

DOM Mechanical Steel Tubing

Specifications & Size Ranges

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ArcelorMittal

DOM Mechanical Steel Tubing Specifications & Size Ranges

Mechanical Properties

Tubular Products Division of ArcelorMittals' DOM (Drawn Over Mandrel) mechanical tubing is manufactured to ASTM Specification A513. This product has tensile properties that are comparable to cold-drawn seamless steel tubing of the same steel analysis and nominal size. In addition, the DOM tubing has superior concentricity and a high degree of uniformity in wall thickness. This is not necessarily true of seamless tubing, because starting shell dimensions are not as consistent. If standard 1020 or 1026 DOM tubing does not meet the strength or toughness requirements for an application, our TuffDOM® tubing may be recommended. Greater strength may also be obtained by the use of DOM tubing with heavier walls.



Minimum Mechanical Properties* Welded DOM (Drawn Over Mandrel) As-Drawn and Stress Relief Annealed

Tube Sizes up to and Including 2.750" OD with a Maximum Wall of .125"

SAE Steel Grade	Yield Strength		Tensile Strength		Elongation % in 2" (Strip Section)		Minimum Hardness Rb
	KSI	N/mm2	KSI	N/mm2	As-Drawn	Stress Relieved	
1008	55	379	65	448	10	15	74
1010	60	414	70	483	10	15	79
1015	65	448	75	517	10	15	81
1018	70	483	80	552	10	15	83
1020	65	483	75	552	10	15	83
1021	75	517	85	586	8	15	87
1025	75	517	85	586	8	15	87
1026	75	552	85	621	8	15	90
**TuffDOM 520	75	552	85	621	—	15	90
1030	80	552	90	621	8	12	91
**1035	85	586	95	655	—	10	93
**TuffDOM 620	90	655	100	724	—	15	96

Tube Sizes over 2.750" OD and/or Walls Heavier Than .125"

SAE Steel Grade	Yield Strength		Tensile Strength		Elongation % in 2" (Strip Section)		Minimum Hardness Rb
	KSI	N/mm2	KSI	N/mm2	As-Drawn	Stress Relieved	
1008	50	345	60	414	10	15	68
1010	55	379	65	448	10	15	72
1015	58	400	67	462	10	15	74
1018	60	414	70	483	10	15	80
1020	60	414	70	483	10	15	80
1021	70	483	80	552	8	15	85
1025	70	483	80	552	8	15	85
1026	75	517	85	586	8	15	85
**TuffDOM 520	75	517	85	586	—	18	85
1030	75	517	85	586	8	12	85
**1035	80	552	90	621	—	10	90
**TuffDOM 620	90	621	100	690	—	15	92

* Please submit special mechanical property requirements for review.
**Not normally purchased in the unannealed condition.



**Chemical Composition Limits (%)
of Selected DOM Tubing Steel Grades**

SAE Grade	C	Mn	P (max.)	S (max.)	Micro-alloying Elements	Al (min.)	Si	Cr	Mo
1008	0.10 max.	0.50 max.	0.030	0.035		0.020			
1010	0.08 - 0.13	0.30 - 0.60	0.030	0.035		0.020			
1015	0.12 - 0.18	0.30 - 0.60	0.030	0.035		0.020			
1018	0.14 - 0.20	0.60 - 0.90	0.030	0.035		0.020			
1020	0.17 - 0.23	0.30 - 0.60	0.030	0.035		0.020			
1021	0.17 - 0.23	0.60 - 0.90	0.030	0.035		0.020			
1025	0.22 - 0.28	0.30 - 0.60	0.030	0.035		0.020			
1026	0.22 - 0.28	0.60 - 0.90	0.030	0.035		0.020			
TuffDOM 520	0.13 - 0.18	1.20 - 1.50	0.020	0.015		0.020			
1030	0.27 - 0.34	0.60 - 0.90	0.030	0.035		0.020			
1035	0.31 - 0.38	0.60 - 0.90	0.030	0.035		0.020			
TuffDOM 620	0.13 - 0.18	1.20 - 1.50	0.020	0.015	0.15 max.*	0.020			

* Vanadium addition

Quench and Temper Heat Treating

Tubular Products offers quench and temper heat treatment for specialized mechanical tubing products. This tubing is used in oil drilling and production, automotive, industrial, agricultural and construction equipment and other applications. This treatment is available for tubing 1.500" through 12.000" OD in wall thicknesses 0.156" through 1.500" and in lengths 12' through 50'.

Wall Uniformity & Concentricity

Uniform wall thickness is the major asset of Tubular Products' DOM tubing.

Seamless tubing, formed by forging a rotating, heated, solid-steel round over a piercing point, inherently possesses some spiraling eccentricity, since it is not possible to hold the piercing point to the exact center of the round.

Tubular Products' DOM tubing usually does not display such eccentricity and very little wall variation for several basic reasons. The tube is formed from high-quality, flat-rolled steel with very little gauge variation. Any minor deviation in the raw material will run naturally in the same plane throughout the tube length, leaving the bore very straight and true.

