	143,20
	10,0	31,40	40,00	764,30	566,00	4,37	3,76	127,40	113,20	1019,00	166,30
	12,0	36,90	47,04	864,40	636,60	4,29	3,67	114,10	127,30	1159,00	185,30
140x 60	**3,0**	9,14	11,64	288,90	76,04	4,98	2,55	41,28	25,35	191,10	43,68
	4,0	12,10	15,36	374,60	97,03	4,94	2,51	53,52	32,34	248,00	55,51
	5,0	14,90	19,00	455,20	116,00	4,89	2,47	65,02	38,67	296,70	66,13
	6,0	17,70	22,56	530,70	133,10	4,85	2,43	75,81	44,36	343,30	75,62
	8,0	23,10	29,44	667,30	161,80	4,76	2,34	95,32	53,95	424,80	91,48
	10,0	28,30	36,00	785,20	184,10	4,67	2,26	112,20	61,36	491,40	103,60

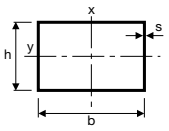


DIMENSIONAL TABLE

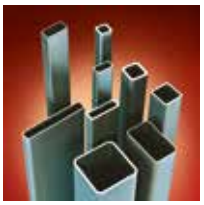


Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
140 x 70	**3,0**	9,61	12,24	317,10	107,30	5,09	2,96	45,30	30,65	250,90	51,70
	4,0	12,60	16,00	404,00	136,00	5,02	2,91	57,70	38,80	325,00	66,00
	5,0	15,50	19,70	488,00	163,00	4,98	2,87	69,80	46,50	394,00	79,00
	6,3	19,20	24,40	589,00	194,00	4,91	2,81	84,20	55,30	477,00	94,00
	7,1	21,40	27,30	647,00	211,00	4,87	2,78	92,40	60,20	523,00	102,00
	8,0	23,80	30,40	707,00	228,00	4,82	2,74	101,00	65,10	572,00	111,00
	10,0	29,00	36,90	823,00	260,00	4,72	2,65	118,00	74,30	668,00	127,00
140 x 80	**3,0**	10,10	12,84	345,30	144,70	5,18	3,36	49,32	36,16	315,70	59,73
	4,0	13,20	16,80	441,00	184,00	5,12	3,31	62,90	46,00	411,00	76,50
	5,0	16,30	20,70	534,00	221,00	5,08	3,27	76,30	55,30	499,00	91,90
	6,3	20,20	25,70	646,00	265,00	5,01	3,21	92,30	66,20	607,00	110,00
	7,1	22,50	28,70	709,00	289,00	4,97	3,17	101,00	72,30	668,00	120,00
	8,0	25,10	32,00	776,00	314,00	4,93	3,14	111,00	78,50	733,00	130,00
	10,0	30,60	38,90	908,00	362,00	4,83	3,05	130,00	90,50	862,00	150,00
	12,5	37,00	47,10	1040,00	407,00	4,70	2,94	149,00	102,00	994,00	169,00
150 x 50	**3,0**	9,14	11,64	311,10	53,92	5,17	2,15	41,47	21,57	149,60	38,31
	4,0	11,90	15,20	394,00	67,40	5,09	2,11	52,50	27,00	192,00	48,40
	5,0	14,70	18,70	476,00	79,70	5,04	2,06	63,40	31,90	230,00	57,20
	6,3	18,20	23,20	572,00	93,30	4,97	2,01	76,30	37,30	273,00	67,10
	8,0	22,60	28,80	683,00	107,00	4,87	1,93	91,10	43,00	321,00	77,40
	10,0	28,30	36,00	845,40	123,90	4,85	1,86	112,70	49,58	366,20	86,84
150 x 60	**3,0**	9,61	12,24	343,50	80,91	5,29	2,57	45,80	26,97	209,10	46,93
	4,0	12,70	16,16	445,90	103,30	5,23	2,53	59,46	34,44	269,30	59,70
	5,0	15,70	20,00	542,60	123,60	5,21	2,49	72,35	41,20	324,90	71,18
	6,0	18,70	23,76	633,70	141,90	5,16	2,44	84,49	47,29	376,00	81,46
	8,0	24,40	31,04	799,20	172,70	5,07	2,36	106,60	57,58	465,70	98,73
	10,0	29,80	38,00	943,50	196,80	4,98	2,27	125,80	65,59	539,10	112,10

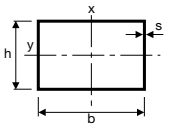
DIMENSIONAL TABLE



Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
150 x 75	**3,0**	10,30	13,14	392,10	133,00	5,46	3,18	52,28	35,46	310,50	59,86
	4,0	13,60	17,36	509,90	171,10	5,42	3,14	67,99	45,62	402,40	76,68
	5,0	16,90	21,50	621,50	206,20	5,38	3,10	82,87	54,99	488,60	92,07
	6,0	20,10	25,56	727,00	238,60	5,33	3,05	96,94	63,62	569,40	106,10
	7,0	23,20	29,54	826,60	268,20	5,29	3,01	110,20	71,52	644,90	118,90
	8,0	26,30	33,44	920,30	295,20	5,25	2,97	122,70	78,72	715,10	130,50
	10,0	32,20	41,00	1091,00	341,90	5,16	2,89	145,40	91,18	840,50	150,40
	12,0	37,90	48,24	1240,00	379,50	5,07	2,80	165,30	101,20	946,40	166,20
150 x 100	**3,0**	11,50	14,64	473,10	253,10	5,68	4,16	63,09	50,62	505,20	81,44
	4,0	15,10	19,20	607,00	324,00	5,63	4,11	81,00	64,80	660,00	105,00
	5,0	18,60	23,70	739,00	392,00	5,58	4,07	98,50	78,50	807,00	127,00
	6,3	23,10	29,50	898,00	474,00	5,52	4,01	120,00	94,80	986,00	153,00
	7,1	25,90	32,90	990,00	520,00	5,48	3,97	132,00	104,00	1090,00	168,00
	8,0	28,90	36,80	1090,00	569,00	5,44	3,94	145,00	114,00	1200,00	183,00
	10,0	35,30	44,90	1280,00	665,00	5,34	3,85	171,00	133,00	1430,00	214,00
	12,5	42,80	54,60	1490,00	763,00	5,22	3,74	198,00	153,00	1680,00	246,00
160 x 80	**3,0**	11,00	14,04	478,10	162,50	5,83	3,40	59,76	40,61	378,80	68,62
	4,0	14,40	18,40	612,00	207,00	5,77	3,35	76,50	51,70	493,00	88,10
	5,0	17,80	22,70	744,00	249,00	5,72	3,31	93,00	62,30	600,00	106,00
	6,3	22,20	28,20	903,00	299,00	5,66	3,26	113,00	74,80	730,00	127,00
	7,1	24,70	31,50	994,00	327,00	5,62	3,22	124,00	81,70	804,00	139,00
	8,0	27,60	35,20	1090,00	356,00	5,57	3,18	136,00	89,00	883,00	151,00
	10,0	33,70	42,90	1280,00	411,00	5,47	3,11	161,00	103,00	1040,00	175,00
	12,5	40,90	52,10	1490,00	465,00	5,34	2,99	186,00	116,00	1200,00	198,00



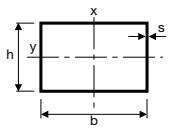
DIMENSIONAL TABLE



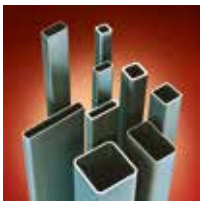
Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
160 x 90	**3,0**	11,50	14,64	515,10	211,20	5,93	3,80	64,38	46,93	463,60	77,85
	4,0	15,10	19,20	661,00	270,00	5,87	3,75	82,60	60,00	605,00	100,00
	5,0	18,60	23,70	804,00	326,00	5,82	3,71	101,00	72,50	738,00	121,00
	6,3	23,10	29,50	978,00	393,00	5,76	3,65	122,00	87,30	901,00	146,00
	7,1	25,90	32,90	1080,00	431,00	5,72	3,62	135,00	95,70	995,00	160,00
	8,0	28,90	36,80	1180,00	470,00	5,68	3,58	148,00	105,00	1100,00	174,00
	10,0	35,30	44,90	1400,00	547,00	5,58	3,49	175,00	122,00	1300,00	203,00
	12,5	42,80	54,60	1620,00	624,00	5,45	3,38	203,00	139,00	1520,00	231,00
180 x 60	**5,0**	17,80	22,70	846,00	144,00	6,10	2,52	94,00	48,10	411,00	86,30
	6,3	22,20	28,20	1030,00	171,00	6,03	2,46	114,00	57,00	495,00	102,00
	7,1	24,70	31,50	1130,00	186,00	5,99	2,43	126,00	61,90	542,00	111,00
	8,0	28,10	35,84	1291,00	205,50	6,00	2,39	143,50	64,48	589,70	120,50
	10,0	34,50	44,00	1536,00	234,80	5,91	2,31	170,70	78,25	683,80	137,30
	12,0	40,70	51,84	1753,00	257,00	5,82	2,23	194,80	85,67	759,30	150,10
180 x 80	**3,0**	12,00	15,24	639,00	180,20	6,47	3,44	71,00	45,06	443,20	77,52
	4,0	15,80	20,16	834,00	232,60	6,43	3,40	92,66	58,15	575,70	99,68
	5,0	19,40	24,70	1000,00	277,00	6,36	3,35	111,00	69,40	703,00	120,00
	6,3	24,10	30,70	1220,00	333,00	6,29	3,29	135,00	83,40	855,00	144,00
	7,1	27,00	34,40	1340,00	365,00	6,25	3,26	149,00	91,20	943,00	158,00
	8,0	30,10	38,40	1480,00	397,00	6,20	3,22	164,00	99,40	1040,00	172,00
	10,0	36,80	46,90	1750,00	461,00	6,10	3,13	194,00	115,00	1220,00	199,00
	12,5	44,80	57,10	2030,00	522,00	5,97	3,03	226,00	131,00	1420,00	227,00
180 x 90	**4,0**	16,50	20,96	895,90	302,70	6,54	3,80	99,55	67,28	708,60	113,40
	5,0	20,40	26,00	1097,00	367,30	6,49	3,76	121,90	81,62	864,90	137,10
	6,0	24,30	30,96	1289,00	427,60	6,45	3,72	143,20	95,03	1013,00	159,10
	8,0	31,90	40,64	1647,00	536,20	6,36	3,63	182,90	119,20	1286,00	198,40
	10,0	39,30	50,00	1970,00	629,70	6,23	3,55	218,90	139,90	1529,00	231,80
	12,0	46,30	59,04	2262,00	709,00	6,19	3,47	251,30	157,60	1743,00	259,80

SQUARE AND RECTANGULAR HOLLOW SECTIONS

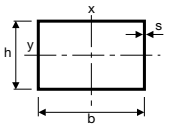
DIMENSIONAL TABLE



Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
180 x 100	**4,0**	16,90	21,60	945,00	379,00	6,61	4,19	105,00	75,90	852,00	127,00
	5,0	21,00	26,70	1150,00	460,00	6,57	4,15	128,00	92,00	1040,00	154,00
	6,3	26,10	33,30	1410,00	557,00	6,50	4,09	156,00	111,00	1280,00	186,00
	7,1	29,20	37,20	1560,00	613,00	6,47	40,6	173,00	123,00	1410,00	205,00
	8,0	32,60	41,60	1710,00	671,00	6,42	4,02	190,00	134,00	1560,00	224,00
	8,8	35,60	45,40	1850,00	720,00	6,38	3,98	205,00	144,00	1690,00	240,00
	10,0	40,00	50,90	2040,00	787,00	6,32	3,93	226,00	157,00	1860,00	263,00
	12,5	48,70	62,10	2385,00	908,00	6,20	3,82	265,00	182,00	2190,00	303,00
180 x 120	**4,0**	17,90	22,87	1043,00	560,80	6,75	4,95	115,90	93,47	1163,00	154,50
	5,0	22,20	28,23	1267,00	679,30	6,70	4,91	140,80	113,20	1427,00	187,70
	6,0	26,30	33,45	1476,00	789,60	6,64	4,86	164,00	131,60	1681,00	218,90
	8,0	34,10	43,46	1853,00	986,50	6,53	4,76	205,90	164,40	2155,00	275,30
	10,0	41,50	52,91	2177,00	1153,00	6,41	4,67	241,90	192,20	2583,00	324,40
180 x 140	**5,0**	23,70	30,23	1420,00	966,60	6,85	5,65	157,80	138,10	1838,00	221,70
	6,0	28,10	35,85	1658,00	1127,00	6,80	5,61	184,20	161,00	2169,00	259,10
	8,0	36,60	46,66	2090,00	1417,00	6,69	5,51	232,30	202,40	2794,00	327,80
	10,0	44,70	56,91	2466,00	1667,00	6,58	5,41	274,00	238,20	3366,00	388,30
200 x 100	**4,0**	17,90	22,87	1191,00	408,70	7,22	4,23	119,10	81,74	987,50	141,70
	5,0	22,60	28,70	1495,00	505,00	7,21	4,19	149,00	101,00	1204,00	172,00
	6,3	28,10	35,80	1830,00	613,00	7,15	4,14	183,00	123,00	1470,00	208,00
	7,1	31,40	40,00	2020,00	674,00	7,11	4,10	202,00	135,00	1630,00	229,00
	8,0	35,10	44,80	2234,00	739,00	7,06	4,06	223,00	148,00	1800,00	251,00
	10,0	43,10	54,90	2664,00	869,00	6,96	3,98	266,00	174,00	2160,00	295,00
	12,5	52,70	67,10	3140,00	1000,00	6,84	3,87	314,00	201,00	2540,00	341,00
	16,0	65,20	83,00	3680,00	1150,00	6,66	3,72	368,00	229,00	2980,00	391,00
200 x 120	**5,0**	23,70	30,23	1637,00	745,50	7,36	4,97	163,70	124,20	1656,00	209,70
	6,3	30,10	38,30	2070,00	929,00	7,34	4,92	207,00	155,00	2030,00	255,00
	7,1	33,70	42,90	2290,00	1030,00	7,30	4,89	229,00	171,00	2250,00	282,00
	8,0	37,60	48,00	2529,00	1130,00	7,26	4,85	253,00	188,00	2490,00	310,00
	10,0	46,30	58,90	3030,00	1340,00	7,17	4,76	303,00	223,00	3000,00	367,00
	12,5	56,60	72,10	3576,00	1560,00	7,04	4,66	358,00	260,00	3570,00	428,00
	14,2	63,30	80,70	3910,00	1690,00	6,96	4,58	391,00	282,00	3920,00	464,00
	16,0	70,20	89,40	4222,00	1810,00	6,87	4,50	422,00	302,00	4250,00	497,00



