



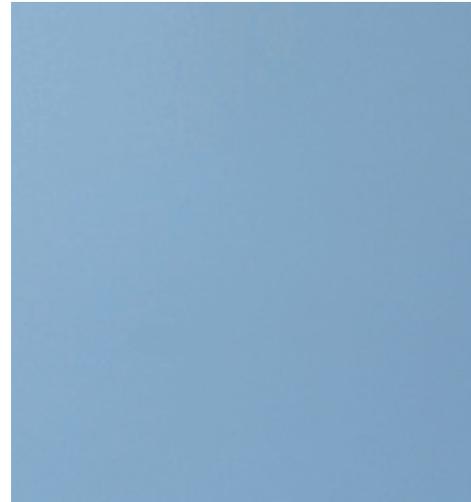
Range of products

**Rudolf Flender Rohr GmbH**



**Flender**

# Intelligent pipe, tube and profile solutions



Intelligence is a question of efficiency and the results it produces. With a high degree of expertise and personal enthusiasm for the pipe and tube industry, we have developed a diverse range of pipes, tubes, extruded profiles and services for our customers.

Our huge range of round, profiled, special-profiled and precision pipes and tubes is suitable for a wide variety of construction-related or medium-transporting applications and has been ambitiously developed with the specific aim of meeting our customers' exacting requirements.

From HFI longitudinally welded steel pipes to round and precision pipes and tubes or standard and special profiled tubes – our range covers a wide variety of products and services that are designed to fully meet all your individual requirements.





## Specialists in welded steel pipes

Welded steel tubes are so much a part of our everyday life that they are often taken for granted. And yet they have been used for decades for transport and design tasks.

Flender has an extensive range of welded steel tubes for a wide variety of applications – including round tubes. With outside diameters of 60.3 to 219.1 mm, square and rectangular tubes, and also customised sections with edge lengths of 15 to 130 mm. These tubes can be used for an unending array of purposes from building and heating engineering to the transport of flammable liquids and gases, from compressed air lines to complex district heating systems, from scaffolding and railings to complicated carrier roller structures, and from furniture frames and office installations to warehouse shelf systems.

In today's world, welded steel tubes are an indispensable lifeline for the supply not only of basic needs but also of more sophisticated requirements. This is just one of the reasons why we have specialised since 1927 in the manufacture of high-quality pipes. The history of our company began on 23 August 1910 when Rudolf Flender started manufacturing and selling sheet metal goods and appliances for the building industry. The range was subsequently enlarged to include domestic and farm implements,

notably feed installations, vats and pumps. It soon became apparent that it would be more profitable for the company to manufacture its own pump inlet and pressure pipes. The first tube rolling and welding machine was commissioned for this purpose in 1927. As machine output exceeded internal demand, Flender steel pipe was also sold to external customers. This marked the beginning of the company's specialisation in tubes and pipes.

In the 1950s Hans Flender, the founder's son, took over the company and enlarged the pipe manufacturing plant. New products were added to the initially slender range, modern production engineering techniques introduced, and business relations cultivated in Germany and abroad.

Today around 75,000 tons of steel are processed every year on five modern lines into 13 million metres of standard and customised steel pipe. Many companies today had their origins in small family-owned businesses. In contrast to most large firms in this sector, however, the family concept of the past has been successfully adapted to today's needs.

We are convinced of the advantages of this concept for customers – in terms of flexibility, quality assurance, and service.



## Our quality assurance

### Certification in accordance with DIN EN ISO 9001:2015

The entire quality assurance process is regulated, controlled and monitored.

### Prematerial from reputed steel works

All hot-rolled/cold rolled coils, supplied by top manufacturers, are tested and registered before processing.

### High-frequency pressure welding without fillers

Consistent welded seam quality through ongoing optimisation of all welding parameters.

### Heat treatment of welded seam

Annealing of the seam area in accordance with specifications.

### Multiple ultrasonic weld seam tests

Up to three testing points, depending on requirements: after welding flash removal, before cutting the tube to length, and separately following water pressure test.

### Cold-water pressure tests up to 400 bars

Pressure tests are integrated in the production process, in accordance with standards or specifications.

### Special seam structure analysis

Evaluation of micro- and macro-sections either randomly or in accordance with customer specifications.

### Material testing of finished tube

Determination of mechanical/technical parameters for the relevant application.

### High-grade corrosion-resistant coating

Polyethylene (PEA or fiber-cement/F/M) coatings in accordance with standards or customer requirements.





## Our services

### **Wide range of tubes from a single source**

Large range of welded and finished steel and sectional tubes.

