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Houston Texas 77041 USA
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PRODUCT RANGE EN 10/2024

Material solutions and tube expertise

DMV USA, Inc.
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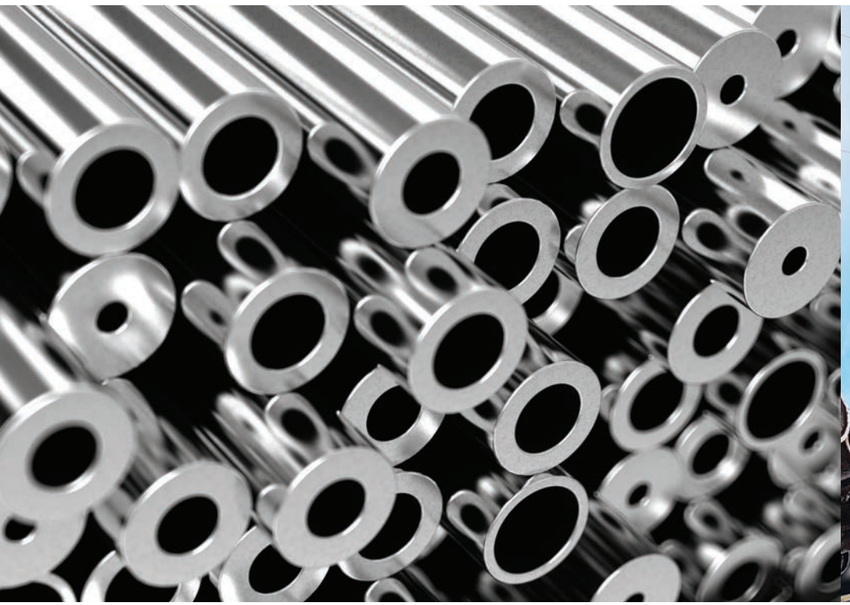
www.dmvtubes.com

Product Range

Seamless Stainless Steel & Nickel-Based Alloy Tubing and Piping



Seamless stainless steel and nickel-based alloy tubes, pipes and hollow bar are our everyday passion at DMV.

With a global network of plants and offices, we are a market leader and a consistently reliable business partner, ensuring quick and customer focused answers to changing market requirements.

Our customers profit from one of the most comprehensive product ranges in our business:

- from small instrumentation tubing to large pipe sizes with outside diameters from1.6 to 280 mm (from 0..163 up to 11 inches) and with wall thicknesses from 0.5 up to 50 mm (from 0.02 up to 1.97 inches)
- Materials from standard austenitic stainless, duplex and super-duplex steels to highly sophisticated nickel-based alloys – this variety offers highest corrosion resistance, heat resistance and/or high-temperature, high-strength materials.

We combine high quality products for critical environments with efficient and reliable services: our customers thus enjoy a supportive personal account management.

Ongoing cycles of investment ensure that we work according to the latest technical standards. This gives us the trustworthiness to equip the so called "critical spots" of customer's plants, products and processes with the special qualities of our tubes and pipes.

Typically, these "critical" service conditions are defined e.g. by:

- high & low temperatures
- high pressure
- high precision – tolerances and surface finish
- aggressive media (acids or basic)

Our tubes and pipes come into operation mainly in the following sectors:

Instrumentation Tubes
With applications in market segments such as chemical, Oil & Gas, aerospace, pharmaceutical and semiconductor for analysis, measurement instruments and hydraulic systems.

Boiler Tubes
In power generation plants in applications such as reheaters and superheaters

Nuclear Tubes
(Power Gen, Waste treatment, Fuel fabrication).

NSSS piping, Heat exchanger tubes (U-bent & straight), In-core instrumentation tubes, Instrumentation tubes for quality class 1, 2, 3 of the nuclear power application.

Furnace Tubes
Industrial furnaces and similar applications demand our heat-, high temperature- and corrosion resistant austenitic steel (usually with high carbon contents) and nickel-based alloys.

Heat Exchanger Tubes
Serving e.g. refineries, (petro-)chemical and pharmaceutical industries as well as fertilizer production and food industries.

Oil and Gas Tubes

- OCTG (Oil Country Tubular Goods)
  Onshore and offshore oil and gas exploration and production need special tubular products to cope with high pressure and/or high temperature conditions as well as with highly aggressive substances
- Umbilical Tubes
  Subsea applications have to withstand aggressive sea water and must be essentially inert to the commonly used fluids transmitted through the tubes
- Other Upstream and Downstream Applications
  These comprise e.g. Subsea Flowlines, Risers and Piping systems, Surface Piping and Line pipes

Hollow Bar and Mechanical Tubes and Pipes
Used highly cost effective quality raw material for radially machined components and a favorable alternative to use of solid bars.

Aerospace Tubes and Pipes and Components
From our Aerospace manufacturing centre of excellence in Issoudun, France we manufacture precision tubes for airframe hydraulic systems, landing gear and engine applications

General Tubes and Pipes
We also offer tubes for general use and different corrosion and heat resistant applications

DMV Stainless Tubes products are exported worldwide to all continents for use within plants, products and processes, e.g. in:

- Onshore and offshore oil and gas industry
- Chemical and petrochemical industry
- Energy and power generation
- Mechanical- and plant engineering
- Machine tool manufacturing
- Automotive industry
- Aerospace industry
- Medical & healthcare technology
- Environmental engineering (water treatment and waste incineration)
- Nuclear industry
- Ship-yard industry
- Food processing industry
- Coal gasification
- Oil & gas exploration
- Fertilizer production
- Environmental protection
- Naval engineering
- Biotechnology

Basic Material Classifications

You can find the following materials within the framework of our manufacturing programme:

Stainless Steels

Corrosion resistant stainless steels

Our product range offers our customers austenitic, martensitic and duplex classes of stainlesssteels.