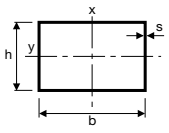
DIMENSIONAL TABLE



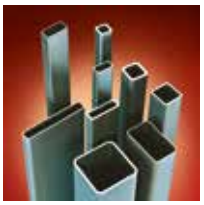
Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
200 x 150	**5,0**	26,10	33,23	1922,00	1238,00	7,60	6,10	192,20	165,00	2397,00	266,70
	6,3	33,00	42,10	2420,00	1550,00	7,58	6,07	242,00	207,00	2950,00	326,00
	8,0	41,40	52,80	2970,00	1890,00	7,50	5,99	297,00	253,00	3640,00	398,00
	10,0	51,00	64,90	3570,00	2260,00	7,41	5,91	357,00	302,00	4410,00	475,00
	12,5	62,50	79,60	4240,00	2670,00	7,30	5,80	424,00	356,00	5290,00	559,00
	14,2	70,00	89,20	4640,00	2920,00	7,22	5,72	464,00	389,00	5830,00	610,00
	16,0	77,70	99,00	5040,00	3150,00	7,13	5,64	504,00	420,00	6370,00	658,00
200 x 180	**6,0**	33,80	43,05	2588,00	2203,00	7,75	7,15	258,80	244,80	3794,00	380,10
	8,0	44,20	56,26	3293,00	2801,00	7,65	7,06	329,30	311,20	4921,00	485,30
	10,0	54,10	68,91	3925,00	3334,00	7,55	6,96	392,50	370,50	5975,00	580,50
	12,0	63,60	80,99	4485,00	3807,00	7,44	6,86	448,50	423,00	6955,00	666,10
220 x 80	**4,0**	17,90	22,87	1323,00	271,60	7,60	3,45	120,20	67,90	751,40	122,60
	5,0	22,20	28,23	1604,00	326,50	7,54	3,40	145,80	81,64	915,60	148,00
	6,0	26,30	33,45	1867,00	376,70	7,47	3,36	469,70	94,18	1070,00	171,30
	8,0	34,10	43,46	2337,00	463,50	7,33	3,26	212,40	115,90	1350,00	212,40
	10,0	41,50	52,91	2735,00	533,40	7,19	3,17	248,70	133,30	1590,00	246,50
220 x 100	**5,0**	23,70	30,23	1835,00	538,90	7,79	4,22	166,90	107,80	1373,00	189,80
	6,0	28,10	35,85	2142,00	625,40	7,73	4,18	194,70	125,10	1614,00	221,00
	8,0	36,60	46,66	2697,00	778,80	7,60	4,08	245,10	155,80	2059,00	277,20
	10,0	44,70	56,91	3177,00	907,80	7,47	3,99	288,80	181,60	2456,00	325,60
220 x 120	**5,0**	25,30	32,23	2067,00	811,70	8,01	5,02	187,90	135,30	1889,00	231,80
	6,3	32,00	40,80	2610,00	1010,00	8,00	4,98	237,00	168,00	2320,00	283,00
	7,1	35,90	45,70	2890,00	1120,00	7,96	4,94	263,00	186,00	2570,00	312,00
	8,0	40,20	51,20	3200,00	1230,00	7,91	4,90	291,00	205,00	2850,00	343,00
	10,0	49,40	62,90	3840,00	1460,00	7,82	4,81	349,00	243,00	3430,00	407,00
	12,5	60,50	77,10	4560,00	1710,00	7,69	4,71	415,00	285,00	4090,00	476,00
	14,2	67,80	86,30	5000,00	1850,00	7,61	4,63	454,00	309,00	4490,00	517,00
	16,0	75,20	95,80	5410,00	1990,00	7,52	4,55	492,00	331,00	4870,00	555,00
220 x 140	**5,0**	26,90	34,23	2298,00	1149,00	8,19	5,79	208,90	164,10	2452,00	273,70
	6,0	31,90	40,65	2691,00	1343,00	8,14	5,74	244,70	191,80	2898,00	320,70
	8,0	41,70	53,06	3416,00	1696,00	8,02	5,65	310,60	242,30	3742,00	407,40
	10,0	51,00	64,91	4059,00	2006,00	7,91	5,56	369,00	286,60	4521,00	484,80
	12,0	59,80	76,19	4624,00	2275,00	7,79	5,46	420,40	325,00	5235,00	553,40

SQUARE AND RECTANGULAR HOLLOW SECTIONS

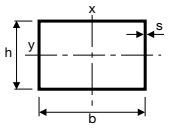
DIMENSIONAL TABLE



Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
220 x 180	**5,0**	30,00	38,23	2760,00	2033,00	8,50	7,29	250,90	225,90	3693,00	357,70
	6,0	35,70	45,45	3241,00	2385,00	8,44	7,24	294,70	265,00	4375,00	420,50
	8,0	46,70	59,46	4136,00	3038,00	8,34	7,15	376,00	337,50	5681,00	537,80
	10,0	57,20	72,91	4942,00	3624,00	8,23	7,05	449,30	402,60	6908,00	644,60
	12,0	67,30	85,79	5664,00	4146,00	8,12	6,95	514,90	460,70	8053,00	741,30
250 x 50	**4,0**	17,90	22,87	1474,00	108,10	8,03	2,17	117,90	43,23	356,80	82,15
	5,0	22,20	28,23	1783,00	127,90	7,95	2,13	142,70	51,16	427,50	97,59
	6,0	26,30	33,45	2070,00	145,20	7,87	2,08	165,60	58,08	491,00	111,20
	8,0	34,10	43,46	2577,00	172,80	7,70	1,99	206,20	69,11	596,60	133,30
250 x 100	**5,0**	26,10	33,23	2534,00	606,60	8,73	4,27	202,70	121,30	1623,00	216,90
	6,3	33,00	42,10	3210,00	751,00	8,73	4,22	257,00	150,00	1980,00	264,00
	7,1	37,00	47,10	3560,00	827,00	8,69	4,19	285,00	165,00	2200,00	291,00
	8,0	41,40	52,80	3940,00	909,00	8,64	4,15	315,00	182,00	2430,00	319,00
	10,0	51,00	64,90	4730,00	1070,00	8,54	4,06	379,00	214,00	2910,00	376,00
	12,5	62,50	79,60	5620,00	1240,00	8,41	3,96	450,00	249,00	3440,00	438,00
	14,2	70,00	89,20	6160,00	1340,00	8,31	3,88	493,00	269,00	3750,00	473,00
	16,0	77,70	99,00	6690,00	1430,00	8,22	3,80	535,00	287,00	4050,00	505,00
250 x 150	**5,0**	30,00	38,23	3284,00	1501,00	9,27	6,27	262,70	200,10	3292,00	336,70
	6,3	38,00	48,40	4143,00	1874,00	9,25	6,20	331,00	250,00	4050,00	413,00
	7,1	42,60	54,20	4610,00	2080,00	9,22	6,19	368,00	277,00	4250,00	457,00
	8,0	47,70	60,80	5111,00	2300,00	9,17	6,15	409,00	306,00	5020,00	506,00
	10,0	58,80	74,90	6170,00	2750,00	9,08	6,06	494,00	367,00	6090,00	605,00
	12,5	72,30	92,10	7390,00	3270,00	8,96	5,96	591,00	435,00	7330,00	717,00
	14,2	81,10	103,00	8140,00	3580,00	8,87	5,88	651,00	477,00	8100,00	784,00
	16,0	90,30	115,00	8880,00	3870,00	8,79	5,80	710,00	516,00	8870,00	849,00
260 x 140	**5,0**	30,00	38,23	3449,00	1331,00	9,45	5,90	265,30	190,20	3091,00	325,80
	6,3	38,00	48,40	4350,00	1660,00	9,49	5,86	335,00	237,00	3800,00	399,00
	8,0	47,70	60,80	5370,00	2030,00	9,40	5,78	413,00	290,00	4700,00	488,00
	10,0	58,80	74,90	6490,00	2430,00	9,31	5,70	499,00	347,00	5700,00	584,00
	12,5	72,30	92,10	7770,00	2880,00	9,18	5,59	597,00	411,00	6840,00	690,00
	14,2	81,10	103,00	8560,00	3140,00	9,10	5,52	658,00	449,00	7560,00	754,00
	16,0	90,30	115,00	9340,00	3400,00	9,01	5,40	718,00	486,00	8260,00	815,00



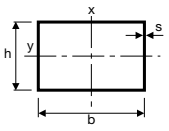
DIMENSIONAL TABLE



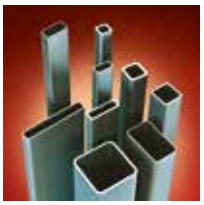
Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
260 x 180	**5,0**	33,10	42,23	4100,00	2339,00	9,85	7,44	315,30	259,90	4705,00	425,70
	6,3	41,90	53,40	5170,00	2930,00	9,83	7,40	397,00	325,00	5810,00	524,00
	8,0	52,70	67,20	6390,00	3610,00	9,75	7,33	492,00	401,00	7220,00	644,00
	10,0	65,10	82,90	7740,00	4350,00	9,66	7,24	595,00	483,00	8800,00	775,00
	12,5	80,10	102,00	9300,00	5200,00	9,54	7,13	715,00	577,00	10640,00	924,00
	14,2	90,10	115,00	10280,00	5720,00	9,46	7,06	791,00	635,00	11820,00	1020,00
	16,0	100,00	128,00	11240,00	6230,00	9,38	6,98	865,00	692,00	12990,00	1110,00
300 x 100	**5,0**	30,00	38,23	4036,00	719,50	10,28	4,34	269,10	143,90	2048,00	262,10
	6,3	38,00	48,40	5110,00	890,00	10,30	4,29	341,00	178,00	2500,00	319,00
	8,0	47,70	60,80	6310,00	1080,00	10,20	4,21	420,00	216,00	3070,00	387,00
	10,0	58,80	74,90	7610,00	1280,00	10,10	4,13	508,00	255,00	3680,00	458,00
	12,5	72,30	92,10	9100,00	1490,00	9,94	4,02	607,00	297,00	4350,00	534,00
	14,2	81,10	103,00	10030,00	1610,00	9,85	3,94	669,00	321,00	4750,00	578,00
	16,0	90,30	115,00	10930,00	1720,00	9,75	3,87	729,00	344,00	5140,00	619,00
300 x 150	**5,0**	33,90	43,23	5124,00	1764,00	10,89	6,39	341,60	235,10	4223,00	406,80
	6,3	43,10	54,90	6521,00	2212,00	10,90	6,35	435,00	295,00	5200,00	500,00
	8,0	54,00	68,80	8010,00	2700,00	10,80	6,27	534,00	360,00	6450,00	613,00
	10,0	66,70	84,90	9720,00	3250,00	10,70	6,18	648,00	433,00	7840,00	736,00
	12,5	82,10	105,00	11690,00	3860,00	10,60	6,07	779,00	514,00	9450,00	874,00
	14,2	92,30	118,00	12930,00	4230,00	10,50	6,00	862,00	564,00	10460,00	959,00
	16,0	103,00	131,00	14160,00	4590,00	10,40	5,92	944,00	613,00	11460,00	1040,00
300 x 200	**5,0**	37,90	48,23	6212,00	3348,00	11,35	8,33	414,10	334,80	6849,00	551,70
	6,3	47,90	61,00	7830,00	4190,00	11,30	8,29	522,00	419,00	8480,00	681,00
	7,1	53,70	68,40	8730,00	4670,00	11,30	8,26	582,00	467,00	9470,00	757,00
	8,0	60,30	76,80	9720,00	5180,00	11,30	8,22	648,00	518,00	10560,00	840,00
	10,0	74,50	94,90	11820,00	6280,00	11,20	8,13	788,00	628,00	12910,00	1020,00
	12,5	91,90	117,00	14270,00	7450,00	11,00	8,02	952,00	754,00	15680,00	1220,00
	14,2	103,00	132,00	15380,00	8330,00	11,00	7,95	1060,00	833,00	17460,00	1340,00
	16,0	115,00	147,00	17390,00	9110,00	10,90	7,87	1160,00	911,00	19250,00	1470,00

SQUARE AND RECTANGULAR HOLLOW SECTIONS

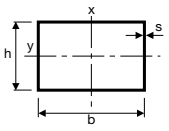
DIMENSIONAL TABLE



Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
350 x 100	**5,0**	33,90	43,23	6017,00	832,50	11,80	4,39	343,80	166,50	2478,00	307,20
	6,0	40,40	51,45	7075,00	970,40	11,73	4,34	404,30	194,10	2915,00	359,00
	8,0	53,00	67,46	9050,00	1220,00	11,58	4,25	517,20	244,00	3729,00	453,60
	10,0	65,10	82,91	10840,00	1436,00	11,44	4,16	619,50	287,30	4463,00	536,80
	12,0	76,80	97,79	12450,00	1622,00	11,28	4,07	711,60	324,40	5119,00	609,20
350 x 150	**5,0**	37,90	48,23	7505,00	2027,00	12,47	6,48	428,80	270,20	5179,00	476,90
	6,0	45,10	57,45	8850,00	2380,00	12,41	6,44	505,70	317,40	6133,00	561,30
	8,0	59,20	75,46	11390,00	3039,00	12,29	6,35	650,80	405,20	7958,00	719,60
	10,0	72,90	92,91	13730,00	3636,00	12,16	6,25	784,70	484,70	9672,00	864,60
	12,5	82,10	105,00	11690,00	3860,00	10,60	6,07	779,00	514,00	9450,00	874,00
	14,2	92,30	118,00	12930,00	4230,00	10,50	6,00	862,00	564,00	10460,00	959,00
	16,00	103,00	131,00	14160,00	4590,00	10,40	5,92	944,00	613,00	11460,00	1040,00
350 x 250	**6,3**	57,80	73,60	13200,00	7890,00	13,40	10,40	754,00	631,00	15210,00	1010,00
	8,0	72,80	92,80	16450,00	9800,00	13,30	10,30	940,00	784,00	19030,00	1250,00
	10,0	90,20	115,00	20100,00	11940,00	13,20	10,20	1150,00	955,00	23350,00	1530,00
	12,5	112,00	142,00	24420,00	14440,00	13,10	10,10	1400,00	1160,00	28530,00	1840,00
	14,2	126,00	160,00	27200,00	16050,00	13,00	10,00	1550,00	1280,00	31890,00	2040,00
	16,0	141,00	179,00	30010,00	17650,00	12,90	9,93	1710,00	1410,00	35330,00	2250,00
400 x 100	**5,0**	37,90	48,23	8537,00	945,40	13,31	4,43	426,90	189,10	2913,00	352,40
	6,3	47,35	60,32	10563,00	1158,00	13,89	4,60	528,04	231,60	3598,00	432,70
	8,0	59,20	75,46	12920,00	1390,00	13,08	4,29	645,80	278,00	4385,00	521,50
	10,0	72,90	92,91	15530,00	1640,00	12,93	4,21	776,70	328,00	5251,00	618,10
	12,5	89,80	114,40	18667,00	1933,00	13,31	4,28	933,00	387,60	6277,00	732,00
400 x 200	**6,3**	57,80	73,60	15700,00	5380,00	14,60	8,55	785,00	538,00	12610,00	917,00
	7,1	64,90	82,60	17530,00	5990,00	14,60	8,51	877,00	599,00	14100,00	1020,00
	8,0	72,80	92,80	19560,00	6660,00	14,50	8,47	978,00	666,00	15730,00	1130,00
	10,0	90,20	115,00	23910,00	8080,00	14,40	8,39	1200,00	808,00	19260,00	1380,00
	12,5	112,00	142,00	29060,00	9740,00	14,30	8,28	1450,00	974,00	23440,00	1660,00
	14,2	126,00	160,00	32380,00	10780,00	14,20	8,21	1620,00	1080,00	26140,00	1830,00
	16,0	141,00	179,00	35740,00	11820,00	14,10	8,13	1790,00	1180,00	28870,00	2010,00