### **Ready availability**

Large supply of starter materials and standard tubes for delivery at short notice.

### **Flexible specifications**

Manufacture of customised products and special lengths in accordance with customer requirements.

### **Expert consultancy**

Experienced specialists provide assistance with problems and developments.

### **Close customer contact**

Professional partners handle regional service tasks on a local basis.

### **Special tests in accordance with specifications**

Determination of material and tube parameters beyond standard tests.

### **Individual item identification**

For exact identification and tracing of each tube back to the steel works – depending on specifications.

### **Quality documentation**

Certificates for any standard or additional tests you wish to obtain – depending on requirements.

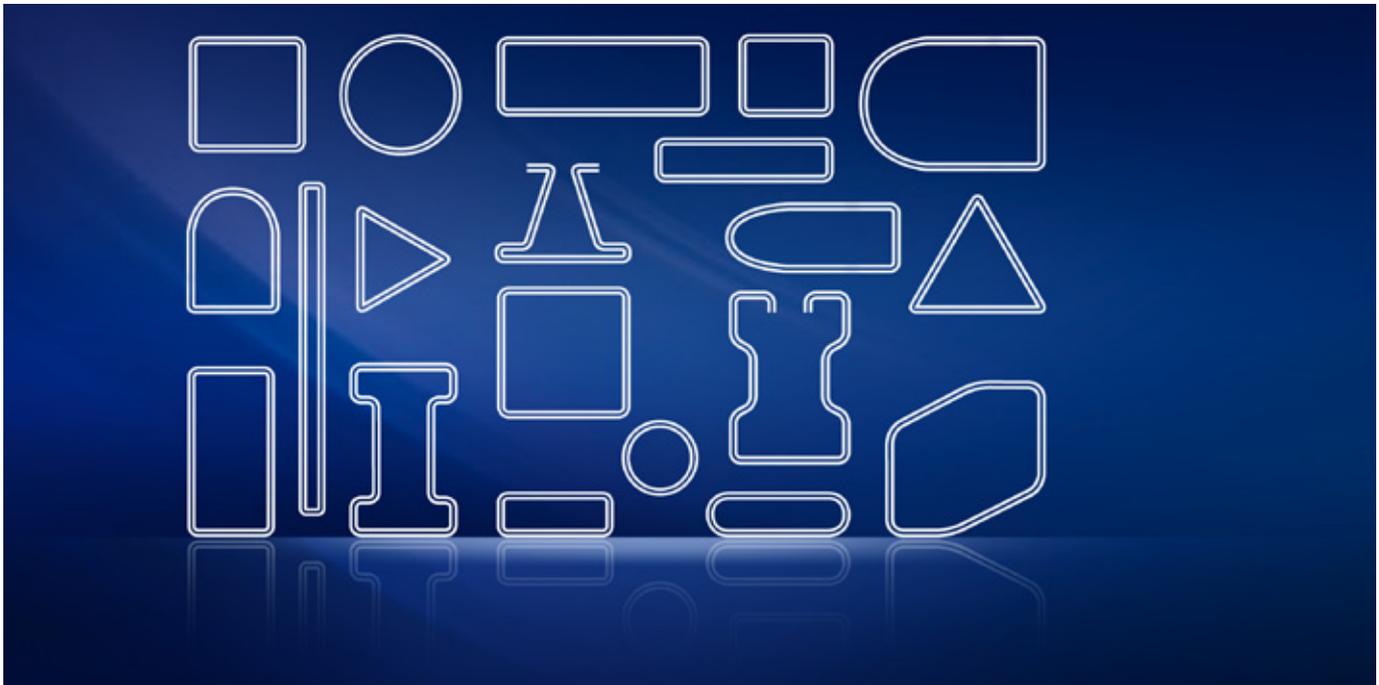
### **VMI Vendor Management Inventory**

Optimised stock quantities of Flender products in your consignment warehouse stock to avoid out-of-stock situations and to enhance delivery performance.

### **Prefabrication**

Using of our machinery for short delivery time in fixlength; more prefabrication on request.





## Product range

It is our ambition to satisfy individual customer requirements and meet technical specifications. We have the facilities to manufacture round steel pipe of up to 219.1 mm outside diameter and square or rectangular tubes and special sections of up to 130 mm edge length.

### Steel tubes

Welded tubes with circular cross-section made of unalloyed steels:

- Without special requirements
- For special requirements
- For particularly exacting requirements
- To convey flammable materials over long distances
- For boiler tubes with annealed welds

### Steel line pipes

Welded pipes for use in gas lines with maximum operating pressure of 16 bars and above, with or without corrosion-resistant coating.