Austenitic-ferritic stainless steels (duplex and super duplex steels) are characterised by their excellent mechanical properties, particularly their high stress corrosion cracking resistance. They are especially well-suited for maritime applications and in the chemical industry. Their excellent resistance to corrosion enables them to withstand concentrated chloride medium, particularly under mechanical stress. This makes them superior to austenitic steels in many cases.

Austenitic corrosion resistant stainless steels primarily include materials with higher alloys (e.g. nickel, chrome and molybdenum). They are resistant to different types of corrosion caused by wet chemical influences, and are still able to maintain an austenitic face centred cubic matrix. This creates a range of highly versatile stainless steels.

High temperature stainless steels

These steels maintain their mechanical properties when exposed to elevated temperatures on either a short- or long-term basis.

Depending on the area of application these temperatures can rise e.g. to

- 500°C (932°F) in chemical processes
- 700°C (1,292°F) in power plant applications
- 1,000°C (1,832°F) for furnace engineering

With their increased concentration of chrome, silicon and aluminium they are especially resistant under the influence of hot gases as well as in salt and metal melting. However, the individual corrosion resistance is always dependent on the surrounding conditions, and can therefore not be precisely determined in a single testing.

Available upon special request are titanium tubes for heat exchangers and bimetallic tubes for strippers in urea application.

Nickel-Based Alloys

Corrosion resistant nickel-based alloys

Nickel's high degree of corrosion resistance is due to the fact that it is a relatively noble metal within the galvanic electrochemical series of metals.

Adding chrome, molybdenum, copper and other elements forms alloys with even higher resistance to oxidation and corrosion which makes it possible to use them in a wider range of applications. Seamless tubes and pipes made of corrosion resistant nickel-based alloys are the first choice for basic industry manufacturers due to their excellent resistance to various acids (sulphuric acid, hydrochloric acid, phosphoric acid) and alkaline solutions.

High temperature nickel-based alloys

Based on an austenitic structure, high temperature, high strength nickel-based alloys allow further increasing of specific alloying elements, such as chrome, molybdenum, tungsten, titanium, aluminium, niobium, etc. This leads to a very low iron concentration enabling the material to be employed within applications up to 1,100°C (2,012°F) in aggressive atmospheres.

Production Techniques

Our production techniques are adapted to the high quality level required by our customers.

Hot Extrusion

... is a production process for manufacturing hot finished tubes, pipes, re-draw hollows and hollow bars in stainless steels and nickel-based alloys. Our range of dimensions includes

- outside diameters from 32 up to 273 mm (1.26 up to 10.752 inches) and
- wall thicknesses from 3.4 up to 50 mm (0.134 up to 1.97 inches)

Cold Pilgering

... is the preferred production process for seamless, cold- finished, high alloyed stainless steel and nickel-based alloy tubes and pipes. This technique provides a high forming rate, close tolerances and good productivity yields.

Our production range covers

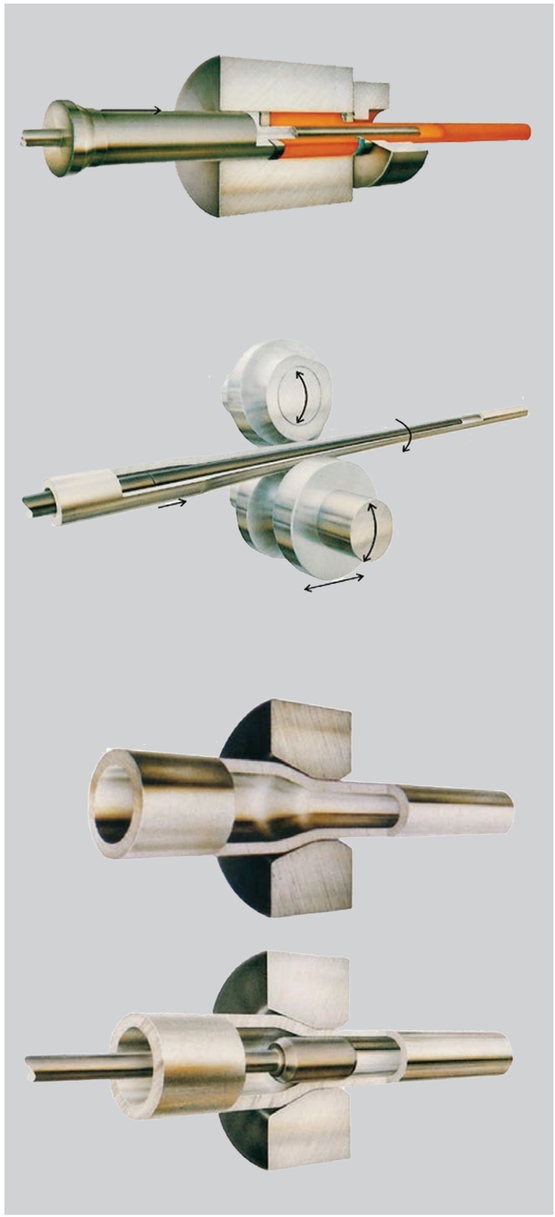
- outside diameters from 6 up to 219.1 mm (0.24 up to 8.63 inches) and
- wall thicknesses from 0.5 up to 30 mm (0.02 up to 1.18 inches)

Cold Drawing

... is the ideal process for achieving very close tolerance ranges, especially for outside diameters. Additionally, the cold drawing process is the perfect choice when a low forming ratio is required.