DIMENSIONAL TABLE



Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
400 x 250	**6,3**	62,90	80,10	18230,00	8855,00	15,10	10,50	911,00	708,00	18367,00	1161,00
	8,0	79,40	101,00	22780,00	11030,00	15,00	10,40	1139,00	882,00	22979,00	1442,00
	10,0	98,50	126,00	27940,00	13460,00	14,90	10,40	1397,00	1077,00	28222,00	1756,00
	12,5	122,00	155,00	34100,00	16340,00	14,80	10,30	1705,00	1307,00	34500,00	2125,00
	14,2	138,00	176,00	38110,00	18190,00	14,70	10,20	1906,00	1455,00	38595,00	2361,00
	16,0	154,00	197,00	42200,00	20060,00	14,70	10,10	2110,00	1605,00	42781,00	2598,00
400 x 300	**6,3**	67,70	86,20	20580,00	13260,00	15,50	12,40	1030,00	884,00	24740,00	1400,00
	7,1	76,00	96,80	23020,00	14820,00	15,40	12,40	1150,00	988,00	27710,00	1570,00
	8,0	85,40	109,00	25710,00	16540,00	15,40	12,30	1290,00	1100,00	31010,00	1750,00
	10,0	106,00	135,00	31520,00	20230,00	15,30	12,20	1580,00	1350,00	38180,00	2140,00
	12,5	131,00	167,00	38450,00	24610,00	15,20	12,10	1920,00	1640,00	46810,00	2590,00
	14,2	148,00	189,00	42950,00	27440,00	15,10	12,10	2150,00	1830,00	52470,00	2890,00
	16,0	166,00	211,00	47540,00	30310,00	15,00	12,00	2380,00	2020,00	58290,00	3180,00
450 x 250	**6,3**	67,70	86,20	24070,00	9760,00	16,70	10,60	1070,00	781,00	21630,00	1310,00
	8,0	85,40	109,00	30080,00	12140,00	16,60	10,60	1340,00	971,00	27080,00	1630,00
	10,0	106,00	135,00	36890,00	14820,00	16,50	10,50	1640,00	1190,00	33280,00	1990,00
	12,5	131,00	167,00	45030,00	17970,00	16,40	10,40	2000,00	1440,00	40720,00	2410,00
	14,2	148,00	189,00	50310,00	20000,00	16,30	10,30	2240,00	1600,00	45580,00	2680,00
	16,0	166,00	211,00	55710,00	22040,00	16,20	10,20	2480,00	1760,00	50550,00	2950,00
500 x 200	**6,3**	67,70	86,20	27240,00	6560,00	17,80	8,72	1090,00	656,00	16920,00	1150,00
	8,0	85,40	109,00	34050,00	8140,00	17,70	8,65	1360,00	814,00	21120,00	1430,00
	10,0	106,00	135,00	41760,00	9890,00	17,60	8,56	1670,00	989,00	25870,00	1740,00
	12,5	131,00	167,00	50960,00	11940,00	17,50	8,45	2040,00	1190,00	31510,00	2100,00
	14,2	148,00	189,00	56940,00	13240,00	17,40	8,38	2280,00	1320,00	35170,00	2320,00
	16,0	166,00	211,00	63040,00	14540,00	17,30	8,30	2520,00	1450,00	38870,00	2550,00
500 x 300	**8,0**	97,90	125,00	43730,00	19950,00	18,70	12,60	1750,00	1330,00	42560,00	2200,00
	10,0	122,00	155,00	53760,00	24440,00	18,60	12,60	2150,00	1630,00	52450,00	2700,00
	12,5	151,00	192,00	65810,00	29780,00	18,50	12,50	2630,00	1990,00	64390,00	3280,00
	14,2	170,00	217,00	73700,00	33240,00	18,40	12,40	2950,00	2220,00	72240,00	3660,00
	16,0	191,00	243,00	81780,00	36770,00	18,30	12,30	3270,00	2450,00	80330,00	4040,00
	20,0	235,00	300,00	98780,00	44080,00	18,20	12,10	3950,00	2940,00	97450,00	4840,00

TABLES REPORT CALCULATIONS FROM MANUFACTURERS AND/OR FROM SPECIFICATION EN 10210-2.

COLD FINISHED WELDED SQUARE AND RECTANGULAR HOLLOW SECTIONS EN 10219

THE NORM EN 10219

It defines the technical delivery conditions for cold finished square, rectangular and circular hollow sections.

DIMENSIONAL TOLERANCES

Shape

Outside dimension:

sides < 100 mm ±1% with a minimum of ± 0.5 mm
100 ≤ sides ≥ 200 mm ± 0.8%
sides > 200 mm ± 0.6%.

Wall thickness:

w.t. ≤ 5 mm ± 10%
w.t. > 5 mm ± 0.5 mm.

Concavity and convexity of sides

On external sides: 0.8% with a minimum of 0.5 mm.

Twist

Up to max. 2 mm, plus 0.5 mm for each meter on the whole tube length.

Squareness of sides

90° ± 1°.

External corner radius

w.t. ≤ 6 mm: from 1.6 to 2.4 times the w.t.
6<w.t.≥ 10 mm: from 2 to 3 times the w.t.
w.t. > 10 mm: from 2.4 to 3.6 times the w.t.

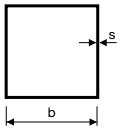
Straightness

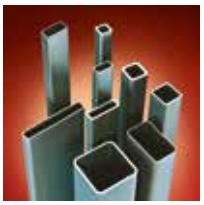
The max tolerance must be ≤ 0.15% on the whole tube length.
Deviations on the local straightness: max 3 mm on each meter length.

Mass

± 6% on the single section.

DIMENSIONAL TABLE

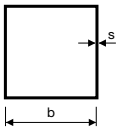




Size **b** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **I** cm^4	Radius of gyration **i** cm	Elastic section modulus **W** cm^3	Torsional inertia constant **J** cm^4	Torsional mudulus constant **C** cm^3
40	**2,0**	2,31	2,94	6,94	1,54	3,47	11,28	5,23
	3,0	3,30	4,21	9,32	1,49	4,66	15,80	7,07
	4,0	4,20	5,35	11,07	1,44	5,54	19,44	8,48
	5,0	4,99	6,36	12,30	1,39	6,13	22,30	9,48
50	**3,0**	4,25	5,41	19,47	1,90	7,79	32,13	11,76
	4,0	5,45	6,95	23,74	1,85	9,49	40,42	14,43
	5,0	6,56	8,36	27,04	1,80	10,82	47,46	16,56
	6,0	7,56	9,63	29,50	1,75	11,80	53,20	18,20
	6,3	7,57	9,65	27,90	1,70	11,20	53,00	18,00
60	**3,0**	5,19	6,61	35,13	2,31	11,71	57,09	17,65
	4,0	6,71	8,55	43,55	2,26	14,52	72,64	21,97
	5,0	8,13	10,36	50,49	2,21	16,83	86,42	25,61
	6,0	9,45	12,00	56,10	2,16	18,70	98,40	28,60
	6,3	9,55	12,20	54,40	2,11	18,10	100,00	28,80
70	**3,0**	6,13	7,81	57,50	2,71	16,40	92,40	24,70
	4,0	7,97	10,15	72,12	2,67	20,61	118,52	31,11
	5,0	9,70	12,36	84,63	2,62	24,18	142,21	36,65
	6,0	11,30	14,40	95,20	2,57	27,20	163,00	41,40
	6,3	11,53	14,69	93,77	2,53	26,79	168,14	42,10
	7,1	12,66	16,13	99,33	2,48	28,38	181,61	44,95
	8,0	13,85	17,64	104,11	2,43	29,74	194,36	47,56
80	**3,0**	7,07	9,01	87,80	3,12	22,00	140,00	33,00
	4,0	9,22	11,75	111,04	3,07	27,76	180,44	41,84
	5,0	11,27	14,36	131,44	3,03	32,86	217,83	49,68
	6,0	13,20	16,80	149,00	2,98	37,30	252,00	56,60
	6,3	13,51	17,21	148,51	2,94	37,13	260,96	57,90
	7,1	14,89	18,97	158,81	2,89	39,70	284,12	62,33
	8,0	16,36	20,84	168,38	2,84	42,09	307,14	66,61
	10,0	19,28	24,56	182,50	2,73	45,62	346,25	73,51
90	**3,0**	8,01	10,20	127,00	3,53	28,30	201,00	42,50
	4,0	10,48	13,35	161,92	3,48	35,98	260,80	54,17
	5,0	12,84	16,36	192,93	3,43	42,87	316,26	64,70
	6,0	15,10	19,20	220,00	3,39	49,00	368,00	74,20
	6,3	15,49	19,73	221,13	3,35	49,14	382,33	76,21
	7,1	17,12	21,81	238,13	3,30	52,92	418,55	82,53
	8,0	18,87	24,04	254,59	3,25	56,58	455,59	88,83
	10,0	22,42	28,56	281,64	3,14	62,59	523,18	99,83

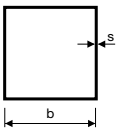
SQUARE AND RECTANGULAR HOLLOW SECTIONS

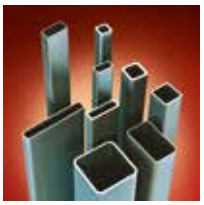
DIMENSIONAL TABLE



Size **b** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **I** cm^4	Radius of gyration **i** cm	Elastic section modulus **W** cm^3	Torsional inertia constant **J** cm^4	Torsional mudulus constant **C** cm^3
100	**3,0**	8,96	11,40	177,00	3,94	35,40	279,00	53,20
	4,0	11,73	14,95	226,35	3,89	45,27	362,01	68,10
	5,0	14,41	18,36	271,10	3,84	54,22	440,52	81,72
	6,0	17,00	21,60	311,00	3,79	62,30	514,00	94,10
	6,3	17,47	22,25	314,17	3,76	62,83	536,02	97,02
	7,1	19,35	24,65	340,13	3,71	68,03	589,17	105,56
	8,0	21,39	27,24	365,94	3,67	73,19	644,51	114,23
	10,0	25,60	32,60	411,00	3,55	82,20	750,00	130,00
110	**4,0**	12,99	16,55	305,94	4,30	55,62	486,47	83,63
	5,0	15,98	20,36	367,95	4,25	66,90	593,60	100,74
	6,0	18,90	24,00	425,00	4,20	77,20	695,00	116,00
	6,3	19,44	24,77	430,10	4,17	78,20	725,85	120,35
	7,1	21,58	27,49	467,65	4,12	85,03	800,24	131,41
	8,0	23,90	30,44	505,64	4,08	91,93	878,70	142,82
	10,0	28,70	36,60	575,00	3,96	105,00	1032,00	164,00
	12,5	33,00	42,00	591,00	3,75	107,00	1139,00	178,00
120	**3,0**	10,80	13,80	312,00	4,76	52,06	488,00	78,15
	4,0	14,25	18,15	402,28	4,71	67,05	636,57	100,75
	5,0	17,55	22,36	485,47	4,66	80,91	778,50	121,75
	6,0	20,70	26,40	562,00	4,61	93,70	913,00	141,00
	6,3	21,42	27,29	571,55	4,58	95,26	955,49	146,19
	7,1	23,81	30,33	623,52	4,53	103,92	1056,01	160,01
	8,0	26,41	33,64	676,88	4,49	112,81	1162,95	174,58
	10,0	31,80	40,06	777,00	4,38	129,00	1376,00	203,00
	12,5	36,90	47,00	817,00	4,17	136,00	1551,00	223,00
130	**3,0**	11,78	15,01	400,27	5,16	61,58	623,13	92,43
	4,0	15,50	19,75	516,94	5,12	79,53	814,75	119,48
	5,0	19,12	24,36	625,68	5,07	96,26	998,22	144,77
	6,0	22,60	28,80	727,00	5,02	112,00	1174,00	168,00
	6,3	23,40	29,80	741,00	4,99	114,00	1229,00	175,00
	7,1	26,04	33,17	810,60	4,94	124,71	1360,74	191,61
	8,0	28,92	36,84	882,85	4,90	135,82	1502,07	209,54
	10,0	35,00	44,60	1021,00	4,79	157,00	1788,00	245,00
	12,5	40,84	52,03	1093,48	4,58	168,23	2046,65	273,61

DIMENSIONAL TABLE

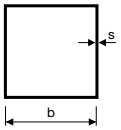




Size **b** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **I** cm^4	Radius of gyration **i** cm	Elastic section modulus **W** cm^3	Torsional inertia constant **J** cm^4	Torsional mudulus constant **C** cm^3
140	**4,0**	16,80	21,30	652,00	5,52	93,10	1023,00	140,00
	5,0	20,69	26,36	790,56	5,48	112,94	1255,76	169,78
	6,0	24,50	31,20	920,00	5,43	131,00	1479,00	198,00
	6,3	25,38	32,33	940,82	5,39	134,40	1549,60	205,42
	7,1	28,27	36,01	1031,71	5,35	147,39	1718,69	225,96
	8,0	31,43	40,04	1126,77	5,30	160,97	1900,84	247,69
	10,0	38,10	48,60	1312,00	5,20	187,00	2274,00	291,00
	12,5	44,80	57,00	1425,00	5,00	204,00	2635,00	329,00
150	**4,0**	18,00	22,90	808,00	5,93	108,00	1265,00	162,00
	5,0	22,26	28,36	982,12	5,89	130,95	1554,13	196,79
	6,0	26,40	33,60	1146,00	5,84	153,00	1833,00	230,00
	6,3	27,36	34,85	1173,71	5,80	156,49	1921,60	238,81
	7,1	30,50	38,85	1289,70	5,76	171,96	2134,13	263,15
	8,0	33,95	43,24	1411,83	5,71	188,24	2364,08	289,03
	10,0	41,30	52,60	1653,00	5,61	220,00	2839,00	341,00
	12,5	48,70	62,00	1817,00	5,41	242,00	3322,00	389,00
	14,2	53,74	68,46	1926,13	5,30	256,82	3595,51	417,10
160	**4,0**	19,30	24,50	987,00	6,34	123,00	1541,00	185,00
	5,0	23,83	30,36	1202,36	6,29	150,29	1896,32	225,79
	6,0	28,30	36,00	1405,00	6,25	176,00	2239,00	264,00
	6,3	29,34	37,37	1442,13	6,21	180,27	2348,60	274,71
	7,1	32,73	41,69	1587,41	6,17	198,43	2611,31	303,17
	8,0	36,46	46,44	1741,24	6,12	217,65	2896,58	333,56
	10,0	44,40	56,60	2048,00	6,02	256,00	3490,00	395,00
	12,5	52,60	67,00	2275,00	5,83	284,00	4115,00	455,00
	14,2	58,20	74,14	2424,77	5,72	303,10	4477,12	489,44
180	**4,0**	21,80	27,70	1422,00	7,16	158,00	2210,00	237,00
	5,0	26,97	34,36	1736,87	7,11	192,99	2724,16	289,81
	6,0	32,10	40,80	2037,00	7,06	226,00	3223,00	340,00
	6,3	33,29	42,41	2095,65	7,03	232,85	3382,71	354,08
	7,1	37,19	47,37	2313,34	6,99	257,04	3767,93	391,72
	8,0	41,48	52,84	2545,86	6,94	282,87	4188,56	432,21
	10,0	50,68	64,57	3016,80	6,84	335,20	5073,57	515,31
	12,5	60,48	77,04	3406,43	6,65	378,49	6049,85	600,06
	14,2	67,12	85,50	3663,16	6,55	407,02	6634,81	651,07
	16,0	73,80	94,00	3887,00	6,43	432,00	7178,00	698,00