### Corrosion-resistant coatings

Corrosion-resistant coatings made of different polyethylene (PE) materials of varying thickness, also with additional fibre-cement mortar (FZM) coating.

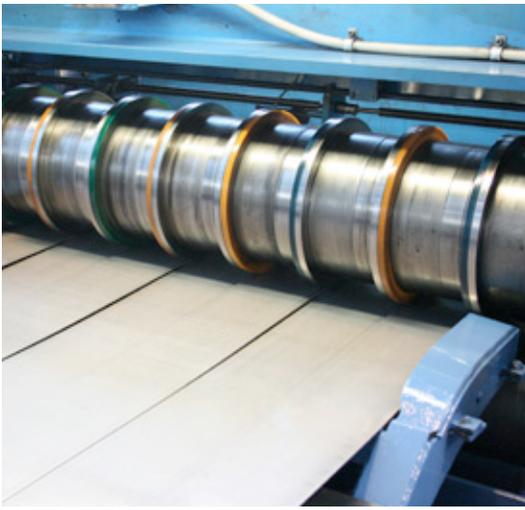
### Precision Steel Tubes

Welded round tubes with extremely minimal tolerances for inner and outer diameters, degree of straightness and roundness. Used in the manufacture of rollers, conveyor systems and installations as well as for diverse implementation in the construction sector.

### Square and rectangular tubes

Welded steel tubes with square or rectangular cross-section, flat oval tubes and customised sections. With cleanly pickled, bright or cold rolled surface. Suitable for tubular steel furniture and computer stands, shop installations and shelf systems, other warehouse facilities, and for various design tasks.

We also manufacture railing tubes, gas and water pipes, scaffolding tubes and roof pole tubes, as well as steel tubes for greenhouses, lamp posts, traffic sign posts, and ceiling supports. Our specialists have years of experience to help you with your technical problems.



## First-rate steel

Flender steel tubes are made from high-frequency HFI longitudinally welded pipe manufactured by skilled and experienced workers on modern production lines.

The pre material is hot-rolled strip obtained from top suppliers in the form of wide-strip coils. Thanks to the ongoing exchange of experience with steel works as part of our quality assurance programme the supplied steel is always of uniform purity, thus ensuring the consistent quality of Flender steel tubes.

The wide strip is slit to the appropriate size in our own cutting shop. In this way we can be sure that the dimensional accuracy meets our demanding requirements and that the edges are properly prepared for welding.

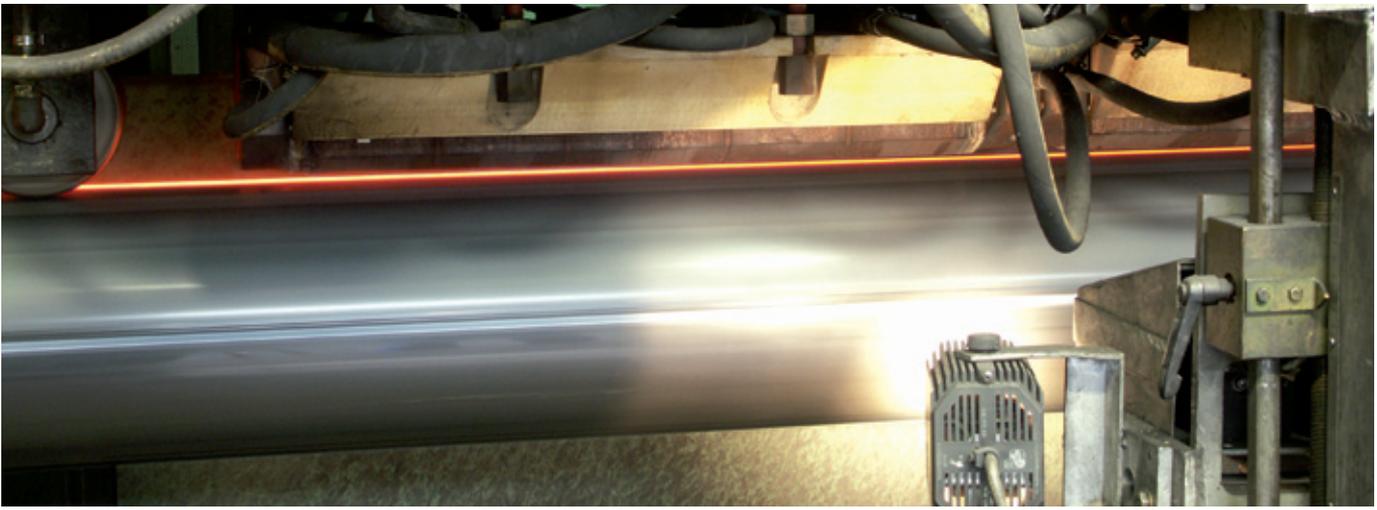
## High-class production in series

Our HFI longitudinally welded pipe is made exclusively by high-frequency resistance pressure welding. This means that the required processing temperature is achieved by induction of the welding current without contact and the edges of the shaped steel strip pressed together without any filler metal.