Tubular Products' DOM tubing is preferred for those numerous applications that require uniform wall thickness (a prerequisite for concentricity) and a straight bore.



DOM Mechanical Steel Tubing Specifications & Size Ranges

Surface Finish

The excellent surface finish of Tubular Products' DOM tubing can substantially reduce finishing costs of many parts and, with the added advantage of close concentricity, may eliminate finishing operations altogether. Prior to cold drawing, the as-welded tubing is cleaned thoroughly to produce clean, bright inside and outside surfaces. During cold drawing, the cross-sectional reduction is precisely controlled to enhance the surface quality even further.

Tubular Products' DOM tubing is offered in a choice of two ID surface finishes: Commercial Quality, and Honed.

Commercial Quality Tubing

Tubular Products' Commercial Quality DOM tubing may be used as received for many applications. It is produced to the OD, ID and wall thickness tolerances shown in the tables on pages 8 and 9, and to conform to the mechanical properties shown on page 2. When surfaces are to be machined, refer to the tables on pages 6 and 7 for stock allowances that assure 100% cleanup of surface imperfections.

Honed Tubing

Tubular Products' Honed tubing should be specified when a cylinder application requires a higher degree of inside surface smoothness or closer dimensional tolerances than the normal standards for Commercial Quality.

ID tolerances of Honed tubing are held within a range of .003-.007" with a maximum 20 microinch finish on the ID. Each tube length is cleaned and oiled on ID and OD surfaces and is plugged upon completion of the honing operation.

Outside Diameter		WALL THICKNESS																											
		mm	1.65	2	2.16	2.41	2.79	3	3.18	3.43	3.81	4	4.19	4.57	4.78	5	5.16	5.59	6	6.10	6.35	6.60	7	7.21	7.62	7.94	8		
		Inches	.065	.079	.085	.095	.110	.118	.125	.135	.150	.157	.165	.180	.188	.197	.203	.220	.236	.240	.250	.260	.276	.284	.300	.313	.315		
3/4	.750	19.05																											
7/8	.875	22.23																											
1	1.000	25.4																											
1 1/8	1.125	28.58																											
1 1/4	1.250	31.75																											
1 1/2	1.500	38.1																											
1 3/4	1.625	41.28																											
1 7/8	1.875	47.63																											
2	2.000	50.8																											
2 1/4	2.250	57.15																											
2 1/2	2.375	60.33																											
2 3/4	2.625	66.68																											
3	3.000	76.2																											
3 1/4	3.250	82.55																											
3 1/2	3.500	88.9																											
3 3/4	3.750	95.25																											
4	4.000	101.6																											
4 1/4	4.250	107.95																											
4 1/2	4.500	114.3																											
4 3/4	4.750	120.65																											
5	5.000	127																											
5 1/4	5.250	133.35																											
5 1/2	5.500	139.7																											
5 3/4	5.750	146.05																											
6	6.000	152.4																											
6 1/4	6.250	158.75																											
6 1/2	6.500	165.1																											
6 3/4	6.750	171.45																											
7	7.000	177.8																											
7 1/4	7.250	184.15																											
7 1/2	7.500	190.5																											
7 3/4	7.750	196.85																											
8	8.000	203.2																											
8 1/4	8.250	209.55																											
8 1/2	8.500	215.9																											
8 3/4	8.750	222.25																											
9	9.000	228.6																											
9 1/4	9.250	234.95																											
9 1/2	9.500	241.3																											
9 3/4	9.750	247.65																											
10	10.000	254																											
10 1/4	10.250	260.35																											
10 1/2	10.500	266.7																											
10 3/4	10.750	273.05																											
11	11.000	279.4																											
11 1/4	11.250	285.75																											
11 1/2	11.500	292.1																											
11 3/4	11.750	298.45																											
12	12.000	304.8																											

DOM Mechanical Steel Tubing Specifications & Size Ranges

Machining Qualities

The widespread use of Tubular Products' DOM tubing for machined parts is due primarily to its remarkable concentricity. This reduces or eliminates certain machining operations and their costs.

The machining qualities of DOM tubing are similar to that of seamless tubing of the same size and analysis. As-drawn Tubular Products' DOM tubing has clean, bright surfaces, high strength and excellent machinability. The Rockwell hardness of

TuffDOM® 520 steel typically will run Rb 85 minimum, ideal for honing, centerless grinding and other circumferential machining.