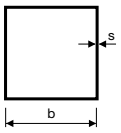
SQUARE AND RECTANGULAR HOLLOW SECTIONS

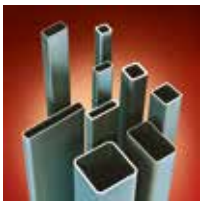
DIMENSIONAL TABLE



Size **b** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **I** cm^4	Radius of gyration **i** cm	Elastic section modulus **W** cm^3	Torsional inertia constant **J** cm^4	Torsional mudulus constant **C** cm^3
200	**4,0**	24,30	30,90	1968,00	7,97	197,00	3049,00	295,00
	5,0	30,11	38,36	2410,09	7,93	241,01	3763,30	361,82
	6,0	35,80	45,60	2833,00	7,88	283,00	4459,00	426,00
	6,3	37,25	47,45	2921,53	7,85	292,15	4682,19	443,52
	7,1	41,65	53,05	3232,22	7,81	323,22	5222,64	491,62
	8,0	46,51	59,24	3566,25	7,76	356,63	5815,18	543,64
	10,0	59,96	72,57	4251,06	7,65	425,11	7071,73	651,48
	12,5	68,33	87,04	4859,42	7,47	485,94	8501,74	765,47
	14,2	76,10	96,90	5261,00	7,37	526,00	9376,00	835,00
	16,0	83,80	107,00	5625,00	7,26	562,00	10210,00	901,00
220	**5,0**	33,25	42,36	3238,02	8,74	294,37	5037,71	441,83
	6,0	39,59	50,43	3813,20	8,70	346,65	5976,35	520,57
	6,3	41,20	52,49	3939,93	8,66	358,18	6277,27	543,03
	7,1	46,11	58,73	4366,78	8,62	396,98	7009,51	602,87
	8,0	51,53	65,64	4828,01	8,58	438,91	7814,84	667,86
	10,0	63,24	80,57	5782,46	8,47	525,68	9532,77	803,62
	12,5	76,18	97,04	6673,98	8,29	606,73	11529,63	950,82
	14,2	85,00	108,00	7264,00	8,19	660,00	12767,00	1042,00
	16,0	93,90	120,00	7812,00	8,08	710,00	13970,00	1129,00
250	**5,0**	37,96	48,36	4805,00	9,97	384,40	7443,01	576,84
	6,0	45,20	57,60	5672,00	9,92	454,00	8842,00	681,00
	6,3	47,14	60,05	5872,62	9,89	469,81	9290,29	711,19
	7,1	52,79	67,25	6522,70	9,85	521,82	10387,18	791,04
	8,0	59,07	75,24	7229,20	9,80	578,34	11597,77	878,18
	10,0	72,66	95,27	8706,67	9,70	696,53	14197,22	1061,80
	12,5	87,95	112,04	10161,31	9,52	812,91	17282,65	1266,25
	14,2	98,30	125,00	11127,00	9,42	890,00	19222,00	1395,00
	16,0	109,00	139,00	12047,00	9,32	964,00	21148,00	1520,00
260	**6,0**	47,10	60,00	6405,00	10,30	493,00	9970,00	739,00
	6,3	49,12	62,57	6634,95	10,30	510,38	10475,19	772,29
	7,1	55,02	70,09	7373,79	10,26	567,21	11716,08	859,44
	8,0	61,58	78,44	8178,02	10,21	629,08	13086,86	954,68
	10,0	75,80	96,57	9864,65	10,11	758,82	16035,47	1155,85
	12,5	91,88	117,04	11547,88	9,93	888,30	19553,31	1381,37
	14,2	103,00	131,00	12666,00	9,83	974,00	21773,00	1524,00
	16,0	114,00	145,00	13739,00	9,73	1057,00	23998,00	1663,00

DIMENSIONAL TABLE

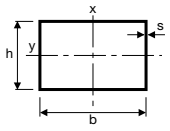




Size **b** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **I** cm^4	Radius of gyration **i** cm	Elastic section modulus **W** cm^3	Torsional inertia constant **J** cm^4	Torsional mudulus constant **C** cm^3
300	**6,0**	54,70	69,60	9964,00	12,00	664,00	15434,00	997,00
	6,3	57,03	72,65	10341,99	11,93	689,47	16218,39	1041,86
	7,1	63,94	81,45	11516,16	11,89	767,74	18160,25	1161,44
	8,0	71,63	91,24	12800,69	11,84	853,38	20311,84	1292,67
	10,0	88,36	112,57	15519,37	11,74	1034,62	24965,66	1572,02
	12,5	107,58	137,04	18348,13	11,57	1223,21	30600,78	1891,80
	14,2	120,64	153,68	20230,39	11,47	1348,80	34198,06	2096,13
	16,0	134,06	170,77	22075,97	11,37	1471,73	37836,71	2299,23
350	**6,0**	64,10	81,60	16008,00	14,00	915,00	24683,00	1372,00
	6,3	66,92	85,25	16644,63	13,97	951,12	25939,00	1435,51
	7,1	75,09	95,65	18567,52	13,93	1061,00	29074,34	1602,81
	8,0	84,19	107,24	20680,70	13,89	1181,75	32557,38	1787,14
	10,0	104,06	132,57	25189,14	13,78	1439,38	40127,03	2182,18
	12,5	127,20	162,04	30044,88	13,62	1716,85	49393,49	2642,20
	14,2	142,93	182,08	33287,67	13,52	1902,15	55371,34	2939,14
	16,0	159,18	202,77	36511,47	13,42	2086,37	61480,98	3237,86
400	**6,0**	73,50	93,60	24104,00	16,00	1205,00	37039,00	1808,00
	6,3	76,81	97,85	25095,55	16,01	1254,78	38924,60	1892,15
	7,1	86,23	109,85	28031,86	15,97	1401,59	43661,96	2115,18
	8,0	96,75	123,24	31269,24	15,93	1563,46	48934,39	2361,59
	10,0	119,76	152,57	38215,99	15,83	1910,80	60431,34	2892,30
	12,5	146,83	187,04	45876,54	15,66	2293,83	74601,64	3517,52
	14,2	165,23	210,48	51003,52	15,57	2550,18	83805,50	3923,99
	16,0	184,30	234,77	56153,61	15,47	2807,68	93278,89	4336,26
	20,0	225,16	286,83	66593,19	15,24	3329,66	113263,60	5186,50
500	**8,0**	121,87	155,24	62171,93	20,01	2486,88	96482,83	3750,46
	10,0	151,16	192,57	76340,93	19,91	3053,64	119468,72	4612,48
	12,5	186,08	237,04	92444,63	19,75	3697,79	147993,74	5642,97
	14,2	209,80	267,26	103249,11	19,65	4129,96	166723,39	6319,39
	16,0	234,54	298,77	114257,87	19,56	4570,31	186135,26	7012,63
	20,0	287,96	366,83	137093,78	19,33	5483,75	227731,67	8469,25

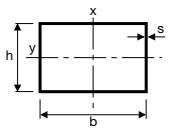
SQUARE AND RECTANGULAR HOLLOW SECTIONS

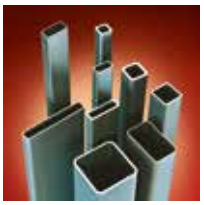
DIMENSIONAL TABLE



Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
50 x 30	**3,0**	3,30	4,21	12,83	5,70	1,75	1,16	5,13	3,80	13,53	6,49
	4,0	4,20	5,35	15,25	6,69	1,69	1,12	6,10	4,46	16,53	7,71
60 x 40	**3,0**	4,25	5,41	25,38	13,44	2,17	1,58	8,46	6,72	29,28	11,17
	4,0	5,45	6,95	30,99	16,28	2,11	1,53	10,33	8,14	36,67	13,65
	5,0	6,56	8,36	35,33	18,43	2,06	1,48	11,78	9,21	42,85	15,60
70x40	**3,0**	4,72	6,01	37,30	15,50	2,49	1,61	10,70	7,75	36,50	13,20
	4,0	6,08	7,75	46,00	18,90	2,44	1,56	13,10	9,44	45,80	16,20
	5,0	7,34	9,36	52,90	21,50	2,38	1,52	15,10	10,80	53,80	18,70
70 x 50	**3,0**	5,19	6,61	44,05	26,10	2,58	1,99	12,59	10,44	53,62	17,06
	4,0	6,71	8,55	54,67	32,22	2,53	1,94	15,62	12,89	68,07	21,19
	5,0	8,13	10,36	63,46	37,20	2,48	1,90	18,13	14,88	80,77	24,64
80 x 40	**3,0**	5,19	6,61	52,25	17,56	2,81	1,63	13,06	8,78	43,88	15,28
	4,0	6,71	8,55	64,79	21,49	2,75	1,59	16,20	10,74	55,24	18,84
	5,0	8,13	10,36	75,11	24,59	2,69	1,54	18,78	12,30	64,97	21,74
80 x 50	**3,0**	5,66	7,21	61,15	29,42	2,91	2,02	15,29	11,77	65,00	19,71
	4,0	7,34	9,35	76,36	36,46	2,86	1,98	19,09	14,59	82,70	24,57
	5,0	8,91	11,36	89,19	42,29	2,80	1,93	22,30	19,62	98,40	28,69
	6,0	10,39	13,23	99,77	46,22	2,75	1,87	24,94	18,49	112,08	32,12
	6,3	10,54	13,43	97,05	46,07	2,69	1,85	24,26	18,43	114,24	32,42
80 x 60	**3,0**	6,13	7,81	70,05	44,89	3,00	2,40	17,51	14,96	88,35	24,14
	4,0	7,97	10,15	87,92	56,12	2,94	2,35	21,98	18,71	113,12	30,32
	5,0	9,70	12,36	103,28	65,66	2,89	2,31	25,82	21,89	135,53	35,67
	6,0	11,30	14,40	116,00	73,60	2,84	2,26	29,10	24,50	156,00	40,20
	6,3	11,53	14,69	114,21	72,66	2,79	2,22	28,55	24,22	159,77	40,88
	7,1	12,66	16,13	120,96	76,83	2,74	2,18	30,24	25,61	172,28	43,59
	8,0	13,85	17,64	126,73	77,12	2,68	2,09	31,68	25,71	183,99	46,04
90 x 50	**3,0**	6,13	7,81	81,85	32,74	3,24	2,05	18,19	13,10	76,67	22,36
	4,0	7,97	10,15	102,71	40,71	3,18	2,00	22,82	16,28	97,70	27,96
	5,0	9,70	12,36	120,60	47,37	3,12	1,96	26,80	18,95	116,47	32,75
	6,0	11,30	14,40	136,00	52,80	3,07	1,91	30,10	21,10	133,00	36,80
	6,3	11,53	14,69	132,69	52,13	3,01	1,88	29,49	20,85	135,96	37,24
	7,1	12,66	16,13	140,30	54,89	2,95	1,84	31,18	21,95	145,78	39,53
	8,0	13,85	17,64	146,66	57,15	2,88	1,80	32,59	22,86	154,61	41,52

DIMENSIONAL TABLE

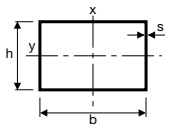




Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
100 x 40	**3,0**	6,13	7,81	92,34	21,67	3,44	1,67	18,47	10,84	59,05	19,39
	4,0	7,97	10,15	115,70	26,69	3,38	1,62	23,14	13,35	74,53	24,04
	5,0	9,70	12,36	135,60	30,76	3,31	1,58	27,12	15,38	87,92	27,90
	6,0	11,30	14,40	152,00	34,00	3,25	1,53	30,40	16,68	99,20	31,00
	6,3	11,53	14,69	147,98	33,43	3,17	1,51	29,60	16,72	100,61	31,23
	7,1	12,66	16,13	155,94	34,92	3,11	1,47	31,19	17,46	106,62	32,83
	8,0	13,85	17,64	162,30	36,03	3,03	1,43	32,46	18,01	111,45	34,08
100 x 50	**3,0**	6,60	8,41	106,46	36,06	3,56	2,07	21,29	14,42	88,56	25,01
	4,0	8,59	10,95	134,14	44,95	3,50	2,03	26,83	17,98	112,99	31,35
	5,0	10,48	13,36	158,19	52,45	3,44	1,98	31,64	20,98	134,87	36,80
	6,0	12,30	15,60	179,00	58,70	3,38	1,94	35,80	23,50	154,00	41,40
	6,3	12,52	15,95	175,68	58,19	3,32	1,91	35,14	23,27	158,08	42,07
	7,1	13,78	17,55	186,64	61,48	3,26	1,87	37,33	24,59	169,91	44,78
	8,0	15,11	19,24	196,24	64,29	3,19	1,83	39,25	25,72	180,79	47,20
100 x 60	**3,0**	7,07	9,01	120,57	54,65	3,66	2,46	24,11	18,22	121,67	30,64
	4,0	9,22	11,75	152,58	68,68	3,60	2,42	30,52	22,89	156,27	38,68
	5,0	11,27	14,36	180,77	80,83	3,55	2,37	36,15	26,94	187,86	45,75
	6,0	13,20	16,80	205,00	91,20	3,49	2,33	41,10	30,40	216,00	51,90
	6,3	13,51	17,21	203,38	90,91	3,44	2,30	40,68	30,30	223,36	53,00
	7,1	14,89	18,97	217,34	96,82	3,38	2,26	43,47	32,27	242,10	56,85
	8,0	16,36	20,84	230,18	102,18	3,32	2,21	46,04	34,06	260,32	60,49
	10,0	19,28	24,56	248,40	103,55	3,18	2,05	49,68	34,52	289,50	66,03
100 x 80	**3,0**	8,01	10,21	148,81	105,64	3,82	3,22	29,76	26,41	196,12	41,91
	4,0	10,48	13,35	189,47	134,17	3,77	3,17	37,89	33,54	253,79	53,38
	5,0	12,84	16,36	225,94	159,61	3,72	3,12	45,19	39,90	307,55	63,72
	6,0	15,10	19,20	258,00	182,00	3,67	3,08	51,70	45,50	357,00	73,00
	6,3	15,49	19,73	258,77	182,81	3,62	3,04	51,75	45,70	371,35	74,97
	7,1	17,12	21,81	278,73	196,66	3,57	3,00	55,75	49,16	406,26	81,15
	8,0	18,87	24,04	298,06	210,02	3,52	2,96	59,61	52,50	441,84	87,29
	10,0	22,42	28,56	329,74	223,25	3,40	2,80	65,95	55,81	506,34	97,92
120 x 50	**3,0**	7,54	9,61	168,58	42,69	4,19	2,11	28,10	17,08	112,87	30,32
	4,0	9,85	12,55	213,82	53,43	4,13	2,06	35,64	21,37	144,22	38,13
	5,0	12,05	15,36	253,89	62,62	4,07	2,02	42,32	25,05	172,44	44,92
	6,0	14,20	18,00	289,00	70,40	4,00	1,98	48,20	28,10	198,00	50,80
	6,3	14,50	18,47	286,21	70,30	3,94	1,95	47,70	28,12	203,17	51,74
	7,1	16,01	20,39	306,36	74,66	3,88	1,91	51,06	29,87	219,10	55,30
	8,0	17,62	22,44	325,05	78,58	3,81	1,87	54,17	31,43	234,16	58,59
	10,0	20,85	26,56	352,10	78,95	3,64	1,72	58,68	31,58	256,61	63,29