To ensure the uniform quality of the welded seams, a continuous production process is essential. This is achieved through the integration of an upstream strip accumulator.

The strip is gradually shaped in a special forming unit into split pipes. By ensuring that the material is not subjected to excessive strain, the exact geometry of the strip edges for the welding process is maintained.

In the high-frequency pressure welding unit the welding current is then applied to the split pipe by induction. The strip edges are heated to the ideal welding temperature and precisely set pressure rollers close the edges during welding. All relevant welding parameters, such as current, voltage and temperature, are continuously monitored to ensure consistent welded seam quality. The weld seam is removed to pipe contour. Sizing stands and straightening rollers are then used to give the unfinished product its circular form, accurate to within very small tolerances. The entire pipe length is also aligned before being cut by means of a travelling unit into individual sections. The ends of the tubes then receive a precision milled bevelling.



## Annealing of welded seams

The weld are in line of Flender steel pipe of 60.3 mm outside diameter and above can be annealed in accordance with standards or customer requirements after welding. This ensures that the mechanical and technological properties of the long seam are in line with those of the basic pipe material.

The process is controlled by a pilot line, which guides three successive line inductors along the middle of the seam. The temperature is precisely controlled by continuously monitoring for optimum results. The hot seam is gradually cooled in the air – not quenched – and finally cooled in a water bath to room temperature. The annealed single pipe lengths are finished on a hyperboloid straightening machine to produce top-quality Flender steel pipes.

### **High-frequency long-seam welded steel pipe:**

- Black, self-coloured
- Hot-dip galvanised
- With polyethylene (PE) coating
- With add. fibre-cement (FZM) coating

### **Ends:**

- Smooth ends, cleanly deburred
- Bevelled ends acc. to norms
- Bevelled ends, customised
- Slip joint

### **Length:**

- Manufactured lengths, 4 up to 24 metres
- Fixed lengths by arrangement

### **Leak test:**

- Ultrasonic control
- Cold-water pressure-test





## Quality assurance points

The entire Flender production process is certified in accordance with DIN EN ISO 9001:2015. All quality-relevant processes in our factory are regulated down to the smallest detail by means of special process, working and test instructions. State-of-the-art monitoring and testing equipment is operated by specially trained staff. The production and quality of Flender pipes are continuously monitored at the following points:

### **Incoming control of hot-rolled wide-strip coils**

Verification that pre material complies with order specifications and delivery papers; registration of chemical and mechanical parameters; verification of size and thickness while splitting the coil.

### **Attachment of positioning pilot lines**

Photo cells scan the line, which is positioned at a defined distance from the weld. This ensures precise seam annealing and control of the test heads for non-destructive seam tests.

### **First ultrasonic seam test**

Immediately after the welding process: nondestructive shock-wave testing, verification of seam and internal deburring.

### **Second ultrasonic seam test**

Before the pipe is cut into individual lengths: input-echo test, verification of inner and outer seam along its entire length with the precise position of errors being indicated visually and acoustically.

### **Tube identification**

Depending on specifications and standards, each tube can be identified and traced back to the coil and steel works.

### **Cold-water pressure test**

Integrated in the production process: cold-water pressure test up to 400 bar, the precise pressure and dwell time being recorded and documented as required.

### **Third ultrasonic seam test**

Depending on specifications a further nondestructive longitudinal seam test can be carried out after the pressure test. Ultrasonic testing of the pipe ends for material laminations is also possible.

### **Mechanical/technological material tests**

Pipe/material tests of tensile strength, yield point and elongation, as well as impact notch, flattening, ring expansion and ring tensile tests where applicable.

### **Seam structure analysis**

Analysis by micro- and macrographs to verify seam structure.

### **Final visual control**

Verification of dimensions and visual check of the pipes before final acceptance.

At the final approval stage the tubes are identified in accordance with specifications and standards, and marked and bundled to customer requirements where applicable. Then they are released for dispatch or further processing in the factory.

