



IMPERIAL

TECHNICAL DATA SHEET

Stainless hollow sections

| Austenitic

| Ferritic

| Duplex

About Stalatube

Stalatube is known worldwide as a leading provider of stainless steel solutions and a manufacturer of highly developed stainless steel hollow sections, profiles and components. With a global presence, in-depth material expertise and the world's widest product portfolio in stainless square and rectangular hollow sections, we help customers connect the right solution with their application or project - in even the most complex of cases. Our customizable, environmentally conscious solutions are here to build a better future. By co-operating with customers and investing in R&D, we believe anything can be achieved.

During almost 50 years of pioneer work in the industry, we have built an international distribution network covering all continents and over 50 countries. Our head office and main production are in Finland, sales offices in the Netherlands, Poland, USA and India, and a new production facility for further processed products in Poland. To assist you in being the best, we provide world-class stainless steel know-how, cutting-edge technology and a full range of professional services.

Stalatube – Use our strength!

Services

Technical consultation

Our experienced staff have extensive know-how on all matters concerning stainless steel. If you have any doubts or questions about stainless steel materials, processing or welding, we are always willing to assist. Not only in theory, but also in practice, hands-on at your plant. Don't hesitate to contact us!



Testing and certification

Get precise documentation, certifications, test reports or other statements for needed purpose. The traceability of our products is always accurate.



Surface enhancement

Surface finish is an essential part of the outlook, durability and functionality of a stainless steel structure. It is even possible to make surfaces hygienic where necessary.



Polishing	Ra [μ"]
Grit 180	59 - 75
Grit 220/240	39 - 55
Grit 320	24 - 35
Polished tubes are single packed: for dimensions ≤ 2.5" x 2.5" packing in plastic sleeve and for > 2.5" x 2.5" in plastic foil.	
Bundles are packed with plastic foil, plastic bands and corner protections.	
Pickling	
Dip pickling	
Bundles are packed with plastic foil, plastic bands and corner protections	

OTHER OPTIONAL SERVICES

Corner polishing and special surfaces by request

Tailoring

Tailoring adds value to stainless products. Products can be cut to any desired length, perforated or laser cut. Smart components can be tailored to meet our customers' needs.



Stalafit

Our Stalafit service allows you to order hollow sections, I-beams and profiles with tailored outer dimensions at intervals of one millimeter. Possible sizes can be checked with our sales personnel or with Stalafit PRO.

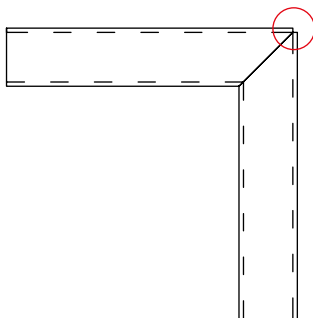


Stalafit PRO

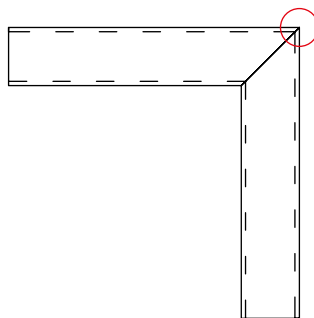
To professionally design stainless structures in accordance with Eurocode, we have created the design application Stalafit PRO, which can be found from stalafit.stalutube.com or from mobile markets.

TOLERANCES	
Cut to length service	13 - 60 ft, tolerance -0" /+ .78"
Precise cutting	.78" - 29.5 ft, tolerance ±.04" ≥ 29.5 ft, tolerance depends on the length
Angle cutting	30-90°, tolerance ± 1°
Laser cutting	± .02"

Standard cut with laser (if corner without gap is required, please specify separately)



Cut with saw



Smart logistics

We guarantee short delivery times and accurate deliveries. Products are delivered in prime condition and ready for installation with each package clearly identified by specification and certification.



OTHER OPTIONAL SERVICES

Marking with stickers available by request.