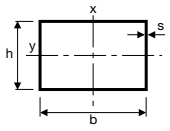
SQUARE AND RECTANGULAR HOLLOW SECTIONS

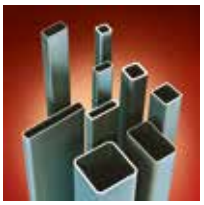
DIMENSIONAL TABLE



Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
120 x 60	**3,0**	8,01	10,21	189,12	64,40	4,30	2,51	31,52	21,47	156,34	37,14
	4,0	10,48	13,35	240,74	81,25	4,25	2,47	40,12	27,08	201,12	47,05
	5,0	12,84	16,36	286,97	95,99	4,19	2,42	47,83	32,00	242,23	55,85
	6,0	15,10	19,20	327,98	109,00	4,13	2,38	54,70	36,30	280,00	63,60
	6,3	15,49	19,73	326,97	109,16	4,07	2,35	54,49	36,39	289,35	65,14
	7,1	17,12	21,81	351,67	116,80	4,02	2,31	58,61	38,93	314,57	70,13
	8,0	18,87	24,04	375,31	123,98	3,95	2,27	62,55	41,33	339,55	74,96
	10,0	22,42	28,56	412,76	128,88	3,80	2,12	68,79	42,96	381,85	82,82
120 x 80	**3,0**	8,96	11,41	230,20	123,43	4,49	3,29	38,37	30,86	255,47	50,80
	4,0	11,73	14,95	294,59	157,29	4,44	3,24	49,10	39,32	331,24	64,93
	5,0	14,41	18,36	353,14	187,78	4,39	3,20	58,86	46,94	402,27	77,77
	6,0	17,00	21,60	406,00	215,00	4,33	3,15	67,70	53,80	469,00	89,40
	6,3	17,47	22,25	408,50	217,11	4,28	3,12	68,08	54,28	487,82	92,07
	7,1	19,35	24,65	442,29	234,51	4,24	3,08	73,71	58,63	535,14	100,01
	8,0	21,39	27,24	475,83	251,66	4,18	3,04	79,31	62,92	584,04	108,01
	10,0	25,60	32,60	534,00	281,00	4,05	2,94	89,00	70,30	676,00	122,00
	12,5	29,10	37,00	527,00	281,00	3,77	2,75	87,80	70,10	715,00	128,00
120 x 100	**4,0**	12,99	16,55	348,43	263,24	4,59	3,99	58,07	52,65	477,84	82,83
	5,0	15,98	20,36	419,31	316,27	4,54	3,94	69,88	63,25	582,86	99,75
	6,0	18,90	24,00	484,00	365,00	4,49	3,89	80,70	72,90	682,00	115,00
	6,3	19,44	24,77	490,02	369,56	4,45	3,86	81,67	73,91	712,27	119,11
	7,1	21,58	27,49	532,90	401,52	4,40	3,82	88,82	80,30	785,03	130,02
	8,0	23,90	30,44	576,35	433,83	4,35	3,78	96,06	86,77	861,65	141,25
	10,0	28,70	36,60	655,00	492,00	4,23	3,67	109,00	98,50	1011,00	162,00
	12,5	33,00	42,00	672,00	507,00	4,00	3,47	112,00	101,00	1114,00	176,00
140 x 60	**4,0**	11,70	14,90	356,00	93,80	4,88	2,51	50,80	31,30	247,00	55,40
	5,0	14,40	18,40	426,00	111,00	4,82	2,46	60,80	37,10	298,00	65,90
	6,0	17,00	21,60	489,00	126,00	4,76	2,42	69,90	42,10	344,00	75,30
	6,3	17,50	22,20	490,00	127,00	4,69	2,39	70,00	42,50	357,00	77,30
	7,1	19,35	24,65	529,54	134,48	4,63	2,34	75,65	44,83	388,77	83,42
	8,0	21,40	27,20	569,00	146,00	4,57	2,31	81,20	48,60	421,00	89,50
	10,0	25,56	32,56	634,24	154,21	4,41	2,18	90,61	51,40	476,41	99,64
	12,5	29,07	37,03	609,83	141,82	4,06	1,96	87,12	47,27	478,54	100,29
140 x 70	**4,0**	12,40	15,70	393,00	133,00	4,99	2,91	56,10	38,10	326,00	65,90
	5,0	15,20	19,40	471,00	159,00	4,94	2,86	67,40	45,30	395,00	78,90
	6,0	17,90	22,80	543,00	181,00	4,88	2,82	77,60	51,80	459,00	90,50
	6,3	18,50	23,50	546,00	184,00	4,82	2,79	78,10	52,40	477,00	93,20
	7,1	20,46	26,07	592,30	195,31	4,77	2,74	84,61	55,80	522,69	101,12
	8,0	22,60	28,80	638,00	212,00	4,70	2,71	91,20	60,70	569,00	109,00
	10,0	27,13	34,56	718,91	229,41	4,56	2,58	102,70	65,55	654,95	123,23
	12,5	31,03	39,53	711,76	218,97	4,24	2,35	101,68	62,56	686,81	128,25

DIMENSIONAL TABLE

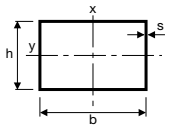




Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
140 x 80	**4,0**	12,99	16,55	429,60	180,42	5,10	3,30	61,37	45,10	411,60	76,48
	5,0	15,98	20,36	517,06	215,94	5,04	3,26	73,87	53,99	500,51	91,83
	6,0	18,90	24,00	597,00	248,00	4,98	3,21	85,30	62,00	584,00	106,00
	6,3	19,44	24,77	602,72	251,42	4,93	3,19	86,10	62,85	608,51	109,19
	7,1	21,58	27,49	655,14	272,36	4,88	3,15	93,59	68,09	668,68	118,88
	8,0	23,90	30,44	708,09	293,31	4,82	3,10	101,16	73,33	731,35	128,77
	10,0	28,70	36,60	804,00	330,00	4,69	3,01	115,00	82,60	851,00	147,00
	12,5	33,00	42,00	814,00	338,00	4,40	2,84	116,00	84,50	920,00	157,00
150 x 50	**4,0**	11,73	14,95	381,39	66,16	5,05	2,10	50,85	26,47	192,14	48,30
	5,0	14,41	18,36	456,29	77,87	4,99	2,06	60,84	31,15	230,05	57,11
	6,0	17,00	21,60	523,00	87,90	4,92	2,02	69,80	35,20	264,00	64,80
	6,3	17,47	22,25	522,83	88,47	4,85	1,99	69,71	35,39	272,24	66,26
	7,1	19,35	24,65	564,18	94,44	4,78	1,96	75,22	37,78	294,42	71,09
	8,0	21,39	27,24	604,42	100,00	4,71	1,92	80,59	40,00	315,88	75,68
	10,0	25,56	32,56	670,74	103,45	4,54	1,78	89,43	41,38	350,23	82,83
	12,5	29,07	37,03	632,52	92,30	4,13	1,58	84,34	36,92	333,74	80,15
150 x 100	**4,0**	14,87	18,95	594,60	318,57	5,60	4,10	79,28	63,71	661,63	104,94
	5,0	18,33	23,36	719,20	384,02	5,55	4,05	95,89	76,80	808,68	126,81
	6,0	21,70	27,60	835,00	444,00	5,50	4,01	111,00	88,80	948,00	147,00
	6,3	22,41	28,55	848,27	452,66	5,45	3,98	113,10	90,53	991,64	152,27
	7,1	24,93	31,75	926,94	493,62	5,40	3,94	123,59	98,72	1095,50	166,76
	8,0	27,67	35,24	1008,13	535,65	5,35	3,90	134,42	107,13	1205,89	181,85
	10,0	33,40	42,60	1162,00	614,00	5,22	3,80	155,00	123,00	1426,00	211,00
	12,5	38,90	49,50	1225,00	651,00	4,97	3,63	163,00	130,00	1607,00	233,00
160 x 80	**4,0**	14,25	18,15	597,71	203,54	5,74	3,35	74,71	50,89	494,10	88,03
	5,0	17,55	22,36	721,69	244,11	5,68	3,30	90,21	61,03	601,34	105,90
	6,0	20,70	26,40	836,00	281,00	5,62	3,26	105,00	70,20	702,00	122,00
	6,3	21,42	27,29	846,48	285,72	5,57	3,24	105,81	71,43	732,25	126,31
	7,1	23,81	30,33	922,98	310,21	5,52	3,20	115,37	77,55	805,56	137,77
	8,0	26,41	33,64	1001,22	334,95	5,46	3,16	125,15	83,74	882,33	149,54
	10,0	31,80	40,60	1146,00	380,00	5,32	3,06	143,00	95,00	1031,00	172,00
	12,5	36,90	47,00	1185,00	396,00	5,02	2,90	148,00	98,90	1130,00	185,00
160 x 90	**4,0**	14,90	18,90	646,00	266,00	5,84	3,74	80,80	59,00	606,00	100,00
	5,0	18,33	23,36	781,77	319,52	5,79	3,70	97,72	71,00	739,70	120,86
	6,0	21,70	27,60	907,00	369,00	5,73	3,65	113,00	82,00	866,00	140,00
	6,3	22,41	28,55	920,94	375,90	5,68	3,63	115,12	83,53	904,70	144,81
	7,1	24,93	31,75	1006,04	409,33	5,63	3,59	125,75	90,96	997,94	158,38
	8,0	27,67	35,24	1093,73	443,46	5,57	3,55	136,72	98,55	1096,54	172,44
	10,0	33,40	42,60	1259,00	507,00	5,44	3,45	157,00	113,00	1291,00	199,00
	12,5	38,90	49,50	1321,00	535,00	5,16	3,29	165,00	119,00	1442,00	219,00

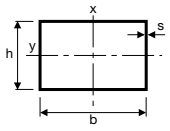
SQUARE AND RECTANGULAR HOLLOW SECTIONS

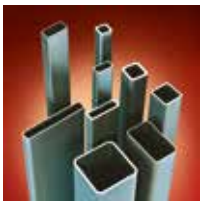
DIMENSIONAL TABLE



Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
180 x 60	**4,0**	14,20	18,10	678,00	119,00	6,11	2,56	75,40	39,60	341,00	72,20
	5,0	17,55	22,36	817,87	141,49	6,05	2,52	90,87	47,16	412,10	86,15
	6,0	20,70	26,40	946,00	161,00	5,98	2,47	105,00	53,80	477,00	98,70
	6,3	21,42	27,29	954,66	163,92	5,91	2,45	106,07	54,64	495,09	101,58
	7,1	23,81	30,33	1039,12	176,77	5,85	2,41	115,46	58,92	540,37	110,04
	8,0	26,41	33,64	1124,81	189,39	5,78	2,37	124,98	63,13	586,35	118,47
	10,0	31,80	40,60	1281,00	211,00	5,62	2,28	142,00	70,30	670,00	133,00
	12,5	36,90	47,00	1298,00	215,00	5,25	2,14	144,00	71,70	698,00	139,00
180 x 80	**4,0**	15,50	19,70	802,00	227,00	6,37	3,39	89,10	56,70	578,00	100,00
	5,0	19,12	24,36	971,03	272,28	6,31	3,34	107,89	68,07	704,11	119,97
	6,0	22,60	28,80	1128,00	314,00	6,25	3,30	125,00	78,50	823,00	139,00
	6,3	23,40	29,81	1144,82	320,02	6,20	3,28	127,20	80,01	858,27	143,44
	7,1	26,04	33,17	1251,49	348,07	6,14	3,24	139,05	87,02	944,93	156,67
	8,0	28,92	36,84	1361,65	376,59	6,08	3,20	151,29	94,15	1036,02	170,32
	10,0	35,00	44,60	1570,00	429,00	5,94	3,10	174,00	107,00	1214,00	196,00
	12,5	40,90	52,00	1650,00	453,00	5,63	2,95	183,00	113,00	1344,00	214,00
180 x 90	**4,0**	16,13	20,55	864,03	294,70	6,48	3,79	96,00	65,49	711,77	113,32
	5,0	19,90	25,36	1047,62	355,68	6,43	3,75	116,40	79,04	869,09	136,92
	6,0	23,57	30,03	1218,64	409,64	6,37	3,69	135,40	91,08	1018,21	158,79
	6,3	24,39	31,07	1239,91	420,12	6,32	3,68	137,77	93,36	1064,04	164,44
	7,1	27,16	34,59	1357,68	458,24	6,26	3,64	150,85	101,83	1174,61	180,08
	8,0	30,18	38,44	1480,07	497,42	6,20	3,60	164,45	110,54	1291,93	196,38
	10,0	36,55	46,56	1714,56	561,35	6,07	3,47	190,51	124,75	1525,16	227,83
	12,5	42,81	54,53	1825,15	585,27	5,79	3,28	202,79	130,06	1717,96	252,04
180 x 100	**4,0**	16,80	2,130	926,00	374,00	6,59	4,18	103,00	74,80	854,00	127,00
	5,0	20,69	26,36	1124,20	451,77	6,53	4,14	124,91	90,35	1044,79	153,88
	6,0	24,50	31,20	1310,00	524,00	6,48	4,10	146,00	105,00	1227,00	179,00
	6,3	25,38	32,33	1334,99	535,75	6,43	4,07	148,33	107,15	1283,41	185,46
	7,1	28,27	36,01	1463,86	585,71	6,38	4,03	162,65	117,14	1419,67	203,53
	8,0	31,43	40,04	1598,49	637,47	6,32	3,99	177,61	127,49	1565,24	222,49
	10,0	38,10	48,60	1859,00	736,00	6,19	3,89	207,00	147,00	1859,00	260,00
	12,5	44,80	57,00	2001,00	796,00	5,92	3,74	222,00	159,00	2122,00	291,00
180 x 120	**4,0**	18,00	22,90	1050,00	564,00	6,76	4,96	117,00	94,00	1160,00	155,00
	5,0	22,26	28,36	1277,37	683,97	6,71	4,91	141,93	114,00	1423,83	187,84
	6,0	26,40	33,60	1491,00	796,00	6,66	4,87	166,00	133,00	1677,00	219,00
	6,3	27,36	34,85	1525,15	816,14	6,62	4,84	169,46	136,02	1757,08	227,56
	7,1	30,50	38,85	1676,23	895,38	6,57	4,80	186,25	149,23	1949,19	250,50
	8,0	33,95	43,24	1835,33	978,44	6,51	4,76	203,93	163,07	2156,35	274,82
	10,0	41,30	52,60	2149,00	1141,00	6,39	4,66	239,00	190,00	2582,00	323,00
	12,5	48,70	62,00	2352,00	1252,00	6,16	4,49	261,00	209,00	3002,00	368,00