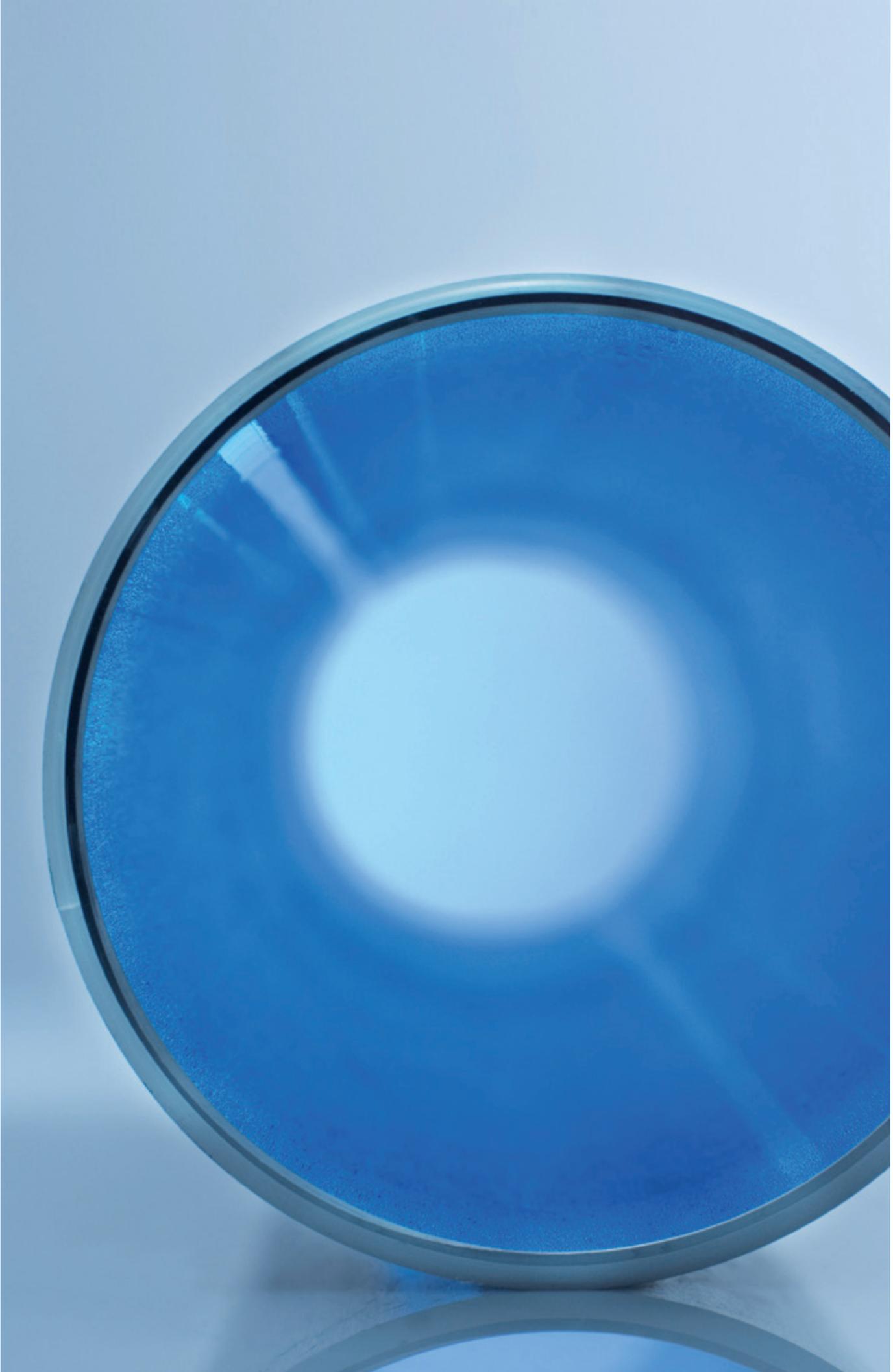


# Steel-pipes

With several qualifications Flender HFI longitudinally welded steel tubes can be used in different applications. As a certified company according to DIN EN ISO 9001:2015 we produce all our products strictly according to the requirements of the mentioned norms and specifications. Mostly they exceed them.

Flender steel tubes are used in construction (DIN EN 10219), in conduction systems as bare tubes and for pressure applications for normal temperature (DIN EN 10217-1) or for high temperature applications (DIN EN 10217-2). Therefore we are a certified producer acc. to DGRL 97/23 EG and AD2000.