Steel grades - chemical and mechanical properties

CHEMICAL COMPOSITION											
(% by mass, maximum values unless indicated otherwise)											
Austenitic											
Fulfills the standards ASTM A554 and ASTM A240/240M											
MT	C	Mn	P	S	Si	Cr	Ni	Mo	N	Others	PRE
304	0.07	2.00	0.045	0.030	0.75	18.0-19.5	8.0-10.5		0.10		18
304L	0.03	2.00	0.045	0.030	0.75	18.0-19.5	8.0-12.0		0.10		18
316L	0.03	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	0.10		24
316Ti ¹⁾	0.08	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	0.10	Min Ti 5x(C+N), max 0.70	24
Ferritic											
Fulfills the standard ASTM A240/240M											
UNS	C	Mn	P	S	Si	Cr	Ni	Mo	N	Others	PRE
S40977	0.03	1.50	0.040	0.015	1.00	10.5-12.5	0.3-1.0		0.03		12
Lean Duplex and Duplex											
Fulfills the standards ASTM A554 and ASTM A240/240M											
UNS	C	Mn	P	S	Si	Cr	Ni	Mo	N	Others	PRE
S32101	0.04	4.0-6.0	0.04	0.03	1.00	21.0-22.0	1.35-1.70	0.10-0.80	0.20-0.25	Cu 0.10-0.80	26
S32202	0.03	2.0	0.04	0.01	1.00	21.5-24.0	1.0-2.8	0.45	0.18-0.26		26
S32304	0.03	2.50	0.04	0.03	1.00	21.5-24.5	3.0-5.5	0.05-0.6	0.05-0.20	Cu 0.05-0.60	28
S32205	0.03	2.00	0.04	0.02	1.00	22.0-23.0	4.5-6.5	3.0-3.5	0.14-0.20		35

1) Not included in standard ASTM A554

MECHANICAL PROPERTIES, STANDARD STRENGTH CLASS				
Measured from coil, minimum values. Fulfills the standard ASTM A240/240M				
Austenitic				
MT	0.2 % -proof strength Rp0.2 ksi (MPa)	Tensile strength Rm ksi (MPa)	Elongation A50 %	
304	30 (205)	75 (515)	40	
304L	25 (170)	70 (485)	40	
316L	25 (170)	70 (485)	40	
316Ti	30 (205)	75 (515)	40	
Ferritic				
UNS	0.2 % -proof strength Rp0.2 ksi (MPa)	Tensile strength Rm ksi (MPa)	Elongation A50 %	
S40977	41 (280)	65 (450)	18	
Lean Duplex and Duplex				
UNS		0.2 % -proof strength Rp0.2 ksi (MPa)	Tensile strength Rm ksi (MPa)	Elongation A50 %
S32101	T ≤ 0.187 in. (5 mm) T > 0.187 in. (5 mm)	77 (530) 65 (450)	101 (700) 94 (650)	30 30
S32202		65 (450)	94 (650)	30
S32304		58 (400)	87 (600)	25
S32205		65 (450)	95 (655)	25

We reserve the right to changes. Stalutube takes no responsibility for any error in numerical information that might appear in this brochure.

MECHANICAL PROPERTIES, ENHANCED STRENGTH CLASS			
Available for roll formed hollow sections			
Measured from tube, minimum values			
Austenitic			
Available in steel grades 304, 304L, 316L and 316Ti			
Tube	0.2 % - proof strength Rp0.2 ksi (MPa)	Tensile strength Rm ksi (MPa)	Elongation A5 %
Stala 350 ¹⁾	50 (350)	87 (600)	30
Ferritic			
Available in steel grade UNS S40977			
Tube	0.2 % - proof strength Rp0.2 ksi (MPa)	Tensile strength Rm ksi (MPa)	Elongation A5 %
Stala 400F ²⁾	58 (400)	65 (450)	10
Lean Duplex			
Available in steel grades UNS S32101 and S32202			
Tube	0.2 % - proof strength Rp0.2 ksi (MPa)	Tensile strength Rm ksi (MPa)	Elongation A5 %
Stala 630D ³⁾	91 (630)	108 (750)	20

1) Available for dimensions up to 4"x4"x.25"/5"x3"x.25"

2) Available for dimensions up to 4"x4"x.18"/5"x3"x.18"

3) Available for dimensions up to 4"x4"x.12"/5"x3"x.12"

Roll formed hollow sections

Austenitic 304, 304L, 316L, 316Ti

DELIVERY CONDITION

Forming	Cold formed (roll formed)
Welding process	TIG/Plasma, Laser or HF
Weld condition	External weld bead removed

TUBE MARKING

Ink-jet marking on tube	Stalalube Oy made in Finland, steel grade, dimensions, coil number, production week/year, welding operator
Bundle tag	Dimensions, steel grade, surface condition, bundle size, batch id, coil number, bundle number

