

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 over 45 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 is soon to open 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.

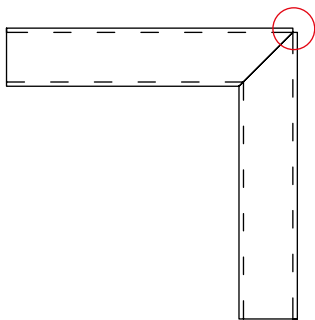


### Stalafit PRO

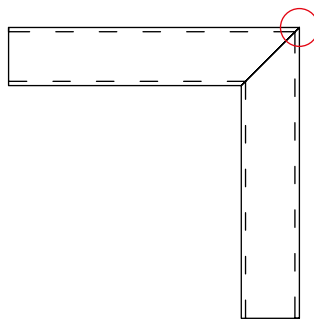
To professionally design stainless structures in accordance with Eurocode, we have created the design application Stalafit PRO, which can be found from [stalafit.stalutube.com](http://stalafit.stalutube.com) or from mobile markets.

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

<b>CHEMICAL COMPOSITION</b>											
<b>(% by mass, maximum values unless indicated otherwise)</b>											
<b>Austenitic</b>											
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 <sup>1)</sup>	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
<b>Ferritic</b>											
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
<b>Lean Duplex and Duplex</b>											
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

<b>MECHANICAL PROPERTIES, STANDARD STRENGTH CLASS</b>				
Measured from coil, minimum values. Fulfills the standard ASTM A240/240M				
<b>Austenitic</b>				
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	
<b>Ferritic</b>				
UNS	0.2 % -proof strength Rp0.2 ksi (MPa)	Tensile strength Rm ksi (MPa)	Elongation A50 %	
S40977	41 (280)	65 (450)	18	
<b>Lean Duplex and Duplex</b>				
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.

<b>MECHANICAL PROPERTIES, ENHANCED STRENGTH CLASS</b>			
<b>Available for roll formed hollow sections</b>			
Measured from tube, minimum values			
<b>Austenitic</b>			
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 <sup>1)</sup>	50 (350)	87 (600)	30
<b>Ferritic</b>			
Available in steel grade UNS S40977			
Tube	0.2 % - proof strength Rp0.2 ksi (MPa)	Tensile strength Rm ksi (MPa)	Elongation A5 %
Stala 400F <sup>2)</sup>	58 (400)	65 (450)	10
<b>Lean Duplex</b>			
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 <sup>3)</sup>	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 EN 1.4301, 1.4307, 1.4404, 1.4571

### 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 $\leq 4'' \times 4'' \times 0.25''$
As welded (unpol), when tube dimension is $> 4'' \times 4'' \times 0.25''$

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					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.

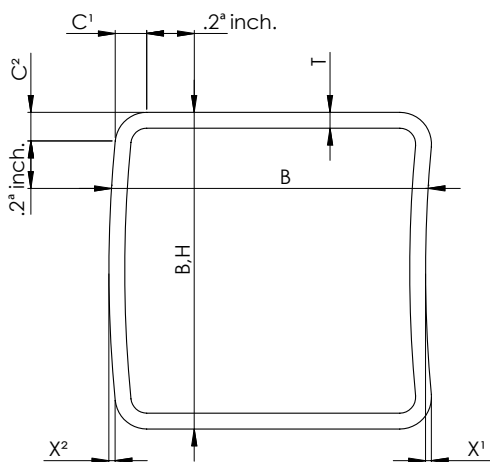
### TOLERANCES (ACCORDING TO ASTM A554)

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) <sup>1)</sup>	+/- .8 % x side length
<b>Thickness</b>	+/- 10 %
<b>Squareness</b>	.006 x longest side
<b>Concavity/convexity (X<sup>1</sup>/X<sup>2</sup>)</b>	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. <sup>1)</sup>	6/5 (30.5)

1) Not included in ASTM A554

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					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.