<b>Water and heating industry</b>	Pipes to transport wastewater and for heating systems.		
<b>District heating</b>	Medium tubes for manufacturers of district heating systems.		
<b>RE-tubes</b>	Steel tubes for solar thermal energy, geothermal energy and wind energy applications.		
<b>Boiler tubes</b>	Steel tubes for boiler and apparatus construction.		
<b>Static and structural steelwork</b>	Tubes to be used in steel constructions, mechanical engineering and industries.		
<b>Standards</b>	EN 10217-1	EN 10217-2	DIN EN 10219-1 + 2
<b>Materials</b>	P 235 TR 1/2 P 265 TR 1/2	P 235 GH TC1 P 265 GH TC1	S 235 JRH S 275 JOH S 355 JOH
<b>Length</b>	60.3–114.3 mm diameter to 24000 mm length. (Water pressure testing and machining of ends possible for pipes and tubes up to 12000 mm in length.) 114.3–219.1 mm diameter to 16000 mm length.		
<b>Versions</b>	Black, on request outside oiled, hot-dip galvanized. Other versions on request.		
<b>Specials</b>	Tubes above 60.3 mm diameter also with normalised annealed welding area. <b>Forms of ends:</b> plain ends cleanly deburred, bevelled ends in standard or special versions.		





## Sizes and weights

Wall thickness	2.0	2.3	2.6	2.9	3.2	3.6	4.0	4.5	5.0	5.4	5.6	5.9	6.3	7.1	8.0	8.8	10.0
Diameter	Weight (kg/m)																
<b>60.3</b>	2.88	3.29	3.70	4.10	4.51	5.03	5.55	6.19	6.82	7.31	7.55	7.91	8.39	9.31			
<b>70.0</b>	3.35	3.84	4.32	4.80	5.27	5.89	6.51	7.27	8.01	8.60	8.89	9.33	9.90	11.0	12.2		
<b>76.1</b>	3.65	4.19	4.71	5.23	5.75	6.44	7.11	7.95	8.77	9.41	9.74	10.2	10.8	12.0	13.4		
<b>82.5</b>	3.97	4.55	5.12	5.69	6.26	7.00	7.74	8.66	9.56	10.2	10.6	11.1	11.8	13.2	14.7		
<b>88.9</b>	4.29	4.91	5.53	6.15	6.76	7.57	8.37	9.37	10.3	11.1	11.5	12.0	12.8	14.3	15.9		
<b>101.6</b>		5.63	6.35	7.06	7.76	8.70	9.63	10.7	11.9	12.8	13.2	13.9	14.8	16.5	18.4		
<b>108.0</b>		6.00	6.76	7.52	8.27	9.27	10.3	11.5	12.7	13.6	14.1	14.8	15.8	17.6	19.7		
<b>114.3</b>		6.35	7.16	7.97	8.77	9.83	10.9	12.2	13.5	14.5	15.0	15.7	16.7	18.7	20.9		
<b>133.0</b>			8.36	9.30	10.2	11.5	12.7	14.3	15.8	17.0	17.6	18.5	19.7	22.0			
<b>139.7</b>			8.79	9.78	10.8	12.1	13.4	15.0	16.6	17.9	18.5	19.5	20.7	23.2			
<b>159.0</b>			10.0	11.1	12.3	13.8	15.3	17.1	19.0	20.5	21.2	22.3	23.7	26.6	29.7		
<b>168.3</b>					13.0	14.6	16.2	18.2	20.1	21.7	22.5	23.6	25.2	28.2	31.6	34.6	
<b>177,8</b>					13,8	15,5	17,1	19,2	21,3	23,0	23,8	25,0	26,6	29,9	33,5		
<b>193.7</b>					15.0	16.9	18.7	21.0	23.3	25.1	26.0	27.3	29.1	32.7	36.6	40.1	45.3
<b>219.1</b>					17.0	19.1	21.2	23.8	26.4	28.5	29.5	31.0	33.1	37.1	41.6	45.6	51.6

Tubes with other outside diameters and wall thicknesses on request and technical scope.

Standard dimensions
  Other dimensions on request

# Precision Steel Tubes

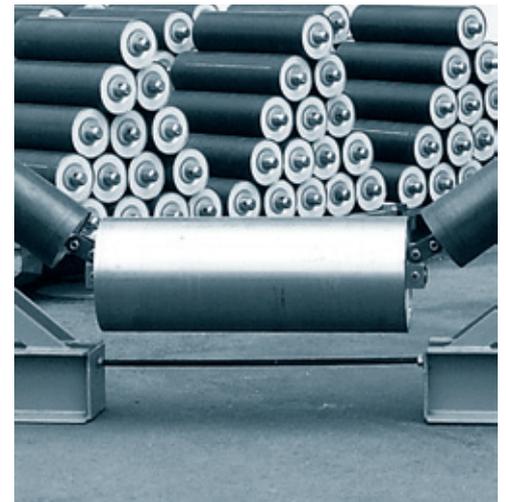
Precision steel tubes demand specific competence, because for this application very close requirements are to be respected.