Our production range covers

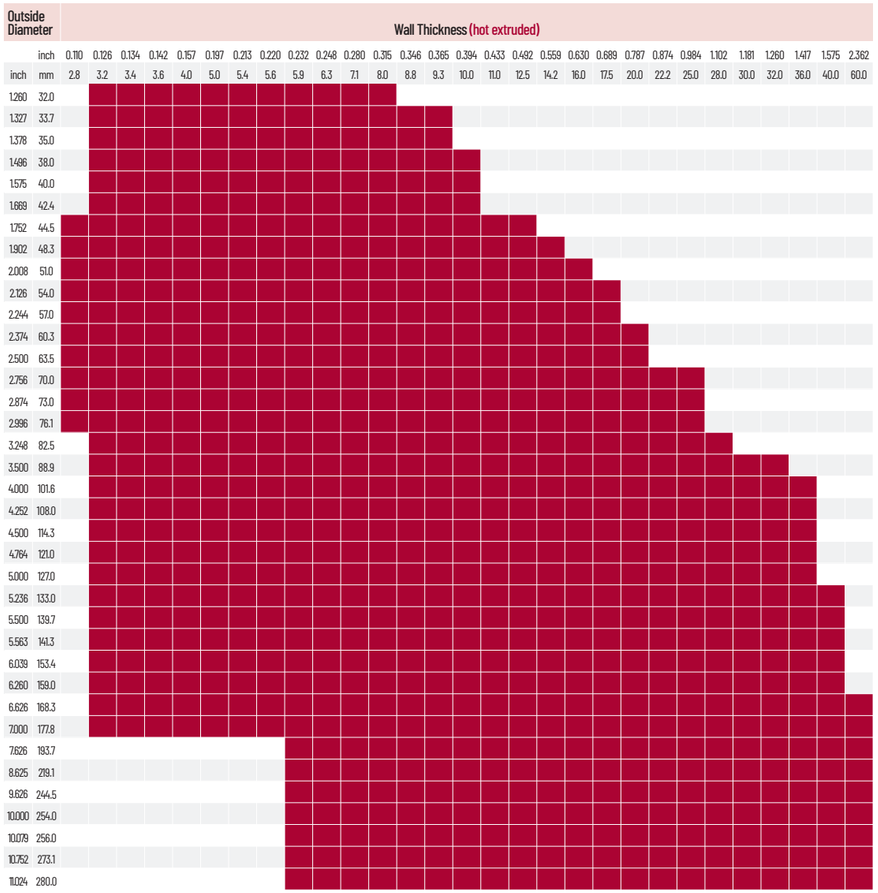
- outside diameters from 1.6 to 51 mm (0..165 to 2 inches) and
- wall thicknesses from 0.05 to 2 mm (0.002 up to 0.08 inches)



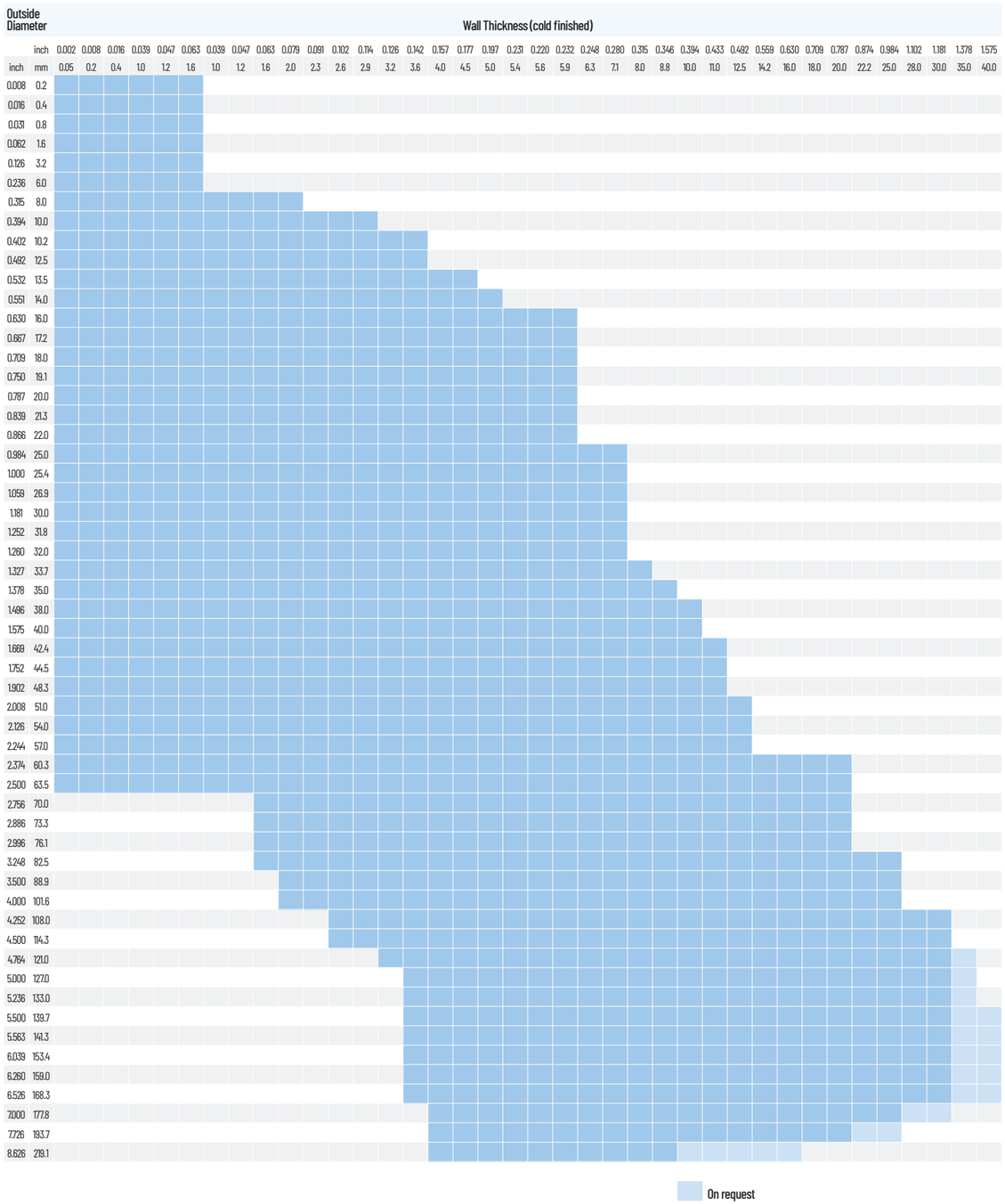
ISO-Dimensions and Tolerances for seamless Tubes