Machining Allowances for DOM Tubing

Minimum Diameter Stock Allowance for Outside and Inside Diameter for the Removal of Imperfections by Machining

Finished OD Inch (mm)	Finished Wall Thickness, Inches (Millimeters)						Greater than .625* (15.88)
	.125 & under (3.18)	.126 – .188 (3.20) – (4.78)	.189 – .250 (4.80) – (6.35)	.251 – .375 (6.37) – (9.53)	.376 – .500 (9.55) – (12.70)	.501 – .625 (12.73) – (15.88)	
Up to—3.000 (76.20)	0.012 (0.30)	0.014 (0.36)	0.017 (0.43)	0.020 (0.51)	0.021 (0.53)	0.025 (0.64)	— —
3.001—4.000 (76.21)—(101.60)	0.014 (0.36)	0.017 (0.43)	0.020 (0.51)	0.021 (0.53)	0.025 (0.64)	0.028 (0.71)	0.030 (0.76)
4.001—6.000 (101.61)—(152.40)	0.020 (0.51)	0.021 (0.53)	0.025 (0.64)	0.028 (0.71)	0.030 (0.76)	0.032 (0.81)	0.035 (0.89)
6.001—8.000 (152.41)—(203.20)	— —	0.025 (0.64)	0.028 (0.71)	0.030 (0.76)	0.032 (0.81)	0.035 (0.89)	0.039 (0.99)
8.001—10.500 (203.21)—(266.70)	— —	— —	— —	0.034 (0.86)	0.035 (0.89)	0.039 (0.99)	0.042 (1.07)
10.501—12.000 (266.71)—(304.80)	— —	— —	— —	0.037 (0.94)	0.039 (0.99)	0.042 (1.07)	0.044 (1.12)

Notes:

- * Any size having a wall thickness over .650" must be referred to the mill for full development.
- Camber: For every foot (12") or fraction thereof over one foot (12") of length, add .010" for camber.
- For steel grades with .030% carbon and above, a minimum of .015" stock is required for removal of decarburization.
- If a specific size is desired, these allowances plus normal size tolerances must be considered in calculating the size to be ordered.
- These allowances are based on conventional chucking procedures.

EXAMPLE #1:

Based on machining OD & ID in 4" (101.60) lengths

Finished machine size 4.000" (101.60) OD x 3.500" (88.90) ID
 + .000 (0.00) + .002 (0.05)
 - .002 (0.05) - .000 (0.00)

Finish machine size:

Max. OD 4.000" (101.60) x Min. ID 3.500" (88.90)
 Allowance + .020 (0.51) - .020 (0.51)
 4.020" (102.11) 3.480" (88.39)

Order Size:

4.020" (102.11) + .011" (0.28) - .000" (0.00) OD x
 3.480" (88.39) + .000" (0.00) - .011" (0.28) ID x
 .270" (6.86) reference wall

EXAMPLE #2:

Based on machining OD & ID in 6" (152.40) lengths

Finished machine size 8.000" (203.20) OD x 7.400" (187.96) ID
 + .000 (0.00) + .002 (0.05)
 - .002 (0.05) - .000 (0.00)

Finish machine size:

Max. OD 8.000" (203.20) x Min. ID 7.400" (187.96)
 Allowance + .030 (0.76) - .030 (0.76)
 8.030" (203.96) 7.370" (187.20)

Plus possible

Minus OD tol. + .016 (0.41) Minus poss.
 Plus ID tol. - .016 (0.41)
 8.046" (204.37) 7.354" (186.79)

Order Size:

8.046" (204.37) +/- .016" (0.41) OD x
 7.354" (186.79) +/- .016" (0.41) ID x
 .346" (8.79) reference wall



Many users have been pleased to learn that their specified "finish machined dimensions" are available in Tubular Products' DOM tubing sizes,

and that the tube will require no machining. Even when the finished part must have the diameters concentric within close limits, only the nominal cleanup

allowance for removal of surface imperfections needs to be made. No additional stock allowance for eccentricity removal is required.

Centerless Grinding Allowances for DOM Tubing

Minimum Outside Diameter Stock Allowance for the Removal of Outside Surface Imperfections by Centerless Grinding

Finished OD Inch (mm)	Finished Wall Thickness, Inches (Millimeters)						Greater than .625* (15.88)
	.125 & under (3.18)	.126 – .188 (3.20) – (4.78)	.189 – .250 (4.80) – (6.35)	.251 – .375 (6.37) – (9.53)	.376 – .500 (9.55) – (12.70)	.501 – .625 (12.73) – (15.88)	
Up to—3.000 (76.20)	0.012 (0.27)	0.014 (0.36)	0.016 (0.41)	0.020 (0.51)	0.024 (0.61)	0.026 (0.66)	— —
3.001—4.000 (76.21)—(101.60)	0.016 (0.41)	0.018 (0.46)	0.020 (0.51)	0.022 (0.56)	0.024 (0.61)	0.026 (0.66)	0.028 (0.71)
4.001—6.000 (101.61)—(152.40)	0.018 (0.46)	0.020 (0.51)	0.022 (0.56)	0.024 (0.61)	0.026 (0.66)	0.028 (0.71)	0.030 (0.76)
6.001—8.000 (152.41)—(203.20)	— —	0.022 (0.56)	0.026 (0.66)	0.027 (0.69)	0.029 (0.74)	0.031 (0.79)	0.033 (0.84)
8.001—10.500 (203.21)—(266.70)	— —	— —	0.027 (0.69)	0.028 (0.71)	0.030 (0.76)	0.032 (0.81)	0.034 (0.86)
10.501—12.000 (266.71)—(304.80)	— —	— —	— —	0.030 (0.76)	0.032 (0.81)	0.034 (0.86)	0.036 (0.91)

Notes:

- *Any size having a wall thickness over .650" must be referred to the mill for full development.
- For steel grades with .030% carbon and above, a minimum of .015" stock is required for removal of decarburization.
- If a specific size is desired, these allowances plus normal size tolerances must be considered in calculating the size to be ordered.