Flender precision tubes afford high precision in inside and outside diameters and very consistent wall thicknesses. Further characteristics of Flender precision steel tubes are the even roundness and the particularly exact degree of straightness. These are the best possible prerequisites for the smooth running and operational safety of your plant.

The particular advantages of Flender roller tubes include:

- Minimised outer diameter tolerances
- Uniform wall thicknesses
- Inner diameter minimised tolerances
- Extreme uniform roundness
- Extreme straightness of the rolls

Due to these properties it is possible to manufacture complex carrier and conveyor belt rollers and hence to ensure that the conveyor system will run quietly and with the utmost reliability.





Precision steel tubes



## Standards and specials

<b>Standards</b>	<b>DIN EN 10305-3</b>
<b>Materials</b>	E 235 E 275 E 355 Other materials on request.
<b>Length</b>	Production-length 6000 or 12000 mm, above 133 mm also to 16000 mm. Other production-length or fixed length on request.
<b>Specials</b>	Depending on the manufacturing process: either cleanly pickled and bright, or unpickled and self-coloured black, on request hot-dip galvanised, 50.0 to 88.9 mm diameter fixed size and brush deburred possible. Other versions on request.

## Sizes and weights

Roller tubes cleanly pickled and bright surface

Wall thickness	1.5	1.75	2.0	2.5	2.6	2.9	3.0	3.2	3.6	4.0
Diameter	Weight (kg/m)									
50.0	1.79	2.08	2.37	2.93	3.04	3.37	3.48			
60.0	2.16	2.51	2.86	3.54	3.68	4.08	4.22			
63.5		2.66	3.03	3.76	3.90	4.33	4.48			
79.5		3.35								
80.0			3.85	4.78	4.96	5.51	5.69	6.06	6.78	7.50
88.9					5.53	6.15	6.35	6.76	7.57	8.37

Standard dimensions
  Other dimensions on request

# Sizes and weights

Roller tubes unpickled and self-coloured black surface

Wall thickness	2.3	2.6	2.9	3.2	3.6	4.0	4.5	5.0	5.4	5.6	5.9	6.3	7.1	8.0	8.8	10.0
Diameter	Weight (kg/m)															
60.3	3.92	3.70	4.11	4.51	5.03	5.55	6.19									
70.0		4.32	4.80	5.27												
76.1		4.71	5.24	5.75	6.44	7.11	7.95	8.76								
88.9		5.53	6.15	6.76	7.57	8.38	9.37	10.3								
101.6		6.35	7.06	7.77	8.70	9.63	10.8	11.9								
108.0		6.76	7.52	8.27	9.27	10.3	11.5	12.7								
133.0				10.2	11.5	12.7	14.3	15.8	17.0	17.6	18.5	19.7				
139.7				10.8	12.1	13.4	15.0	16.6	17.9	18.5	19.5	20.7	23.2			
159.0				12.3	13.8	15.3	17.1	19.0	20.5	21.2	22.3	23.7	26.6	29.8		
168.3				13.0	14.6	16.2	18.2	21.1	21.7	22.5	23.6	25.2	25.2	31.6	34.6	
177.8				13.8	15.5	7.1	19.2	21.3	23.0	23.8	25.0	26.6	29.9	33.5		
193.7				15.0	16.9	18.7	21.0	23.3	25.1	26.0	27.3	29.1	29.1	36.6	40.1	15.3
219.1				12.0	19.1	21.2	23.8	26.4	28.5	29.5	31.0	33.1	33.1	41.6	45.6	51.6

Tubes with other outside diameters and wall thicknesses on request and technical scope.