Outside Diameter	Hot Extruded	Cold Finished		
EN ISO 1127 tolerance class	D2	D2	D3	D4
Permissible deviation	± 1.0% (min. ± 0.5 mm (± 0.0197"))	± 1.0% (min. ± 0.5 mm (± 0.0197"))	± 0.75% (min. ± 0.3 mm (± 0.0012"))	± 0.5% (min. ± 0.1 mm (± 0.0039"))

Wall thickness	Hot Extruded ≤ 5 mm (0.1969")	> 5 mm (0.1969")	Cold Finished	
EN ISO 1127 tolerance class	T1	T2	T3	
Permissible deviation	± 15.0% (min. ± 0.6 mm (± 0.0236"))	± 1.0% (min. ± 0.5 mm (6 0.0197"))	± 0.75% (min. ± 0.3 mm (6 0.0012"))	± 0.5% (min. ± 0.1 mm (± 0.0039"))



ISO-Dimensions and Tolerances for seamless Tubes



Outside Diameter		Schedule 5S		Schedule 10S		Schedule 40S		Schedule 80S		Schedule 120		Schedule 160		Schedule XXS	
		WT	M	WT	M	WT	M	WT	M	WT	M	WT	M	WT	M
NOMINAL INCHES	inch mm	inch mm	lb/ft kg/m	inch mm	lb/ft kg/m	inch mm	lb/ft kg/m	inch mm	lb/ft kg/m	inch mm	lb/ft kg/m	inch mm	lb/ft kg/m	inch mm	lb/ft kg/m
1/4	0.540 13.7			0.065 1.65	0.334 0.498	0.088 2.24	0.432 0.643	0.119 3.02	0.542 0.808						
3/8	0.675 17.1			0.065 1.65	0.429 0.638	0.091 2.31	0.574 0.855	0.126 3.20	0.748 1.114						
1/2	0.840 21.34	0.065 1.65	0.546 0.814	0.083 2.11	0.682 1.016	0.109 2.77	0.865 1.288	0.147 3.73	1.104 1.645			1.188 4.78	1.331 1.982	0.294 7.47	1.742 2.594
3/4	1.050 26.7	0.065 1.65	0.695 1.035	0.086 2.11	0.872 1.299	0.113 2.87	1.150 1.713	0.154 3.91	1.498 2.231			0.219 5.56	1.976 2.943	0.308 7.82	2.482 3.697
1	1.315 33.4	0.065 1.65	0.881 1.312	0.109 2.77	1.426 2.125	0.133 3.38	1.706 2.541	0.179 4.55	2.207 3.287			0.250 6.35	2.888 4.301	0.358 9.09	3.715 5.533
1 1/4	1.660 42.2	0.065 1.65	1.125 1.675	0.109 2.77	1.836 2.735	0.140 3.56	2.312 3.444	0.191 4.85	3.045 4.536			0.250 6.35	3.827 5.700	0.382 9.70	5.300 7.894
1 1/2	1.900 48.3	0.065 1.65	1.294 1.927	0.109 2.77	2.120 3.158	0.145 3.68	2.760 4.112	0.200 5.08	3.691 5.498			0.281 7.14	4.940 7.359	0.400 10.15	6.510 9.696
2	2.375 60.3	0.065 1.65	1.627 2.423	0.109 2.77	2.679 3.990	0.154 3.91	3.707 5.521	0.218 5.54	5.100 7.596			0.344 8.74	7.576 11.284	0.436 11.07	9.162 13.646
2 1/2	2.875 73.0	0.083 2.11	2.515 3.745	0.120 3.05	3.587 5.342	0.203 5.16	5.885 8.765	0.276 7.01	7.777 11.583			0.375 9.53	10.168 15.146	0.552 14.02	13.901 20.706
3	3.500 88.9	0.083 2.11	3.079 4.585	0.120 3.05	4.402 6.557	0.216 5.49	7.698 11.466	0.300 7.62	10.412 15.509			0.438 11.13	14.551 21.674	0.600 15.24	18.872 28.109
3 1/2	4.000 101.6	0.083 2.11	3.529 5.256	0.120 3.05	5.053 7.526	0.226 5.74	9.250 13.778	0.318 8.08	12.703 18.921						
4	4.500 114.3			0.120 3.05	5.704 8.496	0.237 6.02	10.958 16.322	0.337 8.56	15.216 22.665	0.438 11.13	19.304 28.753	0.531 13.49	22.862 34.053	0.674 17.12	27.969 41.660
5	5.563 141.3			0.134 3.40	7.882 11.740	0.258 6.55	14.838 22.101	0.375 9.53	21.111 31.444	0.500 12.70	27.456 40.896	0.625 15.88	33.482 49.871	0.750 19.05	39.151 58.315
6	6.625 168.3			0.134 3.40	9.425 14.039	0.280 7.11	19.266 28.697	0.432 10.97	29.014 43.217	0.562 14.27	36.951 55.033	0.719 18.26	46.058 68.603	0.864 21.95	54.003 80.438
8	8.625 219.1					0.322 8.18	29.004 43.202	0.500 12.70	44.066 65.637	0.719 18.26	61.652 91.830	0.906 23.01	75.852 112.981	0.875 22.23	73.572 109.586
10	10.750 273.1					0.365 9.27	40.52 60.31	0.500 12.70	54.79 81.56	0.844 21.44	89.38 133.01	1.125 28.58	115.75 172.27	1.000 25.40	104.23 155.10