EXAMPLE #1:

OD to be centerless ground to 4.000/3.996" (101.60/101.50) OD x 3.500" (88.90) ID x .250" (6.35) reference wall

Max. finish ground OD 4.000" (101.60)
 Plus allowance + .020 (0.51)
 Minimum Ordered OD 4.020" (102.11)

Order Size:

4.020" (101.96) OD + .011" (0.28) – .000" (0.00) x
 3.500" (88.90) ID + .000" (0.00) – .011" (0.28) ID x
 .260" (6.60) reference wall

EXAMPLE #2:

OD to be centerless ground to 8.000/7.995" (203.20/203.07) OD x 7.252" (184.20) ID x .374" (9.50) reference wall

Max finish ground OD 8.000" (203.20)
 Plus allowance + .027 (0.69)
 8.027" (203.89)
 Plus possible
 Minus OD tolerance + .016 (0.41)
 8.043" (204.29)

Order Size:

8.043" (204.29) +/- .016" (0.41) OD x
 7.252" (184.20) +/- .016" (0.41) ID x
 .396" (10.06) reference wall

DOM Mechanical Steel Tubing Specifications & Size Ranges

Honing Allowances for DOM Tubing

Minimum Inside Diameter Stock Allowance for the Removal of Inside Surface Imperfections by Honing Operations

Finished OD Inch (mm)	Finished Wall Thickness, Inches (Millimeters)						Greater than .625* (15.88)
	.125 & under (3.18)	.126 – .188 (3.20) – (4.78)	.189 – .250 (4.80) – (6.35)	.251 – .375 (6.37) – (9.53)	.376 – .500 (9.55) – (12.70)	.501 – .625 (12.73) – (15.88)	
Up to—3.000 (76.20)	0.006 (0.15)	0.007 (0.18)	0.008 (0.20)	0.009 (0.23)	0.010 (0.25)	— —	— —
3.001—4.000 (76.21)—(101.60)	0.007 (0.18)	0.008 (0.20)	0.009 (0.23)	0.010 (0.25)	0.011 (0.28)	0.012 (0.30)	0.014 (0.36)
4.001—6.000 (101.61)—(152.40)	0.008 (0.20)	0.009 (0.23)	0.010 (0.25)	0.011 (0.28)	0.012 (0.30)	0.013 (0.33)	0.015 (0.38)
6.001—8.000 (152.41)—(203.20)	0.008 (0.20)	0.009 (0.23)	0.010 (0.25)	0.011 (0.28)	0.013 (0.33)	0.014 (0.36)	0.016 (0.41)
8.001—10.500 (203.21)—(266.70)	— —	— —	0.011 (0.28)	0.012 (0.30)	0.013 (0.33)	0.015 (0.38)	0.017 (0.43)
10.501—12.000 (266.71)—(304.80)	— —	— —	— —	0.013 (0.33)	0.014 (0.38)	0.015 (0.38)	0.018 (0.46)

Notes:

- *Any size having a wall thickness over .650" must be referred to the mill for full development.
- For steel grades with .030% carbon and above, a minimum of .015" stock is required for removal of decarburization.
- If a specific size is desired, these allowances plus normal size tolerances must be considered in calculating the size to be ordered.

EXAMPLE #1:

4.000" (101.60) OD tube which will clean-up by honing to 3.500/
3.504" (88.90/89.00) ID

(1) 4.000" (101.60) OD – 3.500" (88.90) ID = .500" (12.70) ÷ 2 = .250" (6.35)
nominal wall
Minimum clean-up allowance for removal of ID surface imperfections
is .009" (0.23)

(2) Minimum honed ID 3.500" (88.90)
Less allowance $\frac{- .009 \quad (0.23)}{3.491" \quad (88.67)}$

(3) Order Size:
4.000" (101.60) + .011" (0.28) – .000" (0.00) OD x
3.491" (88.67) + .000" (0.00) – .011" (0.28) ID x
.255" (6.48) reference wall

EXAMPLE #2:

8.000" (203.20) OD tube which will clean-up by honing to 7.250/
7.255" (184.15/184.28) ID

(1) 8.000" (203.20) OD – 7.250" (184.15) ID = .750" (19.05) ÷ 2 =
.375" (9.53) nominal wall
Minimum clean-up allowance for removal of ID surface
imperfections is .011" (0.28)