BUNDLE PACKING

Plastic bands
Plastic foil

SURFACE CONDITION

Brushed (Stalazzo), when tube dimension is $\leq 4"x4"x0.25"$
As welded (unpol), when tube dimension is $> 4"x4"x0.25"$

SQUARE		WEIGHT [LB/FT]							
H x B [inch]		.060	.080	.120	.180	.250	.312	.375	.500
1	1	.779	1.022	1.483					
1.25	1.25	.985	1.297	1.895					
1.5	1.5	1.188	1.567	2.300					
2	2	1.596	2.112	3.117	4.562	5.931			
2.5	2.5	2.005	2.656	3.934	5.788	7.565			
3	3		3.201	4.751	7.013	9.200			
3.5	3.5			5.568	8.239	10.834			
4	4			6.386	9.465	12.468	16.355	20.107	
5	5			8.020	11.916	15.737	20.713	25.555	
6	6				14.368	19.005	25.071	31.002	36.799
8	8				19.271	25.543	33.787	41.897	49.873
10	10				24.174	32.080	42.504	52.793	62.947
12	12					38.617	51.220	63.688	76.022

Also other dimensions may be possible on request.

TOLERANCES (ACCORDING TO ASTM A554)

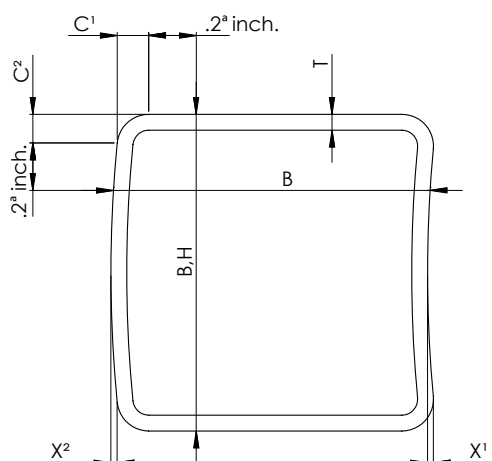
Outside dimensions h, b in. (mm)	
Largest outside dimensions	Tolerance +/- in. (mm)
to 1 ¼ (31.8) incl.	+/- .015" (0.38 mm)
Over 1 ¼ to 2 ½ (31.8 to 63.5) incl.	+/- .020" (0.51 mm)
Over 2 ½ to 5 ½ (63.5 to 139.7) incl.	+/- .030" (0.76 mm)
Over 5 ½ to 8 (139.7 to 203.2) incl.	+/- .060" (1.52 mm)
Over 8 (203.2) ¹⁾	+/- .8 % x side length
Thickness	+/- 10 %
Squareness	.006 x longest side
Concavity/convexity (X¹/X²)	Included in outside dimensions
External corner radius	
Wall thickness in. (mm)	Max external corner radius in. (mm)
Over .020 to .049 (0.51 to 1.24) incl.	3/32 (2.4)
Over .049 to .065 (1.24 to 1.65) incl.	1/8 (3.2)
Over .065 to .083 (1.65 to 2.11) incl.	9/64 (3.6)
Over .083 to .095 (2.11 to 2.42) incl.	3/16 (4.8)
Over .095 to .109 (2.42 to 2.77) incl.	13/64 (5.2)
Over .109 to .134 (2.77 to 3.40) incl.	7/32 (5.6)
Over .134 to .156 (3.40 to 3.96) incl.	1/4 (6.4)
Over .156 to .200 (3.96 to 5.08) incl.	3/8 (9.5)
Over .200 to .250 (5.08 to 6.35) incl.	1/2 (12.7)
Over .250 to .375 (6.35 to 9.53) incl.	3/4 (19.1)
Over .375 to .500 (9.53 to 12.70) incl. ¹⁾	6/5 (30.5)