DIMENSIONAL TABLE

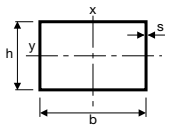




Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
200 x 80	**4,0**	16,80	21,30	1046,00	250,00	7,00	3,42	105,00	62,40	664,00	111,00
	5,0	20,70	26,40	1269,00	300,00	6,94	3,38	127,00	75,10	808,00	134,00
	6,0	24,50	31,20	1477,00	347,00	6,88	3,33	148,00	86,70	945,00	155,00
	6,3	25,40	32,30	1503,00	354,00	6,82	3,31	150,00	88,60	986,00	161,00
	7,1	28,27	36,01	1646,14	382,73	6,76	3,26	164,61	95,68	1086,24	175,57
	8,0	31,40	40,00	1796,00	418,00	6,70	3,23	180,00	105,00	1192,00	191,00
	10,0	38,10	48,60	2083,00	478,00	6,55	3,14	208,00	120,00	1399,00	221,00
	12,5	44,80	57,00	2219,00	511,00	6,24	2,99	222,00	128,00	1561,00	243,00
200 x 100	**4,0**	18,00	22,90	1200,00	411,00	7,23	4,23	120,00	82,20	985,00	142,00
	5,0	22,26	28,36	1459,25	496,94	7,17	4,19	145,93	99,39	1206,29	171,94
	6,0	26,40	33,60	1703,00	577,00	7,12	4,14	170,00	115,00	1417,00	200,00
	6,3	27,36	34,85	1739,24	591,15	7,06	4,12	173,92	118,23	1482,82	207,60
	7,1	30,50	38,85	1910,66	647,11	7,01	4,08	191,07	129,42	1641,16	228,06
	8,0	33,95	43,24	2090,84	705,36	6,95	4,04	209,08	141,07	1810,72	249,60
	10,0	41,30	52,60	2444,00	818,00	6,82	3,94	244,00	164,00	2154,00	292,00
	12,5	48,70	62,00	2659,00	892,00	6,55	3,79	266,00	178,00	2474,00	329,00
	14,2	53,74	68,46	2805,10	896,91	6,40	3,62	280,51	179,38	2646,69	349,02
200 x 120	**4,0**	19,30	24,50	1353,00	618,00	7,43	5,02	135,00	103,00	1345,00	172,00
	5,0	23,83	30,36	1649,42	750,14	7,37	4,97	164,94	125,02	1652,00	209,87
	6,0	28,30	36,00	1929,00	874,00	7,32	4,93	193,00	146,00	1947,00	245,00
	6,3	29,34	37,37	1975,70	897,66	7,27	4,90	197,57	149,61	2040,16	254,71
	7,1	32,73	41,69	2174,97	986,00	7,22	4,86	217,50	164,33	2264,56	280,67
	8,0	36,46	46,44	2385,92	1078,97	7,17	4,82	238,59	179,83	2507,04	308,27
	10,0	44,40	56,60	2806,00	1262,00	7,04	4,72	281,00	210,00	3007,00	364,00
	12,5	52,60	67,00	3099,00	1397,00	6,80	4,57	310,00	233,00	3515,00	416,00
	14,2	58,20	74,20	3297,00	1484,00	6,67	4,47	330,00	247,00	3804,00	446,00
200 x 150	**4,0**	21,20	26,90	1584,00	1021,00	7,67	6,16	158,00	136,00	1942,00	219,00
	5,0	26,18	33,36	1934,67	1245,04	7,62	6,11	193,47	166,00	2391,38	266,83
	6,0	31,10	39,60	2268,00	1457,00	7,56	6,06	227,00	194,00	2826,00	313,00
	6,3	32,30	41,15	2330,39	1499,15	7,53	6,04	233,04	199,89	2965,40	325,47
	7,1	36,07	45,95	2571,44	1652,46	7,48	6,00	257,14	220,33	3300,20	359,71
	8,0	40,23	51,24	2828,55	1815,54	7,43	5,95	282,85	242,07	3664,86	396,44
	10,0	49,10	62,60	3348,00	2143,00	7,31	5,85	335,00	286,00	4428,00	471,00
	12,5	58,50	74,50	3759,00	2410,00	7,10	5,69	376,00	321,00	5256,00	547,00
	14,2	64,90	82,70	4033,00	2583,00	6,98	5,59	403,00	344,00	5746,00	591,00

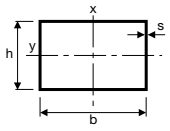
SQUARE AND RECTANGULAR HOLLOW SECTIONS

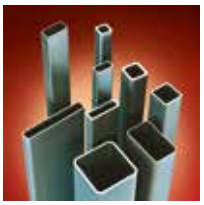
DIMENSIONAL TABLE



Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
250 x 100	**4,0**	21,20	26,90	2092,00	503,00	8,81	4,32	167,00	101,00	1323,00	179,00
	5,0	26,18	33,36	2553,76	609,85	8,75	4,28	204,30	121,97	1620,11	217,08
	6,0	31,10	39,60	2992,00	710,00	8,69	4,23	239,00	142,00	1905,00	253,00
	6,3	32,30	41,15	3065,83	729,63	8,63	4,21	245,27	145,93	1993,22	262,95
	7,1	36,07	45,95	3380,04	800,59	8,58	4,17	270,40	160,12	2207,93	289,39
	8,0	40,23	51,24	3714,08	875,06	8,51	4,13	297,13	175,01	2438,66	317,41
	10,0	49,10	62,60	4384,00	1021,00	8,37	4,04	351,00	204,00	2910,00	373,00
	12,5	58,50	74,50	4868,00	1133,00	8,08	3,90	389,00	227,00	3374,00	425,00
	14,2	64,89	82,66	5196,93	1160,64	7,93	3,75	415,75	232,13	3632,90	454,20
250 x 150	**4,0**	24,30	30,90	2697,00	1234,00	9,33	6,32	216,00	165,00	2665,00	275,00
	5,0	30,11	38,36	3304,18	1507,95	9,28	6,27	264,33	201,06	3284,54	336,90
	6,0	35,80	45,60	3886,00	1768,00	9,23	6,23	311,00	236,00	3886,00	396,00
	6,3	37,25	47,45	4001,43	1824,59	9,18	6,20	320,11	243,28	4077,70	412,18
	7,1	41,65	53,05	4427,59	2015,22	9,14	6,16	354,21	268,70	4542,55	456,34
	8,0	46,51	59,24	4885,79	2219,25	9,08	6,12	390,86	295,90	5050,45	503,96
	10,0	56,96	72,57	5825,01	2634,20	8,96	6,02	466,00	351,23	6120,70	602,08
	12,5	68,33	87,04	6632,67	3002,33	8,73	5,87	530,61	400,31	7314,55	704,10
	14,2	76,10	96,90	7174,00	3240,00	8,61	5,78	574,00	432,00	8036,00	766,00
	16,0	83,80	106,75	7659,02	3358,89	8,47	5,61	612,72	447,85	8712,68	822,98
260 x 160	**4,0**	25,55	32,55	3095,25	1473,18	9,75	6,73	238,10	184,15	3133,02	306,90
	5,0	33,25	42,36	4121,36	2349,53	9,86	7,45	317,03	261,06	4694,89	425,87
	6,0	37,70	48,03	4468,46	2114,64	9,65	6,64	343,73	264,33	4576,64	441,96
	6,3	41,20	52,49	5012,66	2856,31	9,77	7,38	385,59	317,37	5844,33	522,95
	7,1	46,11	58,73	5556,90	3162,82	9,73	7,34	427,45	351,42	6522,24	580,27
	8,0	51,53	65,64	6145,21	3493,23	9,68	7,29	472,71	388,14	7266,68	642,43
	10,0	63,24	80,57	7363,31	4174,13	9,56	7,20	566,41	463,79	8850,30	771,94
	12,5	72,24	92,03	7715,20	3588,38	9,16	6,24	593,48	448,55	8686,93	794,15
	14,2	82,03	104,50	8671,47	3996,76	9,11	6,18	667,04	499,59	9607,11	872,13
	16,0	88,82	113,15	8968,09	4111,08	8,90	6,03	689,85	513,88	10410,92	933,92
260 x 180	**4,0**	26,80	34,10	3358,00	1917,00	9,92	7,49	258,00	213,00	3801,00	347,00
	5,0	33,20	42,40	4121,00	2350,00	9,86	7,45	317,00	261,00	4695,00	426,00
	6,0	39,60	50,40	4856,00	2763,00	9,81	7,40	374,00	307,00	5566,00	501,00
	6,3	41,20	52,50	5013,00	2856,00	9,77	7,38	386,00	317,00	5844,00	523,00
	7,1	46,10	58,73	5556,50	3155,15	9,73	7,33	427,42	350,57	6522,50	580,27
	8,0	51,50	65,60	6145,00	3493,00	9,68	7,29	473,00	388,00	7267,00	642,00
	10,0	63,20	80,60	7363,00	4174,00	9,56	7,20	566,00	464,00	8850,00	772,00
	12,5	76,20	97,00	8482,00	4812,00	9,35	7,04	652,00	535,00	10677,00	911,00
	14,2	85,00	108,00	9230,00	5229,00	9,23	6,95	710,00	581,00	11802,00	998,00
	16,0	93,85	119,55	9922,03	5498,12	9,11	6,78	763,23	610,90	12890,45	1079,37

DIMENSIONAL TABLE

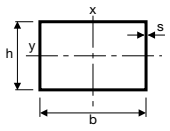




Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
300 x 100	**4,0**	24,30	30,90	3320,00	595,00	10,40	4,39	221,00	119,00	1668,00	216,00
	5,0	30,10	38,40	4065,00	723,00	10,30	4,34	271,00	145,00	2044,00	262,00
	6,0	35,80	45,60	4777,00	842,00	10,20	4,30	318,00	168,00	2403,00	306,00
	6,3	37,20	47,40	4907,00	868,00	10,20	4,28	327,00	174,00	2515,00	318,00
	7,1	41,64	53,05	5423,27	950,01	10,11	4,23	361,55	190,00	2787,43	350,75
	8,0	46,50	59,20	5978,00	1045,00	10,00	4,20	399,00	209,00	3080,00	385,00
	10,0	57,00	72,60	7106,00	1224,00	9,90	4,11	474,00	245,00	3681,00	455,00
	12,5	68,30	87,00	8010,00	1374,00	9,59	3,97	534,00	275,00	4292,00	521,00
	14,2	76,04	96,86	8622,06	1424,36	9,43	3,83	574,80	284,87	4639,25	559,49
	16,0	83,80	106,75	9155,64	1485,11	9,26	3,73	610,38	297,02	4938,58	592,25
300 x 150	**5,0**	34,03	43,36	5153,13	1770,87	10,90	6,39	343,54	236,12	4214,25	406,98
	6,0	40,50	51,60	6074,00	2080,00	10,80	6,35	405,00	277,00	4214,00	407,00
	6,3	42,19	53,75	6265,59	2150,03	10,80	6,32	417,71	286,67	5234,42	498,91
	7,1	47,22	60,15	6946,90	2377,98	10,75	6,29	463,13	317,06	5834,16	553,01
	8,0	52,79	67,24	7683,57	2622,95	10,69	6,25	512,24	349,73	6490,59	611,52
	10,0	64,81	82,57	9209,37	3125,03	10,56	6,15	613,96	416,67	7878,65	732,81
	12,5	78,14	99,54	10594,23	3594,78	10,32	6,01	706,28	479,30	9451,90	861,80
	14,2	87,20	111,00	11526,00	3897,00	10,20	5,92	768,00	520,00	10412,00	941,00
	16,0	96,36	122,75	12385,29	4080,55	10,04	5,77	825,69	544,07	11328,29	1014,89
300 x 200	**5,0**	37,96	48,36	6241,05	3360,92	11,36	8,34	416,07	336,09	6835,78	551,89
	6,0	45,20	57,60	7370,00	3962,00	11,30	8,29	491,00	396,00	8115,00	651,00
	6,3	47,14	60,05	7624,39	4103,82	11,27	8,27	508,29	410,38	8523,54	679,80
	7,1	52,79	67,25	8469,98	4553,79	11,22	8,23	564,67	455,38	9524,03	755,69
	8,0	59,07	75,24	9389,27	5041,67	11,17	8,19	625,95	504,17	10626,50	838,38
	10,0	72,66	92,57	11312,70	6057,73	11,05	8,09	754,18	605,77	12987,13	1012,19
	12,5	87,95	112,04	13178,86	7059,94	10,85	7,94	878,59	705,99	15767,68	1204,48
	14,2	98,30	125,00	14428,00	7717,00	10,70	7,85	962,00	772,00	17507,00	1325,00
	16,0	108,92	138,75	15614,94	8210,38	10,61	7,69	1041,00	821,04	19223,75	1441,67
350 x 150	**5,0**	38,00	48,40	7544,00	2034,00	12,50	6,49	431,00	271,00	5169,00	477,00
	6,0	45,20	57,60	8907,00	2391,00	12,40	6,44	509,00	319,00	6121,00	562,00
	6,3	47,10	60,00	9202,00	2475,00	12,40	6,42	526,00	330,00	6422,00	586,00
	7,1	52,45	66,82	10082,32	2706,60	12,28	6,36	576,13	360,88	7177,27	648,58
	8,0	59,10	75,20	11322,00	3027,00	12,30	6,34	647,00	404,00	7968,00	719,00
	10,0	72,70	92,60	13626,00	3616,00	12,10	6,25	779,00	482,00	9681,00	864,00
	12,5	88,00	112,00	15800,00	4187,00	11,90	6,11	903,00	558,00	11642,00	1020,00
	14,2	98,30	125,00	17266,00	4554,00	11,70	6,03	987,00	607,00	12846,00	1116,00
	16,0	108,92	138,75	18645,96	4802,20	11,59	5,88	1065,48	640,29	14006,40	1206,97