(2) Minimum honed ID 7.250" (184.15)
Less allowance $\frac{- .011 \quad (0.28)}{7.239" \quad (183.87)}$

Less possible Plus ID
tolerance $\frac{- .016 \quad (0.41)}{7.223" \quad (183.46)}$

(3) Order Size:
8.000" (203.20) +/- .016" (0.41) OD x
7.223" (183.46) +/- 0.16" (0.41) ID x
.389" (9.88) reference wall





Skiving Allowances for DOM Tubing

Minimum Inside Diameter Stock Allowance for the Removal of Inside Surface Imperfections by Skiving Operations

Finished OD Inch (mm)	Finished Wall Thickness, Inches (Millimeters)						Greater than .625* (15.88)
	.125 & under (3.18)	.126 – .188 (3.20) – (4.78)	.189 – .250 (4.80) – (6.35)	.251 – .375 (6.37) – (9.53)	.376 – .500 (9.55) – (12.70)	.501 – .625 (12.73) – (15.88)	
Up to—3.000 (76.20)	0.012 (0.30)	0.014 (0.36)	0.016 (0.41)	0.018 (0.46)	0.020 (0.51)	— —	— —
3.001—4.000 (76.21)—(101.60)	0.013 (0.33)	0.015 (0.38)	0.017 (0.43)	0.019 (0.48)	0.021 (0.53)	0.024 (0.61)	0.026 (0.66)
4.001—6.000 (101.61)—(152.40)	0.014 (0.36)	0.016 (0.41)	0.018 (0.46)	0.020 (0.51)	0.022 (0.56)	0.025 (0.64)	0.027 (0.69)
6.001—8.000 (152.41)—(203.20)	0.016 (0.41)	0.018 (0.46)	0.020 (0.51)	0.022 (0.56)	0.024 (0.61)	0.026 (0.66)	0.028 (0.71)
8.001—10.500 (203.21)—(266.70)	— —	— —	0.021 (0.53)	0.023 (0.58)	0.025 (0.64)	0.027 (0.69)	0.029 (0.74)
10.501—12.000 (266.71)—(304.80)	— —	— —	— —	0.024 (0.61)	0.026 (0.66)	0.028 (0.71)	0.030 (0.76)

Notes:

- *Any size having a wall thickness over .650" must be referred to the mill for full development.
- For steel grades with .030% carbon and above, a minimum of .015" stock is required for removal of decarburization.
- If a specific size is desired, these allowances plus normal size tolerances must be considered in calculating the size to be ordered.

EXAMPLE #1:

4.000" (101.60) OD tube which will clean-up by skiving to 3.500/
3.504" (88.90/89.00) ID

(1) 4.000" (101.60) OD – 3.500" (88.90) ID = .500" (12.70) ÷ 2 =
.250" (6.35) nominal wall
Minimum clean-up allowance for removal of ID surface imperfections is .017"
(0.43)

(2) Minimum skived ID 3.500" (88.90)
Less allowance $\frac{- .017 \quad (0.43)}{3.483" \quad (88.47)}$

(3) Order Size:
4.000" (101.60) + .011" (0.28) – .000" (0.00) OD x
3.483" (88.47) + .000" (0.00) – .011" (0.28) ID x
.259" (6.58) reference wall

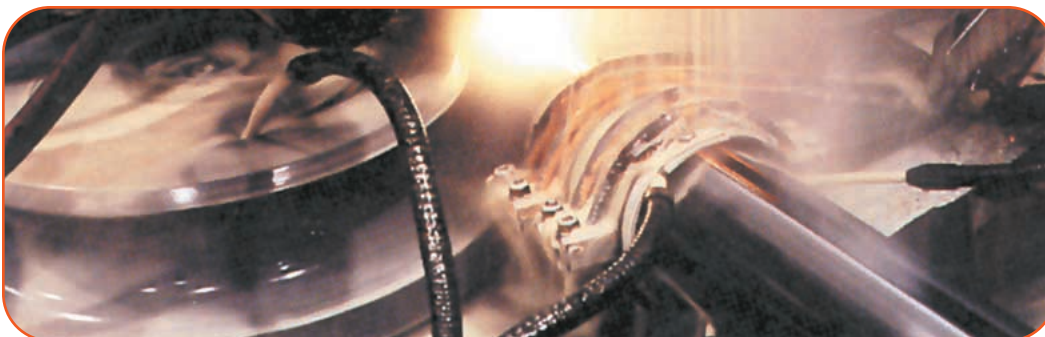
EXAMPLE #2:

8.000" (203.20) OD tube which will clean-up by skiving to 7.250/
7.255" (184.15/184.28) ID

(1) 8.000" (203.20) OD - 7.250" (184.15) ID = .750" (19.05) ÷ 2 = .375"
(9.53) nominal wall
Minimum clean-up allowance for removal of ID surface imperfections is
.022" (0.56)