1) Not included in ASTM A554

Austenitic 304, 304L, 316L, 316Ti

RECTANGULAR		WEIGHT [LB/FT]							
H x B [inch]		.060	.080	.120	.180	.250	.312	.375	.500
1.5	1	.985	1.297	1.895					
2	1	1.188	1.567	2.300					
2	1.5	1.392	1.839	2.708					
3	1	1.596	2.112	3.117					
3	2		2.656	3.934	5.788	7.565			
4	2		3.201	4.751	7.013	9.200			
4	3			5.568	8.239	10.834			
5	2			5.568	8.239	10.834			
5	3			6.386	9.465	12.468			
6	2				9.465	12.468			
6	3				10.691	14.103			
6	4				11.916	15.737	20.713	25.555	
8	2				11.916	15.737			
8	4				14.368	19.005	25.071	31.002	
8	6				16.819	22.274	29.429	36.450	43.336
10	2				14.368	19.005			
10	4					22.274	29.429	36.450	
10	6					25.543	33.787	41.897	49.873
10	8					28.811	38.145	47.345	56.410
12	4				16.819	25.543	33.787	41.897	
12	6					28.811	38.145	47.345	
12	8					32.080	42.504	52.793	62.947
12	10					35.348	46.862	58.240	69.484
14	6					32.080	42.504	52.793	62.947
14	8					35.348	46.862	58.240	69.484
14	10					38.617	51.220	63.688	76.022
16	8					38.617	51.220	63.688	76.022

Also other dimensions may be possible on request.



^a This dimension is maximum when measuring B or H and minimum when measuring T

TOLERANCES (ACCORDING TO ASTM A 554)

Twist	
Largest size, in. (mm)	Twist in 3 feet, max, in. (mm/m)
Under 1/2 (12.7)	.050 (1.4)
1/2 to 1 1/2 (12.7 to 38.1) incl.	.075 (2.1)
Over 1 1/2 to 2 1/2 (38.1 to 63.5) incl.	.095 (2.6)
Over 2 1/2 to 4 (63.5 to 101.6) incl.	.125 (3.5)
Over 4 to 6 (101.6 to 152.4) incl.	.250 (6.9)
Over 6 (152.4)	.375 (10.4)
Standard length	20' (6.1 m)
Length tolerance	-0"/+ .78" (-0 mm/+20 mm)
Straightness	.075"/ 3 ft (2.1 mm/1 m)

ENHANCED STRENGTH CLASS
Stala350
See Mechanical Properties page 5

Also available as
STALAFIT
See more information on page 3

Ferritic S40977

DELIVERY CONDITION

Forming	Cold formed (roll formed)
Welding process	Laser or HF
Weld condition	External weld bead removed
Surface condition	As welded (unpol)

TUBE MARKING

Ink-jet marking on tube	Stalatube Oy made in Finland, steel grade, dimensions, coil number, production week/year, welding operator
Bundle tag	Dimensions, steel grade, surface condition, bundle size, batch id, coil number, bundle number

SQUARE WEIGHT [LB/FT]

H x B [inch]		.060	.080	.120	.180
1	1	.722	.928		
1.25	1.25	.922	1.195	1.687	
1.5	1.5	1.123	1.462	2.087	
2	2	1.523	1.996	2.888	
2.5	2.5		2.530	3.690	5.297
3	3			4.491	6.499
3.5	3.5			5.292	7.701
4	4			6.093	8.902

BUNDLE PACKING

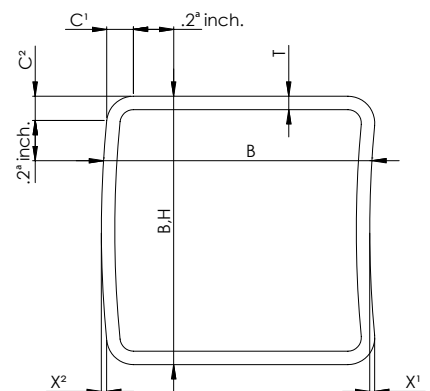
Plastic bands

TOLERANCES

Characteristic	Tolerance
Outside dimensions, B and H	B, H < 4": ± 1%, min ± .02" B, H ≥ 4": ± 0.8 %
Concavity / Convexity	Max. 0.8 % with minimum of .02"
Wall thickness, T	± 10 %
Squareness of side	90° ± 1°
External corner profile (C1, C2)	1.5T - 2.5T
Length	Standard length 20', tolerance -0"/+ .78"
Straightness	0.15 % of total length
Twist	.08" + .02"/ft

RECTANGULAR WEIGHT [LB/FT]

H x B [inch]		.060	.080	.120	.180
1.5	1	.922	1.195		
2	1	1.123	1.462		
2	1.5	1.323	1.729	2.488	
2.5	1	1.323	1.729		
2.5	1.5	1.523	1.996	2.888	
3	1	1.523	1.996		
3	2		2.530	3.690	
4	2		3.064	4.491	
4	3		3.598	5.292	7.701