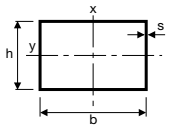
SQUARE AND RECTANGULAR HOLLOW SECTIONS

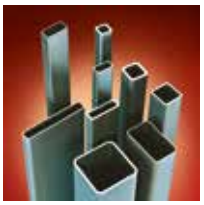
DIMENSIONAL TABLE



Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
350 x 250	**6,0**	54,70	69,60	12457,00	7458,00	13,40	10,30	712,00	597,00	14554,00	967,00
	6,3	57,03	72,65	12923,13	7743,81	13,34	10,32	738,46	619,51	15291,03	1010,43
	7,1	63,94	81,45	14392,82	8617,81	13,29	10,29	822,45	689,43	17115,98	1126,04
	8,0	71,63	91,24	16001,29	9572,62	13,24	10,24	914,36	765,81	19136,32	1252,81
	10,0	88,36	112,57	19407,47	11588,34	13,13	10,15	1109,00	927,07	23499,74	1522,29
	12,5	107,58	137,04	22922,48	13689,96	12,93	9,99	1309,86	1095,20	28763,59	1829,81
	14,2	121,00	154,00	25277,00	15079,00	12,80	9,91	1444,00	1206,00	32117,00	2026,00
	16,0	134,00	171,00	27580,00	16434,00	12,70	9,81	1576,00	1315,00	35499,00	2220,00
400 x 150	**6,0**	49,95	63,63	12460,03	2699,50	13,99	6,51	623,00	359,93	7274,43	644,52
	6,3	52,08	66,35	12888,28	2800,92	13,94	6,50	644,41	373,46	7630,49	672,42
	7,1	58,37	74,35	14329,99	3103,50	13,88	6,46	716,50	413,80	8508,73	746,40
	8,0	65,35	83,24	15900,71	3430,37	13,82	6,42	795,04	457,38	9471,59	826,71
	10,0	80,51	102,57	19199,32	4106,70	13,68	6,33	959,97	547,56	11514,69	994,38
	12,5	97,77	124,54	22406,49	4779,68	13,41	6,19	1120,32	637,29	13866,57	1177,43
	14,2	109,48	139,46	24568,47	5144,67	13,27	6,07	1228,42	685,96	15318,21	1290,70
	16,0	121,48	154,75	26641,03	5523,85	13,12	5,97	1332,05	736,51	16727,63	1399,14
400 x 200	**6,0**	54,70	69,60	14789,00	5092,00	14,60	8,55	739,00	509,00	12068,00	877,00
	6,3	57,03	72,65	15329,74	5286,10	14,53	8,53	766,49	528,61	12672,84	916,17
	7,1	63,94	81,45	17070,37	5875,36	14,48	8,49	853,52	587,54	14168,81	1019,88
	8,0	71,63	91,24	18974,42	6517,08	14,42	8,45	948,72	651,71	15820,22	1133,29
	10,0	88,36	112,57	23002,65	7864,40	14,30	8,36	1150,13	786,44	19368,49	1373,21
	12,5	107,58	137,04	27100,50	9260,46	14,06	8,22	1355,02	926,05	23594,07	1644,04
	14,2	120,64	153,68	29858,47	10172,80	13,94	8,14	1492,92	1017,28	26262,64	1815,37
	16,0	134,06	170,77	32547,00	11055,57	13,81	8,05	1627,35	1105,56	28928,33	1983,78
400 x 250	**6,0**	59,40	75,60	17118,00	8352,00	15,00	10,49	856,00	668,00	17580,00	1110,00
	6,3	61,98	78,95	17771,19	8679,41	15,00	10,49	888,56	694,35	18469,03	1160,07
	7,1	69,51	88,55	19810,74	9665,37	14,96	10,45	990,54	773,23	20679,01	1293,58
	8,0	77,91	99,24	22048,12	10744,32	14,91	10,40	1102,41	859,55	23127,49	1440,19
	10,0	96,21	122,57	26805,99	13029,17	14,79	10,31	1340,30	1042,33	28423,19	1752,64
	12,5	117,39	149,54	31794,51	15454,28	14,58	10,17	1589,73	1236,34	34834,27	2111,78
	14,2	131,77	167,86	35141,00	16937,79	14,47	10,04	1757,05	1355,02	38935,12	2341,59
	16,0	146,60	186,75	38444,34	18461,93	14,35	9,94	1922,22	1476,95	43085,81	2570,59
450 x 250	**6,0**	64,10	81,60	22724,00	9245,00	16,60	10,60	1010,00	740,00	20687,00	1253,00
	6,3	66,92	85,25	23606,12	9615,01	16,64	10,62	1049,16	769,20	21730,45	1309,73
	7,1	75,09	95,65	26335,57	10712,92	16,59	10,58	1170,47	857,03	24335,16	1461,13
	8,0	84,19	107,24	29335,49	11916,03	16,54	10,54	1303,80	953,28	27222,45	1627,59
	10,0	104,06	132,57	35736,59	14470,01	16,42	10,45	1588,29	1157,60	33473,36	1983,04
	12,5	127,20	162,04	42535,83	17218,61	16,20	10,31	1890,48	1377,49	41057,16	2393,83
	14,2	143,00	182,00	47111,00	19031,00	16,10	10,20	2094,00	1523,00	45921,00	2658,00
	16,0	159,00	203,00	51562,00	20822,00	16,00	10,10	2296,00	1666,00	50859,00	2921,00

DIMENSIONAL TABLE





Size **b x h** mm	W.T. **s** mm	Linear mass Kg/m	Cross-sectional area **A** cm^2	Second moment of area **Ix** cm^4	Second moment of area **Iy** cm^4	Radius of gyration **ix** cm^3	Radius of gyration **iy** cm^4	Elastic section modulus **Wx** cm^3	Elastic section modulus **Wy** cm^3	Torsional inertia constant **J** cm^4	Torsional modulus constant **C** cm^3
500 x 200	**6,0**	64,10	81,60	25690,00	6221,00	17,70	8,73	1028,00	622,00	16188,00	1103,00
	6,3	66,92	85,25	26667,56	6468,39	17,69	8,71	1066,70	646,84	16993,54	1152,57
	7,1	75,09	95,65	29743,39	7196,92	17,63	8,67	1189,74	719,69	19004,06	1284,11
	8,0	84,19	107,24	33121,69	7992,49	17,57	8,63	1324,87	799,25	21225,17	1428,27
	10,0	104,06	132,57	40320,93	9671,06	17,44	8,54	1612,84	967,11	26004,90	1734,35
	12,5	127,20	162,04	47874,31	11460,98	17,19	8,41	1914,97	1146,10	31721,53	2083,82
	14,2	142,93	182,08	52973,10	12628,61	17,06	8,33	2118,92	1262,86	35352,00	2306,09
	16,0	159,18	202,77	58015,95	13770,87	16,91	8,24	2320,64	1377,09	38998,57	2526,24
500 x 300	**6,0**	73,50	93,63	33010,59	15145,28	18,78	12,72	1320,42	1009,69	32420,84	1688,16
	6,3	76,81	97,85	34345,78	15777,18	18,74	12,70	1373,83	1051,81	34061,56	1766,32
	7,1	86,23	109,85	38368,73	17608,45	18,69	12,66	1534,75	1173,90	38184,78	1973,42
	8,0	96,75	123,24	42805,10	19623,51	18,64	12,62	1712,20	1308,23	42767,40	2201,93
	10,0	119,76	152,57	52327,60	23932,70	18,52	12,52	2093,10	1595,51	52735,98	2692,95
	12,5	146,83	187,04	62731,08	28686,68	18,31	12,38	2509,24	1912,45	64953,57	3268,75
	14,2	165,23	210,48	69733,99	31840,34	18,20	12,30	2789,36	2122,69	72864,37	3641,78
	16,0	184,30	234,77	76763,26	34994,59	18,08	12,21	3070,53	2332,97	80971,78	4018,78
	20,0	225,16	286,83	90987,11	41340,86	17,81	12,01	3639,48	2756,06	97951,05	4791,33
600x400	**8,0**	121,87	155,24	80669,90	43564,07	22,80	16,75	2689,00	2178,20	88671,55	3590,68
	10,0	151,16	192,57	99080,85	53429,32	22,68	16,66	3302,70	2671,47	109715,97	4412,89
	12,5	186,08	237,04	119901,36	64652,58	22,49	16,52	3996,71	3232,63	135769,31	5393,76
	14,2	209,80	267,26	133919,84	71953,52	22,38	16,41	4463,99	3597,68	152846,28	6036,53
	16,0	234,54	298,77	148206,14	79760,23	22,27	16,34	4940,20	3988,01	170514,56	6694,24
	20,0	287,96	366,83	177829,29	95499,86	22,02	16,13	5927,64	4774,99	208256,46	8072,33

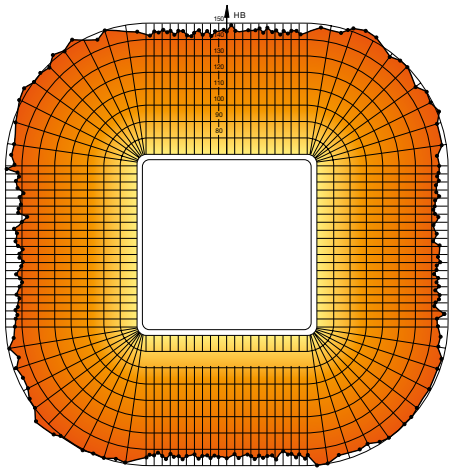
TABLES REPORT CALCULATIONS FROM MANUFACTURERS AND/OR FROM SPECIFICATION EN 10219-2.

MAIN DIFFERENCES IN THE MECHANICAL PROPERTIES OF HOT FINISHED AND COLD FINISHED HOLLOW SECTIONS

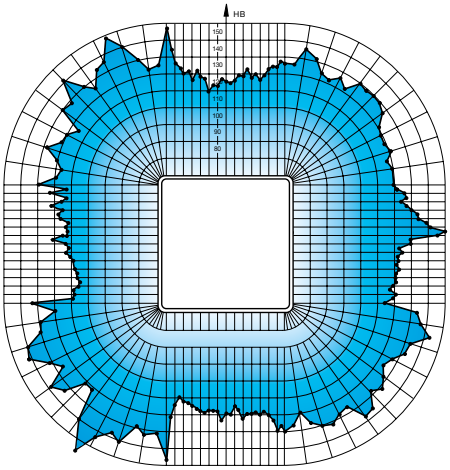
HARDNESS DISTRIBUTION

The hardness distribution over the cross section represents the most striking difference between hot finished and cold finished hollow sections. Whilst the hot finished hollow section shows a uniform hardness distribution over its entire profile, a cold formed hollow section exhibits significant hardness peaks in the areas of the cold formed corners.

This indicates that variations in the tensile properties can be expected in those areas. A further hardness peak can be found in the longitudinal weld area, therefore we can suppose lack of homogeneity in resistance properties.



HARDNESS DISTRIBUTON HOT ROLLED

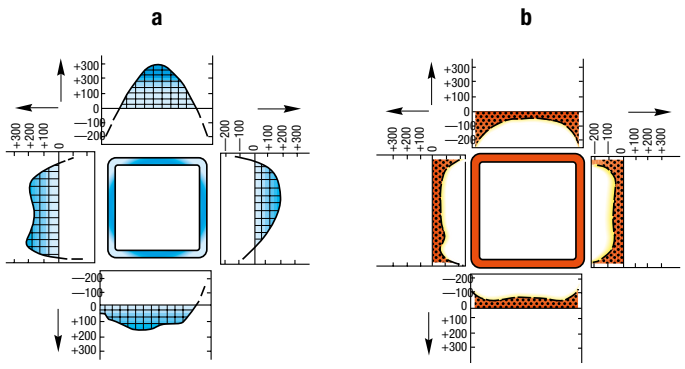


HARDNESS DISTRIBUTION COLD FORMED

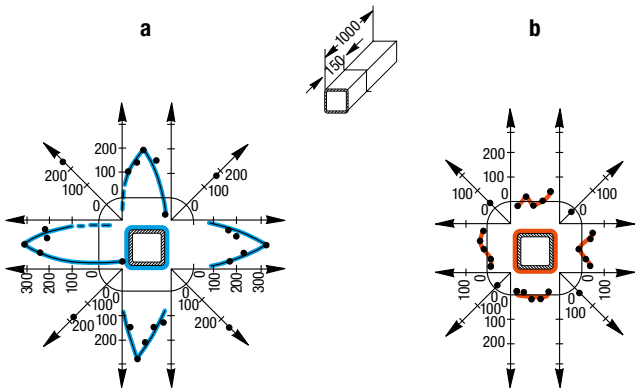
RESIDUAL STRESSES

The residual stress distribution offers a picture similar to that of the hardness distribution. As it can be seen very clearly from adjacent diagrams, hot rolled sections exhibit exceedingly uniform and low stresses over the entire cross section.

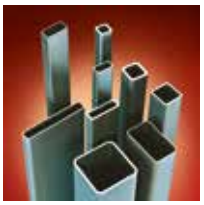
On the contrary, cold formed hollow sections are identified by high residual tensile stresses. During processing (e.g. welding, hot dip galvanizing, bending), these residual stresses may be released and may cause unexpected distortion of the hollow section or of the complete structure.



Residual tensile stress distribution in N/mm2 over the cross sections of cold formed (a) and hot formed (b) hollow sections in ST 37.



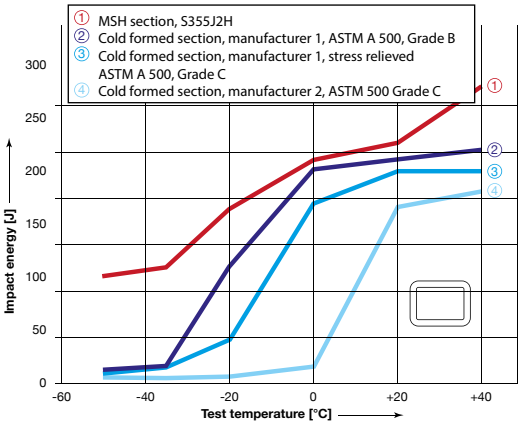
Residual transversal stress distribution in N/mm2 over the cross sections of cold formed (a) and hot formed (b) hollow sections (60 x 60 x 4 mm).