(2) Minimum skived ID 7.250" (184.15)
Less allowance $\frac{- .022 \quad (0.56)}{7.228" \quad (183.59)}$
Less possible Plus ID
tolerance $\frac{- .016 \quad (0.41)}{7.212" \quad (183.18)}$
Ordered ID size

(3) Order Size:
8.000" (203.20) +/- .016" (0.41) OD x
7.212" (183.18) +/- 0.16" (0.41) ID x
.394" (10.01) reference wall



DOM Mechanical Steel Tubing Specifications & Size Ranges

Tolerances

With each tube application, certain dimensions are more critical than others. The most important usually concern outside and inside diameters and wall thickness. When ordering, specify only the two dimensions most important to your application: (a) OD and ID, (b) OD and wall thickness, or (c) ID and wall thickness. Your Tubular Products representative will provide helpful specification assistance. Or, you may contact one of our inside sales representatives. The telephone and fax numbers are listed on the back of this brochure.



OD and ID Tolerances – DOM Tubing

Inches						Millimeters					
OD	Wall, Percent of OD	OD		ID		OD	Wall, Percent of OD	OD		ID	
		Over	Under	Over	Under			Over	Under	Over	Under
.500 to 1.699	All	0.005	0.000	0.000	0.005	12.70 to 43.16	All	0.13	0.00	0.00	0.13
1.700 – 2.099	All	0.006	0.000	0.000	0.006	43.17 – 53.32	All	0.15	0.00	0.00	0.15
2.100 – 2.499	All	0.007	0.000	0.000	0.007	53.33 – 63.48	All	0.18	0.00	0.00	0.18
2.500 – 2.899	All	0.008	0.000	0.000	0.008	63.49 – 73.64	All	0.20	0.00	0.00	0.20
2.900 – 3.299	All	0.009	0.000	0.000	0.009	73.65 – 83.80	All	0.23	0.00	0.00	0.23
3.300 – 3.699	All	0.010	0.000	0.000	0.010	83.81 – 93.96	All	0.25	0.00	0.00	0.25
3.700 – 4.099	All	0.011	0.000	0.000	0.011	93.97 – 104.12	All	0.28	0.00	0.00	0.28
4.100 – 4.499	All	0.012	0.000	0.000	0.012	104.13 – 114.28	All	0.30	0.00	0.00	0.30
4.500 – 4.899	All	0.013	0.000	0.000	0.013	114.29 – 124.44	All	0.33	0.00	0.00	0.33
4.900 – 5.299	All	0.014	0.000	0.000	0.014	124.45 – 134.60	All	0.36	0.00	0.00	0.36
5.300 – 5.549	All	0.015	0.000	0.000	0.015	134.61 – 140.95	All	0.38	0.00	0.00	0.38
5.550 – 5.999	All	0.009	0.009	0.009	0.009	140.96 – 152.38	All	0.23	0.23	0.23	0.23
6.000 – 6.499	All	0.010	0.010	0.010	0.010	152.39 – 165.08	All	0.25	0.25	0.25	0.25
6.500 – 6.999	All	0.012	0.012	0.012	0.012	165.09 – 177.78	All	0.30	0.30	0.30	0.30
7.000 – 7.499	All	0.013	0.013	0.013	0.013	177.79 – 190.48	All	0.33	0.33	0.33	0.33
7.500 – 7.999	All	0.015	0.015	0.015	0.015	190.49 – 203.18	All	0.38	0.38	0.38	0.38
8.000 – 8.499	All	0.016	0.016	0.016	0.016	203.19 – 215.88	All	0.41	0.41	0.41	0.41
8.500 – 8.999	All	0.017	0.017	0.017	0.017	215.89 – 228.58	All	0.43	0.43	0.43	0.43
9.000 – 9.499	All	0.019	0.019	0.019	0.019	228.59 – 241.28	All	0.48	0.48	0.48	0.48
9.500 – 9.999	All	0.020	0.020	0.020	0.020	241.29 – 253.98	All	0.51	0.51	0.51	0.51
10.000 – 10.999	All	0.022	0.022	0.022	0.022	253.99 – 279.38	All	0.56	0.56	0.56	0.56
11.000 – 12.000	All	0.025	0.025	0.025	0.025	279.39 – 304.80	All	0.64	0.64	0.64	0.64

The ovality shall be within the above tolerance except when the wall thickness is less than 3% of the O.D. In such cases, the additional ovality shall be as follows, but the mean diameter shall be within the specified tolerance.