Stainless steel pipe ANSI B 36-19 M up to and including Schedule 80 S. Above, ANSI B 36-10 M dimensions.
The conventional linear mass are those of austenitic stainless steel calculated from the formula:

$$M = \frac{(D - T)T}{K}$$ (corresponding to a density of 7.97 with K = 40)

The above values (weight / meter and feet) are those applicable to austenitic stainless steel.
M = mass (weight per length unit)
D = outside diameter
T = wall thickness

ASTM A 213 and A 269

Outside Diameter		Wall Thickness (cold finished)																				
	inch	0.035	0.039	0.047	0.049	0.059	0.063	0.065	0.071	0.079	0.083	0.095	0.098	0.102	0.109	0.114	0.120	0.126	0.134	0.142	0.148	0.157
	mm	0.89	1.0	1.2	1.24	1.5	1.6	1.65	1.8	2.0	2.11	2.41	2.5	2.6	2.77	2.9	3.05	3.2	3.4	3.6	3.76	4.0
	BWG	20			18			16			14	13			12			11	10		9	
inch	mm																					
0.500	12.70	■	■	■	■	■	■	■	■	■												
0.540	13.72	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■					
0.551	14.00	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■					
0.625	15.90	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
0.675	17.20	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
0.750	19.05	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
0.787	20.00			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
0.840	21.30			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
0.984	25.00				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.000	25.40					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.050	26.90					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.181	30.00					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.250	31.80					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.315	33.70					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.500	38.10					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.660	42.40					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.750	44.50					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.900	48.30					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2.000	50.80					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2.125	54.00					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Tolerances according to ASTM A 1016. Tube deliveries according to EN-DIN-AFNOR-UNI requirements as well as intermediate dimensions (diameters, wall thicknesses) on request.

U-bending

Outside Diameter		Wall Thickness								
	inch	0.035	0.039	0.049	0.059	0.065	0.079	0.083	0.095	0.109
	mm	0.89	1.0	1.24	1.5	1.65	2.0	2.11	2.41	2.77
	BWG	20		18		16	16	14	13	12
inch	mm									
0.625	15.90	40.0	32.0	24.0	24.0	24.0	32.0			
0.630	16.00	40.0	32.0	24.0	24.0	24.0	32.0			
0.750	19.05		38.0	28.5	28.5	28.5	28.5	28.5	38.0	
0.787	20.00		40.0	30.0	30.0	30.0	30.0	30.0	35.0	
0.839	21.30			42.5	32.0	32.0	32.0	32.0	32.0	
0.984	25.00				50.0	38.0	38.0	38.0	38.0	50.0
1.000	25.40				51.0	38.0	38.0	38.0	38.0	51.0
1.181	30.00				60.0	45.0	45.0	45.0	45.0	60.0
1.252	31.80				65.0	48.0	48.0	48.0	48.0	65.0

Minimum bending radius in mm

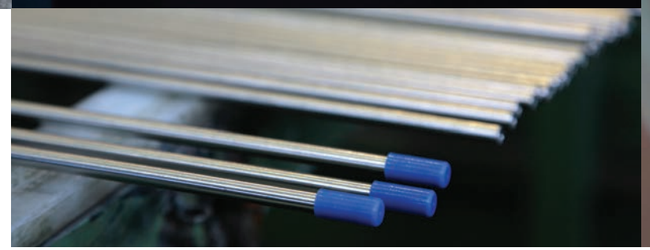
Initial length
Maximum lengths of 32 m can be supplied on request.

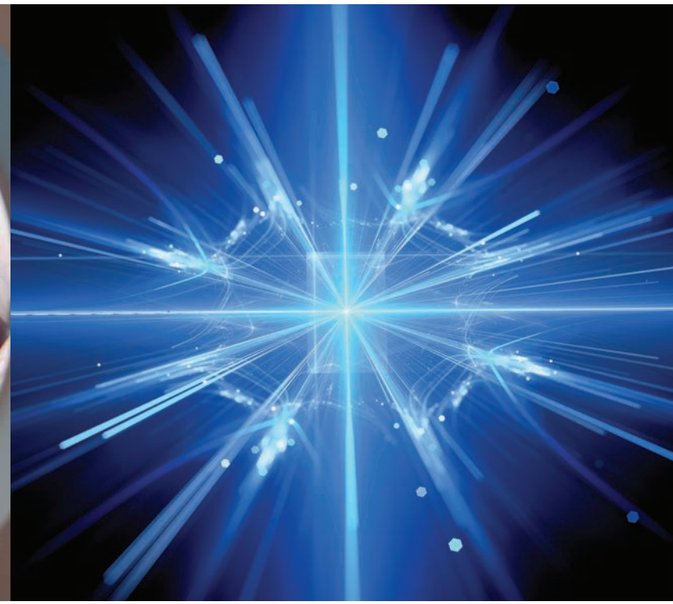
Bending radius
Maximum 1500 mm

Heat treatment of the bend
U-bends with a bending radius up to maximum of 750 mm can be heat treated on request.

The above sizes are those most frequently used, other sizes can be produced upon request.

The dimensions for heat exchanger tubes in special grades and nickel-based alloys may differ from the above, please contact your nearest DMV Stainless Tubes office for further information.





Sustainability & Circular Economy

SILVER | Top 15%
ecovadis
Sustainability Rating
FEB 2024

Embracing the drive to decarbonisation using EcoVadis as a sustainability assessment methodology on both Corporate Carbon Footprint and Product Carbon Footprint across the full scope of our supply chain. Using our above average industry performance score as a basis for focus on continuous improvement across our five manufacturing plants.