IMPACT PROPERTIES

Impact properties consist in a particular mechanical resistance that material opposes to sudden stresses, such as impacts or jerks. Steels with high impact properties are tenacious, in the opposite case they are brittle.
Carbon steel products that were subject to hot forming processes or heat treatments, such as annealing or normalizing, show a considerable mechanical resistance and high impact properties. Carbon steel products obtained by cold forming processes or subject to work hardening due to subsequent cold deformation steps, are normally characterized by high mechanical resistance against "statical" stress, but low resistance against "dynamical" stress and low impact properties, therefore this kind of materials is to be considered as "brittle". One of the most dangerous phenomena facing design engineers in both structural steel work and mechanical construction is brittle fracture.

This low ductility fracture represents a particularly severe hazard, because it occurs suddenly, without any prior indication, and sometimes under stresses far below the permissible level.
The impact properties of a material can be regarded as an important index of brittle fracture tendency, since impact properties decrease when the work hardening due to cold deformation increase.
The adjacent diagram shows the behaviour of impact properties for hot rolled and cold formed hollow sections. The American standard for cold formed hollow sections, ASTM A 500, expressly points out in a foot note that these sections may be unsuitable for dynamically stressed structures exposed to low temperature.



[1] *Extract from ASTM A500*

"Note 1 – Products manufactured to this specifications may not be suitable for those applications such as dynamically loaded elements in welded structures, etc, where low-temperature impact properties may be important"

MAIN DIFFERENCES IN THE MECHANICAL PROPERTIES OF HOT FINISHED AND COLD FINISHED HOLLOW SECTIONS

WELDING PROPERTIES

The differences in the mechanical/technical properties of hot finished sections (EN 10210) and untreated cold formed sections become more important when jointing various parts or surfaces by welding.
Joint welding is an operation which is often carried out on this type of product as it is mainly used for the construction of metal structures. This is a critical operation and must be carried out in total safety to avoid procedure induced stresses which can lead to mechanical failure. The hollow sections produced using hot finishing process offer an opportunity to carry out welding operations on every surface of the product, INCLUDING CORNERS, with excellent welding properties, thereby offering the best mechanical results and maximum reliability for the finished material structure.

Cold forming, on the other hand, is one of the main culprits for mechanical failure due to "fragility" (see impact properties), and the regulations governing cold formed section welding not only include advice to use specific groups of suitable special quality steels, but also specify clearly that "welding is not recommended" on many surface areas of the product, and in particular on the corners. Regarding this, we quote here below paragraph 4.14 of Eurocode 3 (EN 1993-1-8) regulation that concerns "Design of steel structures - Part 1-8: General - Design of joints".

4.14 Welding in cold-formed zones

(1) Welding may be carried out within a length 5t either side of a cold-formed zone, see Table 4.2, provided that one of the following conditions is fulfilled:
- the cold-formed zones are normalized after cold-forming but before welding;
- the r/t-ratio satisfies the relevant value obtained from Table 4.2.

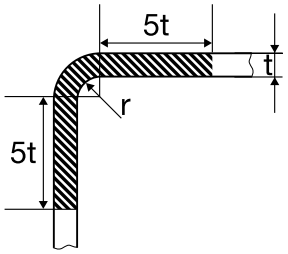
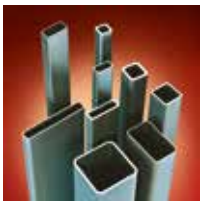
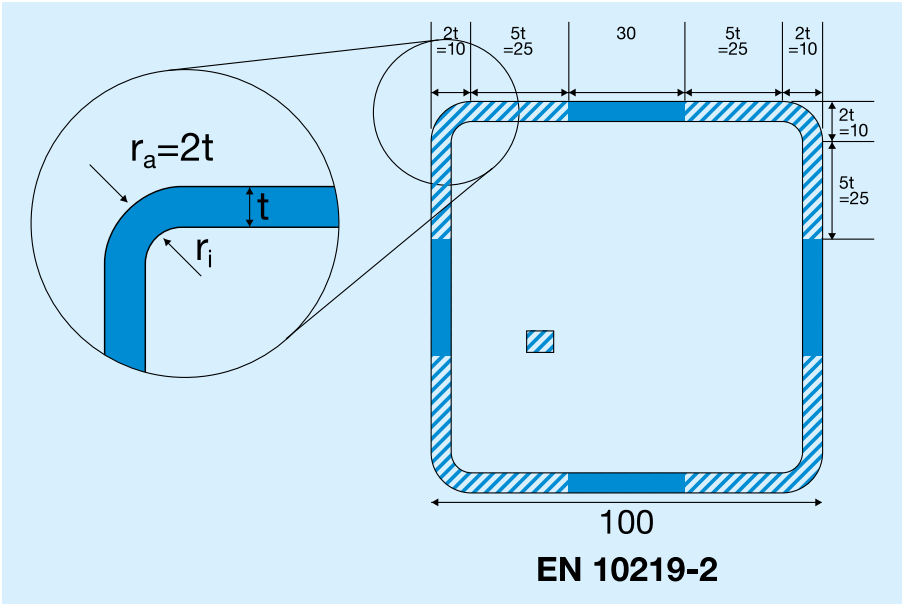


Table 4.2 conditions for welding cold-formed zones and adjacent material

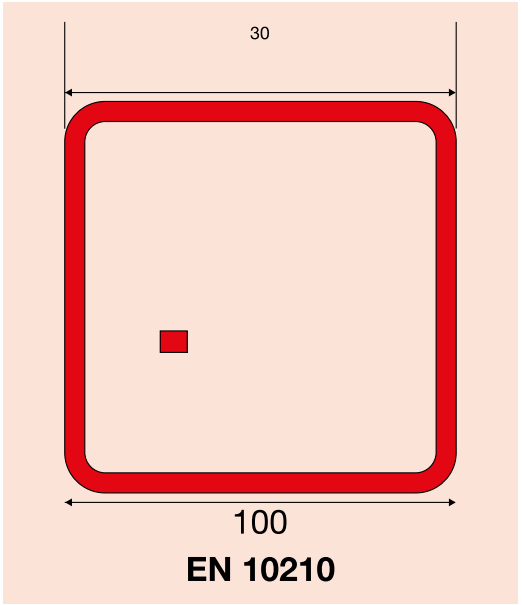
r/t	Strain due to cold forming (%)	Maximum thickness (mm)		
		Generally		Fully killed steel Aluminium killed steel (Al ≥ 0,02%)
		Predominantly static loading	Where fatigue predominates	
≥ 25	≥ 2	Any	Any	Any
≥ 10	≥ 5	Any	16	Any
≥ 3,0	≥ 14	24	12	24
≥ 2,0	≥ 20	12	10	12
≥ 1,5	≥ 25	8	8	10
≥ 1,0	≥ 33	4	4	6



The welding limits stated above are for cold formed products (EN 10219). These limits are not applicable to hot finished products (EN 10210), where 100% of the surface area, including the corners, can be welded.
The following table shows the requirements of Eurocode 3.



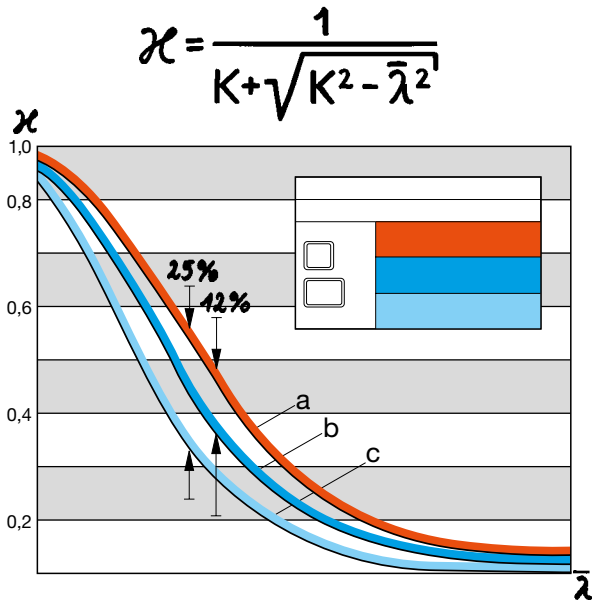
EN 10219-2



EN 10210

STRESS OF FLEXURE

Because of their favourable static values, hollow sections are particularly suitable for structural elements subject to flexure loads (columns, metal structures and frames). The different properties of cold formed and hot finished hollow sections have their effect on the design rules and calculations for realization of structures. The following Table taken from Eurocode 3 shows the classification of the various types of hollow sections into European of flexure stress diagrams (a). Hot finished hollow sections are characterized by the better flexure curve (a), cold finished hollow sections corresponds to curves "b" or "c" depending on the buckling stess used for calculation. This means that hot finished sections can tolerate higher stress of flexure.



The values for the flexure curve (a) are up to 25% higher than those from the curve (c) and up to 12% higher than those from the curve (b).

STOCK FACILITY

STEELGRADES

Our standard stock of square and rectangular hollow sections is referred to steelgrades S355J2H, S355NH and S420NH for hot finished tubes according to EN 10210.
Cold finished tubes according to EN 10219 are available in steelgrades S355J2H and S420MH.
However, it is possible to supply material in all existing steelgrades mentioned in this catalogue, upon request and with a minimum quantity to be agreed according mill conditions.

SIZES

All the standard sizes according to the norm are to be considered as normal stock supply. It is possible to supply also special sizes upon request and with a minimum quantity to be agreed according mill conditions. Upon request, it is possible to supply material with RESTRICTED TOLERANCES in respect to what foreseen by the product standards.

CERTIFICATES

Mill test certificates (3.1 EN 10204) can be supplied with all deliveries. In order to grant traceability, all tubes report manufacturer's logo, steelgrade, reference norm and heat number by paint marking or by labels.

PACKING

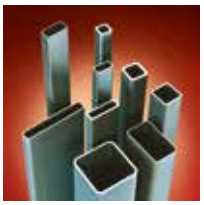
Tubes are loose or in bundles tightened with iron strips or bands, according to sizes. Tubes cut to fixlength are supplied stripped on a wire with polyester bands in order to unload and move the material easily.
Upon request it is possible to arrange special packing: metal or wooden cases, pallets, etc.

CE MARK

All tubes for structural purposes belong to manufacturers adopting a Factory Production Control complying with European Regulation 305/2011 for construction products. The product is endorsed by the CE mark and accompanied by the Declaration of Performance of the manufacturer.

LENGTHS

RANDOM LENGTHS: from 4 to 18 m (upon request it is possible to supply up to 22 m lengths)
FIXLENGTHS: up to 18 m.



IGQ
ISTITUTO ITALIANO DI GARANZIA DELLA QUALITÀ

Certificate of conformity of the factory production control

1608 CPR P193

In compliance with Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the constructions product:

Steel structural components

whose characteristics are detailed in the attached annex,

placed on the market under the name or trade mark of

S.I.C.A.M. Spa

Via Marziana, 21 - 27020 Parona Lomellina PV-IT

and produced in the manufacturing plant(s):

Parona Lomellina PV-IT

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard

EN 1090-1:2009+A1:2011

under system 2+ are applied and that

the factory production control is assessed to be in conformity with the applicable requirements.

This certificate was first issued on 07/07/2017 and will remain valid as long as neither the harmonized standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified factory production control certification body.

Current issue: 07/07/2017

The Director
Ing. Dario Agalbato

IGQ
ISTITUTO ITALIANO DI GARANZIA DELLA QUALITÀ

APPENDIX TO CERTIFICATE 1608 CPR P193

Steel structural components in accordance to EN 1090-1:

Product name	Standard	Steel grades	Class of execution	Delivery condition
Structural components not welded for general purpose	EN 1090-2	EN 10210-1: up to S355K2H up to S460NLH EN 10219-1: up to S355K2H up to S460NLH up to S460MLH	EXC1 - EXC2 - EXC3	According to customer specification

prima emissione: 07/07/2017
emissione corrente: 07/07/2017

Il Direttore
Ing. Dario Agalbato

CERTIFICATION ACCORDING TO EN 1090-1

Products for structural applications can be supplied, upon request, with Declaration of Performance according to norm EN 1090-1 and in execution class up to EXC3.
This certification is referred to products obtained through cut in fixlength by band saw, with ends not suitable for immediate welding and through laser cutting and/or drilling according to provided drawings.

FIXLENGTH AND TOLERANCES

Square and rectangular hollow sections can be cut to fixlength as required by the customer.
We can perform 90° cutting or angle cutting up to 60°.

LENGTH: standard tolerance -0; +5 mm.
More restrictive tolerances can be agreed.
For angle cutting, the fixlength tolerance is applicable only to the longer length.

INCLINATION OF CUT: for both angle and 90° cut, the tolerance regulating inclination consists of ± 0.5°.

ADDITIONAL WORKING PROCESSES

Upon request it is possible to supply tubes with working processes like outside sandblasting or laser cutting.

DELIVERIES

Inland, through carriers.

SQUARE AND RECTANGULAR HOLLOW SECTIONS

Lloyd's Register

Current issue date: 12 November 2019
Expiry date: 11 December 2022
Certificate identity number: 10235258

Original approval(s): ISO 9001 - 12 December 1995

Certificate of Approval

This is to certify that the Management System of:

S.I.C.A.M. SpA

Via Marziana 21, 27020 Parona Lomellina - PV, Italy

has been approved by Lloyd's Register to the following standards:

ISO 9001:2015

Approval number(s): ISO 9001 – 0029971

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

The scope of this approval is applicable to:
Stockholding of carbon steel pipes and tubes, hollow sections, hollow bars, solid bars, chrome plated tubes and bars for Italian and foreign companies active in the mechanical and lifting equipment industry, civil and industrial construction industry, in the field of cylinders, pneumatics and hydraulics and in the petrochemical and plant design industry.
EA: 17 – 29 - 31

Daniel Oliva Marcilio de Souza
Area Operations Manager - South Europe
Issued by: Lloyd's Register Quality Assurance Italy Srl

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Lloyd's Register

Certificate identity number: 10235258

Certificate Schedule

Location	Activities
S.I.C.A.M. SpA Via Marziana 21, 27020 Parona Lomellina - PV, Italy	**ISO 9001:2015** Stockholding of carbon steel pipes and tubes, hollow sections, hollow bars, solid bars, chrome plated tubes and bars for Italian and foreign companies active in the mechanical and lifting equipment industry, civil and industrial construction industry, in the field of cylinders, pneumatics and hydraulics and in the petrochemical and plant design industry.
SICAM CENTRO S.r.l. Via Leopardi 11/A, 40050 Castello d'Argile - BO, Italy	**ISO 9001:2015** Stockholding of carbon steel pipes and tubes, hollow sections, hollow bars, solid bars, chrome plated tubes and bars for Italian and foreign companies active in the mechanical and lifting equipment industry, civil and industrial construction industry, in the field of cylinders, pneumatics and hydraulics and in the petrochemical and plant design industry.

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S.p.A.

SOCIETÀ ITALIANA COMMERCIO ACCIAI E METALLI

This catalogue replaces the previous one.
Contents of this publication are given as indicative information without any responsibility from our side for any possible mistake.

Edition
March 2020

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SQUARE AND RECTANGULAR HOLLOW SECTIONS

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