^a This dimension is maximum when measuring B or H and minimum when measuring T

ENHANCED
STRENGTH CLASS

**Stala
400F**

See more information
on page 5

Lean Duplex and Duplex S32101, S32202, S32304, S32205

DELIVERY CONDITION	
Forming	Cold formed (roll formed)
Welding process	TIG/Plasma, Laser or HF
Weld condition	External weld bead removed

TUBE MARKING	
Ink-jet marking on tube	Stalutube Oy made in Finland, steel grade, dimensions, coil number, production week/year, welding operator
Bundle tag	Dimensions, steel grade, surface condition, bundle size, batch id, coil number, bundle number

All dimensions are available in steel grade S32101. Maximum thickness for steel grade S32202 is .180". Steel grades S32304 and S32205 are possible for thickness $\geq .180"$ and $B, H \geq 2.5"$

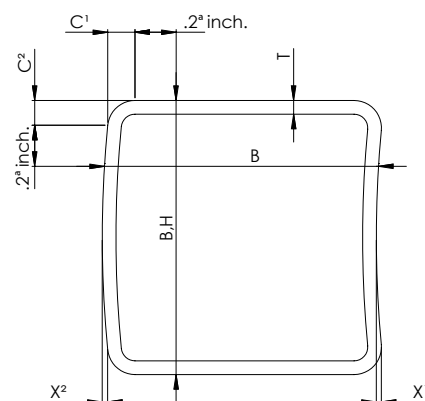
SQUARE		WEIGHT [LB/FT]				
H x B [inch]		.060	.080	.120	.180	.250
1	1	.731				
1.25	1.25	.934	1.210			
1.5	1.5	1.137	1.481			
2	2	1.543	2.022			
2.5	2.5		2.563	3.737		
3	3		3.104	4.549		
3.5	3.5			5.361	7.801	
4	4			6.172	9.018	12.135
5	5			7.795	11.453	15.517
6	6			9.418	13.887	18.898
8	8				18.757	25.662
10	10					32.425
12	12					39.188

RECTANGULAR		WEIGHT [LB/FT]				
H x B [inch]		.060	.080	.120	.180	.250
1.5	1	.934	1.210			
2	1	1.137	1.481			
2	1.5	1.340	1.751			
3	1	1.543	2.022			
3	2		2.563	3.737		
4	2		3.104	4.549		
4	3		3.645	5.361		
6	4			7.795	11.453	15.517
8	4			9.418	13.887	18.898
10	6				18.757	25.662
12	4				18.757	25.662
12	8					32.425
16	8					39.188

SURFACE CONDITION	
Brushed (Stalazzo), when tube dimension is $\leq 4" \times 4" \times .25"$ (100x100x6 mm)	
As welded (unpol), when tube dimension is $> 4" \times 4" \times .25"$ (100x100x6 mm)	

BUNDLE PACKING	
Plastic bands	
Plastic foil	

TOLERANCES	
Characteristic	Tolerance
Outside dimensions, B and H	$B, H < 4": \pm 1\%$, min $\pm .02"$ $B, H \geq 4": \pm 0.8\%$
Concavity / Convexity (X^1/X^2)	Max. 0.8 % with minimum of .02"
Wall thickness, T	$\pm 10\%$
Squareness of side	$90^\circ \pm 1^\circ$
External corner profile, C1, C2	$B + H \leq 8": 1.5T - 2.5T$ $B + H > 8"$ and $T \leq .16": 2T - 3T$ $B + H > 8"$ and $T > .16": 1.5T - 2.5T$
Length	Standard length 20', tolerance $-0"/+ .78"$
Straightness	0.15 % of total length
Twist	$.08" + .02"/ft$



^a This dimension is maximum when measuring B or H and minimum when measuring T

ENHANCED STRENGTH CLASS
Stala 630D
See more information on page 5

Also available as
STALAFIT
ENERGETIC POSSIBILITIES
See more information on page 3

Stalargo press brake hollow sections

304, 304L, 316L, 316Ti, S32101, S32202, S32304, S32205

Press brake hollow sections in Duplex grades are available for dimensions with T = 0.25 - 0.5" and H = 6 - 20"