Tubes and pipes for the most demanding

- Aeronautics
- Nuclear industry
- Medical & healthcare
- Oil & gas exploration

SOTEP service range:

- Precision cutting
- Machining
- Forming
- Bending
- Welding
- Surface treatment
- Electropolishing

Dimensions:

- Outside diameter: from 1.6 mm
- Wall thickness: from 0.05 mm
- Lengths: up to 40 m

Materials:

- Austenitic and super austenitic stainless steel grades
- Martensitic grades
- Duplex and super duplex grades
- Nickel-based alloys
- Cobalt-based alloys

Our Quality approvals

See our website for downloadable copies

QMS / FACILITY	GERMANY, REMSCHEID	ITALY, COSTA VOLPINO	FRANCE, MONTBARD	FRANCE, ISSOUDUN	USA, HOUSTON
ISO 9001	✔	✔	✔	✔	✔
AD 2000	✔	✔	✔	✔	
PED 2014/68/EU	✔	✔	✔	✔	✔
PER 2016/1105		✔	✔		✔
ISO 14001	✔	✔	✔		
ISO 45001			✔		
ISO 17025			✔		
ISO 19443		•••	✔		
ASME III		✔	✔		
API - 5CRA	✔	✔	✔		
API - 5LC	✔		✔		
ISO 50001	✔				
AS 9100				✔	

Austenitic Ferritic

DMV Designation	Nearest equivalent standard			Typical chemical composition 1)						Density		Min. mechanical prop. at RT			
	UNS	EN	JIS	Cmax	Cr	Ni	Mo	Cu	Others			$Rp_{0.2}$	Yield St.	R_m Tensile St.	
										g/cm³	lb/in³	MPa	ksi	MPa	ksi
DMV 18.5	S31500	1.4424		0.03	18.5	4.8	2.7		Si 1.7; N 0.1	7.8	0.28	440	64	630	92
DMV 22.5	S31803	1.4462		0.03	22.0	5.5	3.0		N 0.17 2)	7.8	0.28	450	65	620	90
DMV 25.7	S31260			0.03	25.0	6.5	3.0	0.5	N 0.20; W 0.5	7.8	0.28	450	65	690	100
DMV 25.7Cu	S32550	1.4507		0.03	25.0	7.0	3.5	1.5	N 0.22 2)	7.8	0.28	550	80	760	110
DMV 25.7N	S32760	1.4501		0.03	25.0	7.0	4.0	0.5	N 0.25; W 0.5 2)	7.8	0.28	550	80	750	109
DMV 25.7NS	S32750	1.4410		0.03	25.5	7.0	4.0	0.25	N 0.3 2)	7.8	0.28	550	80	750	109
DMV 29.7	S32906	1.4477		0.03	25.6	7	2.3	<0.80	N 0.35 2)	7.8	0.28	650	94	800	116

1) All figures in weight percentage. In the event of order, the limits of the order specification will apply.
2) Min PRE value controlled.

Austenitic

DMV Designation	Nearest equivalent standard			Typical chemical composition 1)						Density		Min. mechanical prop. at RT			
	UNS	EN	JIS	Cmax	Cr	Ni	Mo	Cu	Others			$Rp_{0.2}$	Yield St.	R_m Tensile St.	
										g/cm³	lb/in³	MPa	ksi	MPa	ksi
DMV 304	S30400	1.4301	SUS 304	0.06	18.5	9.5				7.9	0.29	205	30	515	75
DMV 304L	S30403	1.4306	SUS 304L	0.03	19.0	11.0				7.9	0.29	170	25	485	70
DMV 304LN	S30453	1.4311		0.03	18.0	10.0				7.9	0.29	205	30	515	75
DMV 321	S32100	1.4541	SUS 321	0.08	18.5	10.5			5 x C < Ti < 0.6%	7.9	0.29	170	25	485	70
DMV 347	S34700	1.4550	SUS 347	0.08	18.5	11.0			Nb > 10 x C < 1.0%	7.9	0.29	205	30	515	75
DMV 316	S31600	1.4401	SUS 316	0.06	17.0	11.5	2.25			8.0	0.29	205	30	515	75
DMV 316L	S31603	1.4404		0.03	17.0	12.0	2.25			8.0	0.29	170	25	485	70
DMV 316LMoS	S31603	1.4435	SUS 316L	0.03	17.0	12.5	2.75			8.0	0.29	170	25	485	70
DMV 316LN	S31653	1.4429		0.03	17.0	12.5	2.75		0.12 < N < 0.22	8.0	0.29	205	30	515	75
DMV 316Ti	S31635	1.4571		0.08	17.0	11.5	2.25			8.0	0.29	205	30	515	75
DMV 316LVM	S31673	1.4441		0.025	17.5	14.0	2.8	<0.10	N<0.10	8.0	0.29	190	28	490	71
DMV 317L	S31703	1.4438	SUS 317L	0.03	18.0	14.5	3.5			8.0	0.29	205	30	515	75
DMV 316LUG	S31603	1.4435		0.02	17.0	13.5	4.5			8.0	0.29	170	25	485	70
DMV 309	S30900	1.4828	SUS 309 TB	0.07	25.0	14.0				7.9	0.29	205	30	515	75
DMV 306Si	S30600	1.4361		0.015	18.0	15.0			Si 4	7.9	0.29	240	35	540	78
DMV 4439	(S31726)	1.4439		0.03	17.5	13.5	4.5		N 0.16	8.0	0.29	240	35	550	80
DMV 4335	S31002	1.4335		0.015	25	20.5			N<0.10	7.9	0.29	255	37	540	78
DMV 25.22.2	S31050	1.4466		0.02	25.0	22.0	2.0		N 0.12	7.9	0.29	255	37	540	78
DMV 310S	S31008	1.4845		0.015	25.0	21.0				7.9	0.29	205	30	515	75
DMV 904	N08904	1.4539		0.02	20.5	25.5	4.5	1.5		8.0	0.29	215	31	490	71
DMV 926	N08926	1.4529		0.02	20.0	25.0	6.5	0.8	N 0.20	8.0	0.29	295	43	650	94
DMV 954	S31254	1.4547		0.02	20.0	18.0	6.2		N 0.20	8.0	0.29	310	45	655	95
DMV 8367	N08367			0.03	21	24.5	6.5	0.75	0.18 < N < 0.25	8	0.29	365	53	745	108
DMV 304H	S30409	1.4948		0.08 2)	18.5	9.5				7.9	0.29	205	30	515	75
DMV 304HCu	S30432	1.4907		0.13 2)	18.5	9.5		3.0	N 0.10; Nb 0.5	7.9	0.29	235	34	590	85
DMV 321H	S32109	1.4940		0.08 2)	18.5	11.0			Ti > 4 x C < 0.6	7.9	0.29	170	25	480	70
DMV 347H	S34709	1.4912		0.08 2)	18.5	11.0			Nb > 8 x C < 1.0	7.9	0.29	205	30	515	75
DMV 347HFG	S34710	1.4908		0.10 2)	18.5	11.0			Ti+Nb > 8xC < 1.0	7.9	0.29	205	30	550	80
DMV 4910	S31653	1.4910		0.04	17	13	2.4			7.9	0.29	260	37	590	85
DMV 310N	S31042	1.4952		0.10 2)	25.0	20.0			N 0.20; Nb 0.40	8.0	0.29	295	43	655	95
DMV 310H	S31009	1.4845	SUS 310 TB	0.10 2)	25.0	20.0				8.0	0.29	205	30	515	75
DMV 4841		1.4841		0.10	25.0	20.5			Si 2.0	8.0	0.29	205	30	515	75

