

EN 10219-1 & 2 Cold Formed Welded Rectangular Tubes

Nominal dimensions and sectional properties of rectangular hollow sections

Size (BXH)		Wall Thickness (T)		Mass per unit length		Pieces/bdls	Size (BXH)		Wall Thickness (T)		Mass per unit length		Pieces/bdls
in	mm	in	mm	kg/m	lb/ft		in	mm	in	mm	kg/m	lb/ft	
2 1/3 x 1 3/5	60 x 40	0.059	1.50	2.24	1.504	81	3 x 2	75 x 50	0.118	3.00	5.42	3.644	36
		0.071	1.80	2.66	1.786	64			0.157	4.00	7.02	4.720	25
		0.079	2.00	2.93	1.969	64			0.197	5.00	8.52	5.726	25
		0.098	2.50	3.60	2.419	49			0.236	6.00	9.92	6.667	25
		0.118	3.00	4.25	2.856	49	3 1/7 x 1 3/5	80 x 40	0.059	1.50	2.71	1.821	49
		0.157	4.00	5.45	3.663	49			0.071	1.80	3.22	2.166	49
		0.197	5.00	6.56	4.409	36			0.079	2.00	3.56	2.392	49
		0.236	6.00	7.56	5.081	25			0.098	2.50	4.39	2.950	36
2 9/16 x 1 3/8	65 x 35	0.059	1.50	2.24	1.504	81	3 1/7 x 1 3/5	80 x 40	0.118	3.00	5.19	3.488	36
		0.071	1.80	2.66	1.786	64			0.157	4.00	6.71	4.509	25
		0.079	2.00	2.93	1.969	64			0.197	5.00	8.13	5.464	25
		0.098	2.50	3.60	2.419	49			0.236	6.00	9.45	6.351	20
		0.118	3.00	4.25	2.856	49	4 x 2	100 x 50	0.059	1.50	3.42	2.298	49
		0.157	4.00	5.45	3.663	49			0.079	2.00	4.50	3.026	49
		0.197	5.00	6.56	4.409	36			0.098	2.50	5.56	3.737	36
		0.236	6.00	7.56	5.081	25			0.118	3.00	6.60	4.435	36
3 x 2	75 x 50	0.059	1.50	2.83	1.900	49	4 x 2	100 x 50	0.157	4.00	8.59	5.773	25
		0.071	1.80	3.37	2.261	49			0.177	4.50	9.55	6.419	20
		0.079	2.00	3.72	2.499	49			0.197	5.00	10.50	7.056	20
		0.098	2.50	4.58	3.080	36			0.236	6.00	12.30	8.266	20

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in	mm	in	mm	kg/m	lb/ft		in	mm	in	mm	kg/m	lb/ft	
4 x 2 1/3	100 x 60	0.079	2.00	4.82	3.237	49	4 11/16 x 3 1/7	120 x 80	0.197	5.00	14.40	9.677	16
		0.098	2.50	5.96	4.003	36			0.236	6.00	17.00	11.425	12
		0.118	3.00	7.07	4.751	36			0.276	6.30	17.50	11.761	12
		0.157	4.00	9.22	6.196	25			0.315	8.00	21.40	14.382	9
		0.177	4.50	10.26	6.894	20			0.354	9.00	23.53	15.813	9
		0.197	5.00	11.30	7.594	20			0.394	10.00	25.60	17.204	9
		0.236	6.00	13.20	8.871	20			0.472	12.00	28.31	19.026	9
		0.315	8.00	16.40	11.022	20			0.098	2.50	7.53	5.058	30
4 11/16 x 2 1/3	120 x 60	0.098	2.50	6.74	4.530	30	5 x 3	125 x 75	0.118	3.00	8.96	6.022	24
		0.118	3.00	8.01	5.383	25			0.157	4.00	11.70	7.863	20
		0.157	4.00	10.50	7.056	25			0.177	4.50	13.08	8.793	16
		0.177	4.50	11.67	7.843	20			0.197	5.00	14.40	9.677	16
		0.197	5.00	12.80	8.602	20			0.236	6.00	17.00	11.425	9
		0.236	6.00	15.10	10.148	20			0.315	8.00	21.40	14.382	9
		0.248	6.30	15.50	10.417	20			0.079	2.00	6.86	4.610	25
		0.315	8.00	18.90	12.702	16			0.098	2.50	8.51	5.718	25
4 11/16 x 3 1/7	120 x 80	0.079	2.00	6.07	4.079	20	6 x 3	150 x 75	0.118	3.00	10.13	6.808	25
		0.098	2.50	7.53	5.060	20			0.157	4.00	13.30	8.941	20
		0.118	3.00	8.96	6.022	20			0.177	4.50	14.85	9.981	16
		0.157	4.00	11.70	7.863	16			0.197	5.00	16.37	11.003	12