OD Inches	Additional Ovality Tolerance Inch	OD Millimeters	Additional Ovality Tolerance Millimeters
Up to 2.000	.010	Up to 50.80	0.25
Over 2.000 – 3.000 Inclusive	.015	Over 50.80 – 76.20 Inclusive	0.38
Over 3.000 – 4.000 Inclusive	.020	Over 76.20 – 101.60 Inclusive	0.51
Over 4.000 – 5.000 Inclusive	.025	Over 101.60 – 127.00 Inclusive	0.64
Over 5.000 – 6.000 Inclusive	.030	Over 127.00 – 152.40 Inclusive	0.76
Over 6.000 – 7.000 Inclusive	.035	Over 152.40 – 177.80 Inclusive	0.89
Over 7.000 – 8.000 Inclusive	.040	Over 177.80 – 203.20 Inclusive	1.02
Over 8.000 – 9.000 Inclusive	.045	Over 203.20 – 228.60 Inclusive	1.14
Over 9.000 – 10.000 Inclusive	.050	Over 228.60 – 254.00 Inclusive	1.27
Over 10.000 – 11.000 Inclusive	.055	Over 254.00 – 279.40 Inclusive	1.40
Over 11.000 – 12.000 Inclusive	.060	Over 279.40 – 304.80 Inclusive	1.52



Wall Thickness Tolerances—DOM Tubing

Inches					Millimeters				
Wall Thickness	Outside Diameter				Wall Thickness	Outside Diameter			
	Up to .875	Over .875 to 1.875	Up over 1.875 to 3.750	Over 3.750 to 12.000		Up to 22.23	Over 22.23 to 47.63	Over 47.63 to 95.25	Over 95.25 to 304.80
.065	+.002 -.002	+.002 -.003	+.002 -.003	+.004 -.004	1.65	+0.05 -0.05	+0.05 -0.08	+0.05 -0.08	+0.10 -0.10
.083	+.002 -.002	+.002 -.003	+.003 -.003	+.004 -.005	2.11	+0.05 -0.05	+0.05 -0.08	+0.08 -0.08	+0.10 -0.13
.095	+.002 -.002	+.002 -.003	+.003 -.003	+.004 -.005	2.41	+0.05 -0.05	+0.05 -0.08	+0.08 -0.08	+0.10 -0.13
.109	+.002 -.003	+.002 -.004	+.003 -.003	+.005 -.005	2.77	+0.05 -0.08	+0.05 -0.10	+0.08 -0.08	+0.13 -0.13
.120		+.002 -.004	+.003 -.003	+.005 -.005	3.05		+0.05 -0.10	+0.08 -0.08	+0.13 -0.13
.134		+.002 -.004	+.003 -.003	+.005 -.005	3.40		+0.05 -0.10	+0.08 -0.08	+0.13 -0.13
.148		+.002 -.004	+.003 -.003	+.005 -.005	3.76		+0.05 -0.10	+0.08 -0.08	+0.13 -0.13
.165		+.003 -.004	+.003 -.004	+.005 -.006	4.19		+0.08 -0.10	+0.08 -0.10	+0.13 -0.15
.180		+.004 -.004	+.003 -.005	+.006 -.006	4.57		+0.10 -0.10	+0.08 -0.13	+0.15 -0.15
.203		+.004 -.005	+.004 -.005	+.006 -.007	5.16		+0.10 -0.13	+0.10 -0.13	+0.15 -0.18
.220		+.004 -.006	+.004 -.006	+.007 -.007	5.59		+0.10 -0.15	+0.10 -0.15	+0.18 -0.18
.238		+.005 -.006	+.005 -.006	+.007 -.007	6.05		+0.13 -0.15	+0.13 -0.15	+0.18 -0.18
.259		+.005 -.006	+.005 -.006	+.007 -.007	6.58		+0.13 -0.15	+0.13 -0.15	+0.18 -0.18
.284		+.005 -.006	+.005 -.006	+.007 -.007	7.21		+0.13 -0.15	+0.13 -0.15	+0.18 -0.18
.300		+.006 -.006	+.006 -.006	+.008 -.008	7.62		+0.15 -0.15	+0.15 -0.15	+0.20 -0.20
.320		+.007 -.007	+.007 -.007	+.008 -.008	8.13		+0.18 -0.18	+0.18 -0.18	+0.20 -0.20
.344		+.008 -.008	+.008 -.008	+.009 -.009	8.74		+0.20 -0.20	+0.20 -0.20	+0.23 -0.23
.375			+.009 -.009	+.009 -.009	9.53			+0.23 -0.23	+0.23 -0.23
.400			+.010 -.010	+.010 -.010	10.16			+0.25 -0.25	+0.25 -0.25
.438			+.011 -.011	+.011 -.011	11.13			+0.28 -0.28	+0.28 -0.28
.480			+.012 -.012	+.012 -.012	12.19			+0.30 -0.30	+0.30 -0.30
.531			+.013 -.013	+.013 -.013	13.49			+0.33 -0.33	+0.33 -0.33
.563			+.013 -.013	+.013 -.013	14.30			+0.33 -0.33	+0.33 -0.33
.580			+.014 -.014	+.014 -.014	14.73			+0.36 -0.36	+0.36 -0.36
.600			+.015 -.015	+.015 -.015	15.24			+0.38 -0.38	+0.38 -0.38
.625			+.016 -.016	+.016 -.016	15.88			+0.41 -0.41	+0.41 -0.41
.650			+.017 -.017	+.017 -.017	16.51			+0.43 -0.43	+0.43 -0.43
.651 to .685	Contact the mill				16.52 to 17.40	Contact the mill			

For intermediate wall: Use the tolerance for the nearest listed wall. If the intermediate wall falls equally between two listed walls, use the greater tolerance.