1) All figures in weight percentage. In the event of order, the limits of the order specification will apply.
2) Minimum level of carbon content is mandatory.

Nickel and Nickel-based Alloys

DMV designation	Nearest equivalent standard			Typical chemical composition 1)						Density		Min. mechanical prop. at RT			
	Corrosion / Heat Resistant	UNS	EN	Cmax	Cr	Ni	Mo	Cu	Others			$Rp_{0.2}$	Yield St.	R_m Tensile St.	
										g/cm³	lb/in³	MPa	ksi	MPa	ksi
DMV 800L	Corrosion Resistant	(N08800)	1.4558	0.025	21.0	32.0			Ti 0.30; Al 0.30	8	0.29	180	26	450	65
DMV 931	Corrosion Resistant	N08031	1.4562	0.015	27.0	31.0	6.5	1.2	N 0.20	8.1	0.29	280	41	650	94
DMV 928	Corrosion Resistant	N08028	1.4563	0.02	27.0	31.0	3.5	1.2	N 0.10	8	0.29	210	31	500	73
DMV 800	Corrosion Resistant	N08800	1.4876	0.08	21.0	32.0			Ti < 0.40	8	0.29	210	31	500	73
DMV 200	Corrosion Resistant	N02200	2.4066	0.05		99.4				8.9	0.32	103	15	379	55
DMV 201	Corrosion Resistant	N02201	2.4068	0.02		99.4				8.9	0.32	83	12	345	50
DMV 400	Corrosion Resistant	N04400	2.4360	0.15		65.0		30.0	Fe 2; Mn 1.5	8.8	0.32	180	26	450	65
DMV C22	Corrosion Resistant	N06022	2.4602	0.01	22.0	57.0	13.0		W	8.7	0.31	310	45	690	100
DMV 59	Corrosion Resistant	N06059	2.4605	0.01	23.0	59.0	16.0		Al	8.6	0.31	340	50	690	100
DMV C4	Corrosion Resistant	N06455	2.4610	0.01	16.0	66.0	16.0		Ti	8.6	0.31	280	41	700	102
DMV G3	Corrosion Resistant	N06985	2.4619	0.015	22.0	48.0	7.0	2.0	Co. W	8.3	0.30	205	30	585	85
DMV 690	Corrosion Resistant	N06690	2.4642	0.02	29.0	60.0			Fe 9	8.2	0.29	205	30	585	85
DMV 8020	Corrosion Resistant	N08020	2.4660	0.02	20.0	34.0	2.5	3.5	Nb + Ta	8.1	0.29	240	35	550	80
DMV 718	Corrosion Resistant	N07718	2.4668	0.08	19	52.5	3		Nb 5.1; Mn 0.35;Ti 0.8; Al 0.5	8.2	0.29	1035	150	1276	185
DMV 4692	Corrosion Resistant	N08034	2.4692	0.01	27.0	35.0	6.5	1.5	N 0.20	8.1	0.29	310	45	750	108
DMV 600L	Corrosion Resistant	N06600	2.4817	0.025	16.0	76.0			Fe 8	8.4	0.30	180	26	550	80
DMV C276	Corrosion Resistant	N10276	2.4819	0.01	16.0	57.0	16.0		W	8.4	0.30	350	51	750	109
DMV 625	Corrosion Resistant	N06625 Gr.1	2.4856	0.025	22.0	63.0	9.0		Nb 3.5	8.5	0.31	414	60	827	120
DMV 825	Corrosion Resistant	N08825	2.4858	0.03	22.0	42.0	3.0	2.0	Ti 0.80; Al 0.10	8.1	0.29	180	26	530	75
DMV AC66	Heat Resistant	S33224	1.4877	0.06	27.0	32.0			Ce 0.07; Nb 0.8	8.0	0.29	185	27	500	73
DMV 800H	Heat Resistant	N08810	1.4958	0.10 2)	21.0	32.0			(Al.Ti) 0.15 - 0.60	8.0	0.29	170	25	500	73
DMV 811	Heat Resistant	N08811	1.4959	0.10 2)	21.0	32.0			0.85 < Ti + Al < 1.20	8.0	0.29	170	25	500	73
DMV C263	Heat Resistant	N07263	2.4650	0.08	20.0	52.0	5.8	-	Co 20; Ti 2.1.Al 0.5, Mn <0.6	8.4	0.3	585	118	1004	145
DMV 617	Heat Resistant	N06617	2.4663	0.08	22.0	55.0	9.0		Co 12; Al; Ti	8.4	0.30	300	44	700	102
DMV 600H	Heat Resistant	N06600	2.4816	0.07	16.0	76.0			Fe 8	8.4	0.30	240	35	550	80
DMV 601	Heat Resistant	N06601	2.4851	0.08	23.0	62.0			Al 1.2; Ti 0.3	8.1	0.29	240	35	600	87
DMV 625	Heat Resistant	N06625 Gr.2	2.4856	0.025	22.0	63.0	9.0		Nb 3.5	8.4	0.30	276	40	690	100