<sup>a</sup> 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)
<b>Standard length</b>	20' (6.1 m)
<b>Length tolerance</b>	-0"/+ .78" (-0 mm/+20 mm)
<b>Straightness</b>	.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

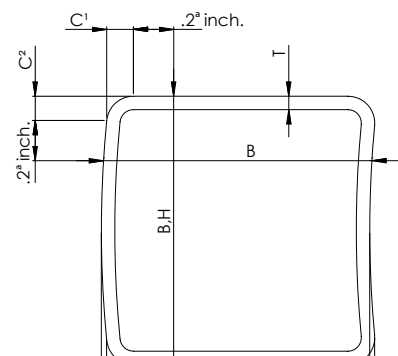
Plastic bands

## 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



<sup>a</sup> 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  $B, H \geq 2.5"$

### 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

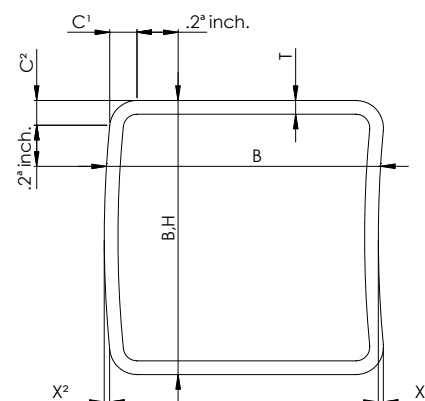
Plastic foil

### 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	$.08" + .02"/ft$

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



<sup>a</sup> 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



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

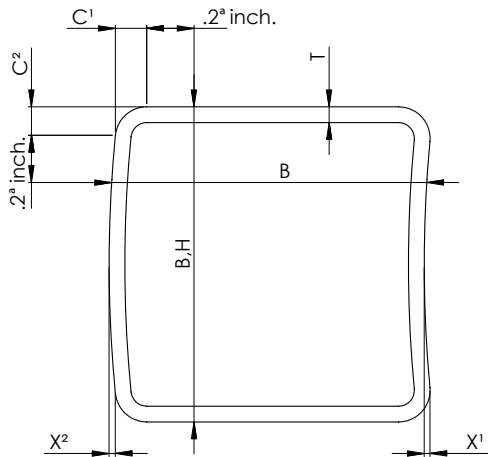
BUNDLE PACKING	
Plastic bands	
Corner protection	

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]		.120	.180	.250	.312	.375	.500	.625
5	5	7.85	11.50	15.53				
6	6	9.50	13.97	18.96	23.17	27.24	35.73	
7	7	11.14	16.44	22.38	27.44	32.38	41.58	
8	8	12.78	18.90	25.81	31.71	37.52	48.43	58.54
10	10		23.83	32.66	40.26	47.79	62.13	75.67
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
24	24			80.60	100.10	119.71		
32	32				134.30	160.81		
39	39					196.77		

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. 8.5"x8.5"x.5"



<sup>a</sup> This dimension is maximum when measuring B or H and minimum when measuring T

Also available as

See more information on page 3

RECTANGULAR		WEIGHT (LB/FT)						
H x B [inch]		.120	.180	.250	.312	.375	.500	.625
6	2	6.21	9.04	12.11				
6	3	7.03	10.27	13.82				
7	4	8.67	12.74	17.24	21.03	24.67		
8	4	9.50	13.97	18.96	23.17	27.24		
10	6	12.78	18.90	25.81	31.71	37.52	48.43	58.54
12	4	12.78	18.90	25.81	31.71	37.52		
12	8		23.83	32.66	40.26	47.79	62.13	75.67
14	6		23.83	32.66	40.26	47.79	62.13	75.67
14	10		28.77	39.51	48.81	58.06	75.83	9.79
16	4		23.83	32.66	40.26	47.79		
16	12			46.36	57.36	68.34	89.53	109.92
18	6			39.51	48.81	58.06	75.83	92.79
20	4			39.51	48.81	58.06		
20	8			46.36	57.36	68.34	89.53	109.92
20	12			53.21	65.91	78.61	103.23	127.04
20	16			60.06	74.46	88.89	116.93	144.17
24	8			53.21	65.91	78.61		
24	16			66.90	83.00	99.16		
28	8			60.06	74.46	88.89		
32	8			66.90	83.00	99.16		
32	16			80.60	100.10	119.71		
32	24				117.20	140.26		
35	12				97.96	117.14		
35	20				115.06	137.69		
35	28				132.16	158.24		
39	16				115.06	137.69		
39	24				132.16	158.24		

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	±1.0 %, min ± .08"
Concavity / Convexity, X <sup>1</sup> , X <sup>2</sup>	Max. 0.8%
Wall thickness, T	± 10 %
Squareness of sides	90° ± 1°
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 45 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.

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