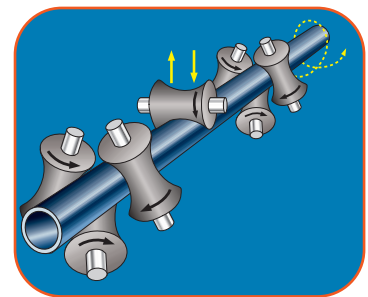
Straightness Tolerances

Since Tubular Products considers straightness to be important in virtually all DOM tube applications, every foot of our DOM tubing passes through special rollers (shown in the drawing at the bottom of this page) which assure complete straightness. The tube is also checked to commercial straightness tolerances.

Commercial Straightness Tolerances

Maximum acceptable tolerances are .030" in any 3 feet of length up to and including 8.000" OD (up to and including 203.20 mm OD, 1:1200); and .060" in any 3 feet of length over 8.000" OD (over 203.20 mm OD, 1:600).

Straightness, or camber, is measured for any 3 feet or meter of length with a 3-foot straight-edge and a feeler gauge.



Special arrangement of rollers assures uniform tube straightness.

DOM Mechanical Steel Tubing Specifications & Size Ranges

Cut-Length Tolerances – Lathe-cut DOM

Inches					Millimeters				
OD Inches	Lengths—Inches and Feet				OD Millimeters	Lengths—Millimeters			
	6 inches to under 12 inches	12 inches to under 48 inches	4 feet to under 10 feet	10 feet to 24 feet inclusive		152 mm to under 304.80 mm	304.80 mm to under 1219.20 mm	1219.20 mm to under 3048 mm	3048 mm to 7315.20 mm incl.
up to 3.000	± 1/64	± 1/32	± 3/64	± 1/8	up to 76.21	± 0.40	± 0.79	± 1.19	± 3.18
3.001 to 6.000	± 1/32	± 3/64	± 1/16	± 1/8	76.22 to 152.41	± 0.79	± 1.19	± 1.59	± 3.18
6.001 to 9.000	± 1/16	± 1/16	± 1/8	± 1/8	152.42 to 228.61	± 1.59	± 1.59	± 3.18	± 3.18
9.001 to 12.000	± 3/32	± 3/32	± 1/8	± 1/8	228.62 to 304.80	± 2.38	± 2.38	± 3.18	± 3.18

For each additional 10 feet, or fraction thereof over and beyond 24 feet, make an additional allowance of ±1/16 inch.

For each additional 3048 mm or fraction thereof over and beyond 7315.20 mm, make an additional allowance of 1.59 millimeters.

Tube Cutting

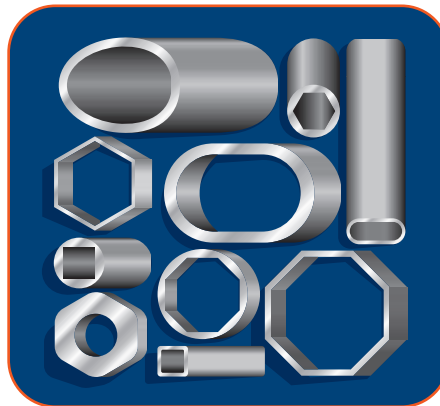
Tubular Products has some of the most extensive tube cutting facilities in the industry. Tolerances as close as ± .005" are available on certain sizes.

Special Tubular Shapes

Special shapes produced from Tubular Products' DOM mechanical tubing are often the most practical answer to design problems.

These tubular shapes are cold-drawn to the specific configuration required. They reduce or even eliminate costly machining while serving as a superior, money-saving alternative to fabrications, castings or parts made from solid bar stock.

Tubular Products' single-source reliability starts with application engineering assistance and covers every step from manufacture of the tubing



through production of the final shape in the Cold Draw Department.

Our engineering personnel select the proper combination of manufacturing processes to produce a custom configuration. They design the dies and mandrels, which are then produced in our Machine Shop. Bench operators draw the round tube through the dies and over the mandrels to create the shape. Our steel tubing and special shapes are produced to inch or metric dimensions, with dimensional control as developed by the specific requirements.

Testing and Inspections

To assure sound weld quality, all Tubular Products' DOM mechanical tubing is nondestructively tested continuously on the weld line and prior to shipping.

Tubular Products' standard nondestructive electronic testing procedures are in complete compliance with the guidelines set forth in paragraph S8 of ASTM specification A-513.

The types of testing employed include Ultrasonic, Flux Leakage and Eddy Current.

Other Tests and Inspections

Tube samples taken during welding are subjected to a number of destructive tests depending upon the end use and specifications. Throughout production, Tubular Products DOM mechanical tubing is also inspected visually and dimensionally to assure strict compliance with customer specifications.

MECHANICAL TUBING BUSINESS

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