1) All figures in weight percentage. In the event of order, the limits of the order specification will apply.
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ASTM-Standards

Iron and Steel Products Steel - Piping, Tubing, Fittings

ASTM Volume 01.01

A 213 / A 213M	Seamless ferritic and austenitic alloy steel boiler, superheater and heat exchanger tubes
A 269 / A 269M	Seamless and welded austenitic stainless steel tubing for general service
A 312 / A 312M	Seamless and welded austenitic stainless steel pipes
A 376 / A 376M	Seamless austenitic steel pipe for high-temperature service
A 511	Seamless stainless steel mechanical tubing
A 789 / A 789M	Seamless and welded ferritic-austenitic stainless steel tubing for general service
A 790 / A 790M	Seamless and welded ferritic-austenitic stainless steel pipe

Nonferrous Metal Products - Nickel....

ASTM Volume 02.04

B 161	Nickel seamless pipe and tube (UNS N02200; N02201)
B 163	Seamless nickel and nickel alloy condenser and heat exchanger tubes (e.g. UNS N02200; N04400; N06600; N08800)
B 165	Nickel-copper alloy (UNS N04400), seamless nickel pipe and tube
B 167	Nickel-chromium-iron alloys (UNS N06600, N06601 and N06690), seamless pipe and tube
B 407	Nickel-iron-chromium alloys (UNS N08800; N08810; N08811), seamless pipe and tube
B 423	Nickel-iron-chromium-molybdenum-copper alloys (UNS N08825), pipe and tube
B 444	Nickel-chromium-molybdenum-columbium alloys (UNS N06625), pipe and tube
B 622	Seamless nickel and nickel-cobalt alloy pipe and tube (e.g. UNS N06455; N06059; N10276, N06002)
B 668	Seamless tubes (UNS N08028)
B 677	Seamless pipe and tube (UNS N08904; N08925; N08926)
B 729	Seamless pipe and tube (UNS N08020; N08026; N08024)

Nonferrous Metal Products - Titanium....

ASTM Volume 02.04

B 338	Seamless and welded Titanium and Titanium alloy tubes for condensers and heat exchangers

ASME-Standards

ASME Boiler Pressure Code Section II Part A - Ferrous Material Specification

ASME

SA 213 / SA 213M	Seamless ferritic and austenitic alloy steel boiler, superheater and heat exchanger tubes
SA 312 / SA 312M	Seamless and welded austenitic stainless steel pipes
SA 376 / SA 376M	Seamless austenitic steel pipe for high-temperature central-station service
SA 511	Seamless stainless steel mechanical tubing
SA 789 / SA 789M	Seamless and welded ferritic-austenitic stainless steel tubing for general service
SA 790 / SA 790M	Seamless and welded ferritic-austenitic stainless steel pipe

Nonferrous Metal Products - Nickel....

ASME

SB 161	Nickel seamless pipe and tube (UNS N02200; N02201)
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SB 165	Nickel-copper alloy (UNS N04400), seamless nickel pipe and tube
SB 167	Nickel-chromium-iron alloys (UNS N06600, N06601 and N06690), seamless pipe and tube
SB 407	Nickel-iron-chromium alloys (UNS N08800; N08810; N08811), seamless pipe and tube
SB 423	Nickel-iron-chromium-molybdenum-copper alloys (UNS N08825), pipe and tube
SB 444	Nickel-chromium-molybdenum-columbium alloys (UNS N06625), pipe and tube
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SB 729	Seamless pipe and tube (UNS N08020; N08026; N08024)

Standards and delivery specifications

API-Standards

API 5CRA	Specification for Casing and Tubing
API 5LC	Specification for CRA Line Pipe

EN-Standards

EN 10216-5	Seamless steel tubes for pressure purposes
EN 10297-2	Seamless steel tubes for mechanical and general engineering purposes
incl. DIN, NFA,....; VdTÜV data sheets on request	

ISO-Standards

ISO 13680	Petroleum and natural gas industries – Corrosion-Resistant alloy
	Seamless tubulars for use as casing, tubing and coupling stock – Technical delivery condition

GOST Standards

GOST 9940	Seamless stainless steel tubes, hot finished
GOST 9941	Semaless stainless steel tubes, cold and hot finished
on request:	

BS-Standards

Stainless and high-strength high-temperature steelsSeamless tubulars for use as casing, tubing and	
BS 3059	Steel boiler and superheater tubescoupling stock – Technical delivery condition

JIS-Standards

JIS G 3446	Stainless steel pipes
JIS G 3459	Stainless steel pipes
JIS G 3463	Stainless steel boiler and heat exchanger tubes
JIS G 3467	Steel tubes for fired heater

DNV-Standards

OS F101	Submarine Pipeline Systems

RCC-M-Standards

RCC-M M 3303 RCC-M	Cold finished seamless austenitic stainless steel tubes for class 1, 2 and 3 heat exchangers
M 3304	Class 1, 2 and 3 austenitic stainless steel pipes and tubes (not intended for use in heat exchangers)