DELIVERY CONDITION	
Forming	Press braked, made of two U or J profiles
Welding process	Tig/Plasma or MAG
Surface condition	Welded and pickled

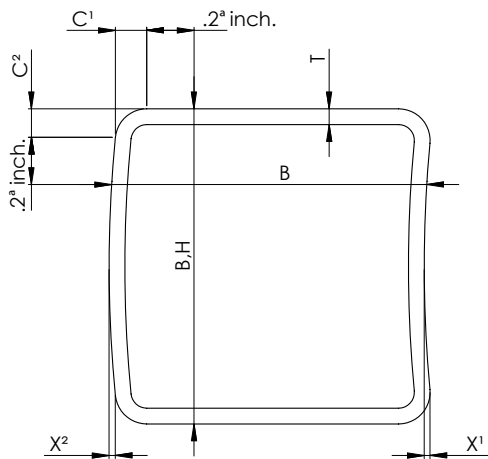
BUNDLE PACKING	
Plastic bands	
Corner protection	

TUBE MARKING	
Marking on tube	Stalutube Oy made in EU, steel grade, dimensions, coil or plate number, production week/year
Bundle tag	Dimensions, steel grade, surface condition, bundle size, batch id, coil or plate number, bundle number

SQUARE		WEIGHT (LB/FT)					
H x B [inch]		.180	.250	.312	.375	.500	.625
5	5	11.50	15.53	18.89	22.10		
6	6	13.97	18.96	23.17	27.24	35.73	
7	7	16.44	22.38	27.44	32.38	41.58	
8	8	18.90	25.81	31.71	37.52	48.43	
10	10	23.83	32.66	40.26	47.79	62.13	
12	12	28.77	39.51	48.81	58.06	75.83	92.79
14	14		46.36	57.36	68.34	89.53	109.92
16	16		53.21	65.91	78.61	103.23	127.04
20	20		66.90	83.00	99.16	130.62	161.29

Tube weights (lb/ft) are calculated for grades 304 and 304L, for grades 316L and 316Ti the weight has to be multiplied by factor 8.0/7.9.

Intermediate dimensions within range are available by request fex. 8.5"x8.5"x .5"



^a This dimension is maximum when measuring B or H and minimum when measuring T

Also available as

See more information on page 3

304, 304L, 316L, 316Ti, S32101, S32202, S32304, S32205

RECTANGULAR		WEIGHT (LB/FT)					
H x B [inch]		.180	.250	.312	.375	.500	.625
6	2	9.04	12.11				
6	3	10.27	13.82				
7	4	12.74	17.24	21.03			
8	4	13.97	18.96	23.17			
10	6	18.90	25.81	31.71	37.52	48.43	
12	4	18.90	25.81	31.71			
12	8	23.83	32.66	40.26	47.79	62.13	
14	6	23.83	32.66	40.26	47.79	62.13	
14	10	28.77	39.51	48.81	58.06	75.83	
16	4	23.83	32.66	40.26			
16	12		46.36	57.36	68.34	89.53	109.92
18	6		39.51	48.81	58.06	75.83	
20	4		39.51	48.81			
20	8		46.36	57.36	68.34	89.53	
20	12		53.21	65.91	78.61	103.23	127.04
20	16		60.06	74.46	88.89	116.93	144.17

Tube weights (lb/ft) are calculated for grades 304 and 304L, for grades 316L and 316Ti the weight has to be multiplied by factor 8.0/7.9.

Intermediate dimensions within range are available by request f.ex. 35.5"x22.0"x .312"

TOLERANCES	
Characteristic	Tolerance
Outside dimensions, B and H	$\pm 1.0\%$, min $\pm .08"$
Concavity / Convexity, X ¹ , X ²	Max. 0.8%
Wall thickness, T	$\pm 10\%$
Squareness of sides	$90^\circ \pm 1^\circ$
External corner profile, C1, C2	Max 3T
Length (Standard 20 ft)	-0 /+ .4"
Straightness	.04"/3 ft
Twist	.08" + .02"/3 ft
External weld bead	Width: Max 2T, Height: Max .08"

Best stainless steel solutions to answer your needs.

Over the past 49 years, we've gained the expertise, created the world's widest range of hollow sections and developed a global distribution network to be able to serve you in all corners of the globe, even in the most demanding projects and applications.

www.stalatube.com

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TUBE

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