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in	mm	in	mm	kg/m	lb/ft		in	mm	in	mm	kg/m	lb/ft	
6 x 3	150 x 75	0.217	5.50	17.87	12.007	9	8 x 4	200 x 100	0.236	6.00	26.40	17.742	9
		0.236	6.00	19.34	12.997	9			0.315	8.00	33.90	22.782	6
		0.315	8.00	24.53	16.485	9			0.394	10.00	41.30	27.755	6
		0.354	9.00	27.07	18.192	9			0.472	12.00	47.10	31.653	4
6 x 4	150 x 100	0.118	3.00	11.31	7.601	20	8 x 6	200 x 150	0.157	4.00	21.20	14.247	9
		0.157	4.00	14.90	10.013	16			0.197	5.00	26.20	17.608	9
		0.197	5.00	18.30	12.298	12			0.236	6.00	31.11	20.907	6
		0.236	6.00	21.70	14.583	9			0.315	8.00	40.23	27.036	6
		0.315	8.00	27.70	18.616	9			0.394	10.0	49.10	32.997	4
		0.354	9.00	30.60	20.565	9			0.472	12.0	56.60	38.038	4
		0.394	10.00	33.40	22.446	6			0.157	4.00	21.20	14.247	6
		0.472	12.00	37.70	25.336	6			0.197	5.00	26.20	17.608	6
6 ^{3/10} x 3 ^{1/7}	160 x 80	0.118	3.00	10.80	7.258	20	10 x 4	250 x 100	0.236	6.00	31.11	20.907	4
		0.157	4.00	14.20	9.543	16			0.315	8.00	40.23	27.036	4
		0.197	5.00	17.50	11.761	16			0.394	10.00	49.10	32.997	4
		0.236	6.00	20.70	13.911	12			0.472	12.00	56.60	38.038	2
		0.315	8.00	26.40	17.742	9	10 x 6	250 x 150	0.157	4.00	24.29	16.324	6
		0.354	9.00	29.20	19.624	9			0.197	5.00	30.10	20.228	6
8 x 4	200 x 100	0.157	4.00	18.00	12.097	12	10 x 6	250 x 150	0.236	6.00	35.80	24.059	4
		0.197	5.00	22.30	14.987	9			0.315	8.00	46.50	31.250	4

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in	mm	in	mm	kg/m	lb/ft		in	mm	in	mm	kg/m	lb/ft			
		0.394	10.00	57.00	38.306	4	12 x 6	300 x 150	0.236	6.00	40.50	27.218	4		
		0.472	12.00	66.00	44.355	2			0.315	8.00	52.80	35.484	2		
12 x 4	300 x 100	0.157	4.00	24.30	16.331	4			12 x 8	300 x 200	0.394	10.00	64.80	43.548	2
		0.197	5.00	30.10	20.228	4					0.472	12.0	75.40	50.672	2
		0.236	6.00	35.80	24.059	4					0.157	4.00	30.60	20.565	4
		0.315	8.00	46.50	31.250	2					0.197	5.00	38.00	25.538	4
		0.394	10.00	57.00	38.306	2	0.236	6.00			45.20	30.376	4		
		0.472	12.00	66.00	44.355	2	0.315	8.00			59.10	39.718	2		
12 x 6	300 x 150	0.157	4.00	27.43	18.434	4	0.394	10.00			72.70	48.858	2		
		0.197	5.00	34.03	22.870	4	0.472	12.00			84.80	56.989	2		

TOLERANCES ON SHAPE AND MASS:

Characteristic	Circular hollow sections	Square and Rectangular hollow sections	
		Side length (mm)	Tolerance
External dimensions (D,B & H)	± 1%, with a minimum of ±0.5 mm and a maximum of ±10 mm	H, B < 100	± 1% with a min. ± 0.5mm
		100 ≤ H, B ≤ 200	± 0.8%
		H,B > 200	± 0.6%
Thickness(T)	For D ≤ 406.4 mm, T ≤ 5.0mm ± 10% T > 5.0mm ± 0.5mm	T ≤ 5.0mm ± 10% T > 5.0mm ± 0.5mm	
Out of roundness(O)	2% for hollow sections having a diameter to thickness ration not exceeding 100	--	

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Concavity/Convexity	--	Max. 0.8 % with a minimum of 0.5mm
Squareness of sides(\emptyset)	--	$90^\circ \pm 1^\circ$

Characteristic	Circular hollow sections	Square and Rectangular hollow sections	
		Side length (mm)	Tolerance
External corner profile	--	$T \leq 6.0\text{mm}$: 1.6T to 2.4T, $6.0 < T \leq 10.0\text{mm}$: 2.0T to 3.0T, $T > 10.0\text{mm}$: 2.4T to 3.6T	
Twist		2.0mm plus 0.5mm/m length	
Straightness	0.20 % of total length and 3.0 mm over any 1m length	0.15 % of total length and 3.0 mm over any 1m length	
Mass per unit length	$\pm 6\%$ on individual delivered length		
Length	-0/ +20mm		

CHEMICAL COMPOSITION:

Grade	Chemical composition % max.						
	C	Si	Mn	P	S	N	Carbon Equivalent(CEV)
S235JRH	0.17	--	1.40	0.040	0.040	0.009	0.35
S275J0H	0.20	--	1.50	0.035	0.035	0.009	0.40
S275J2H	0.20	--	1.50	0.030	0.030	--	0.40
S355J0H	0.22	0.55	1.60	0.035	0.035	0.009	0.45
S355J2H	0.22	0.55	1.60	0.030	0.030	--	0.45

Carbon Equivalent : Max. carbon equivalent shall be
 $CEV = C + (Mn / 6) + (Cr + Mo + V) / 5 + (Ni + Cu) / 15$

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MECHANICAL PROPERTIES:

Grade	Min. Yield Strength R_{eh} (MPa)	Tensile Strength (MPa)		Minimum Elongation %	Min. Impact Energy (J)		
		T < 3 mm	T ≥ 3 mm		-20°C	0°C	20°C
S235JRH	235	360-510	360-510	24	-	-	27
S275J0H	275	430-580	410-560	20	-	27	-
S275J2H					27	-	-
S355J0H	355	510-680	470-630	20	-	27	-
S355J2H					27	-	-

* For section sizes $D/T < 15$ (round) and $(B+H) / 2T < 12.5$ (Square & rectangular) the minimum elongation is reduce by 2

Workmanship : Free from overlap, lamination, tool/roll marks, pin holes, open seam & other harmful defect.

Marking : Online Stenciling as per the standard & customer requirement.

Packing : Box Type