Standard dimensions
  Other dimensions on request

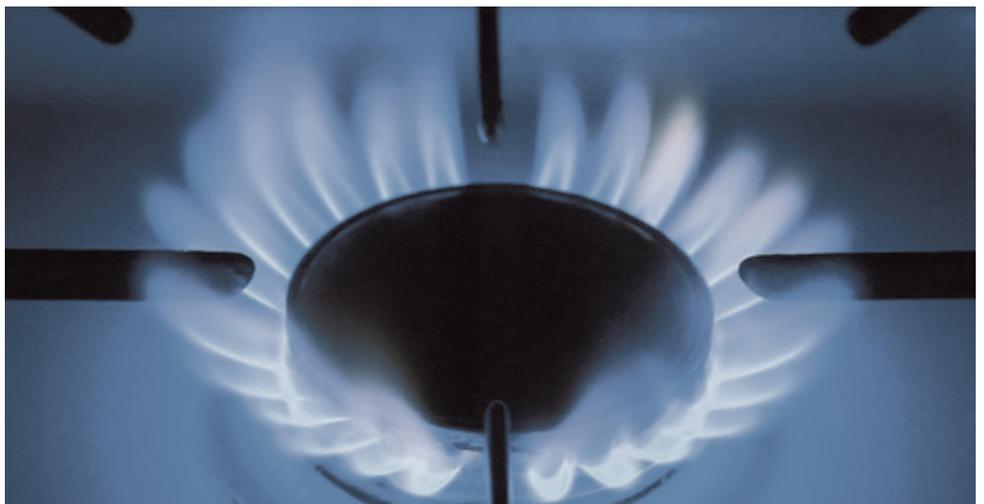


# Linepipes

Steel pipelines are used throughout the world to transport oil, gas, water, solids and many other media from production facilities or source to destination sites.

During the production of the tubes, all relevant parameters at every step of production are managed by modern control and monitoring systems (In-Process-Measuring).

This process of quality management is supervised, controlled and externally observed and certified according to DIN EN ISO 9001:2015, API and others.





Linepipes

# Data and facts

<b>Crude oil and natural gas</b>	Pipes for crude oil and natural gas		
<b>Drinking water pipes</b>	Pipelines for drinking water		
<b>Standards</b>	EN 10217-1/EN10224 DIN EN ISO 3183	DIN EN ISO 3183	API 5 L
<b>Materials</b>	P 235 TR2 L235	L 245 NE L 290 NE L 360 NE	Grad A/B X 42 X 52
<b>Length</b>	33.7–108.0 mm Diameter 6000 mm length, 88.9 mm Diameter 12 m length, 114.3–219.1 mm Diameter up to 16 m length, other length on request.		
<b>Versions</b>	<ul style="list-style-type: none"> <li>• Untreated black, with polyethylene coating in accordance with DIN 30670 or EN ISO 21809-1, with fibre cement coating in accordance with DVWG work sheet GW 340 (FZM-N)</li> <li>• GRP coating in different variations</li> <li>• PP coating in accordance with DIN 30678</li> <li>• Epoxy single layer coating in accordance with G015</li> </ul>		
<b>Specials</b>	Tubes with normalised annealed welding area. <b>Forms of ends:</b> plain ends cleanly deburred, bevelled ends in standard or special versions. Slip joint end in standard or special version. Other forms of ends on request.		

## Linepipes

### Sizes and weights

Wall thickness	3.2	3.6	4.0	4.5	5.0	5.4	5.6	5.9	6.3	7.1	8.0	8.8
Diameter	Weight (kg/m)											
33.7		2.97	3.20									
48.3		3.97	4.37									
60.3		5.03	5.55	6.19								
76.1		6.44		7.95								
88.9	6.76	7.57	8.38	9.37	10.3							
114.3	8.77	9.83	10.9	12.2	13.5							
168.3	13.0	14.6	16.2	18.2	21.1	21.7	22.5	23.6	28.2	31.6	34.6	39.0
219.1	17.0	19.1	21.2	23.8	26.4	28.5	29.5	31.0	37.1	41.6	45.6	51.6

Other dimensions on request

Standard dimensions
  Other dimensions on request





## Sizes and weights

Additional weights with FR\*3S polyethylene coating

Nominal size	Outside diameter	Additional weight with minimum polyethylene coating thickness DIN 30670	
		Standard version (n) (kg/m)	heavy-duty version (v) (kg/m)
25	33.7	0.2	0.3
40	48.3	0.3	0.4
50	60.3	0.4	0.5
65	76.1	0.5	0.7
80	88.9	0.5	0.8
100	114.3	0.7	1.0
125	133.0	0.9	1.2
125	139.7	0.9	1.2
150	159.0	1.0	1.4
150	168.3	1.1	1.5
200	219.1	1.4	1.8

## Additional weight with fibre-cement-mortar (FZM) coating

Outside diameter	Nominal FZM-coating thickness	Minimum coating (FZM)	Additional weight
114.3	9.0	7.0	8.1
168.3	9.0	7.0	11.5
219.1	9.0	7.0	14.7

Nominal FZM coating thickness can be exceeded by up to 3 mm.

Tubes with other outside diameters and wall thicknesses on request and technical scope.

Standard dimensions
 
 Other dimensions on request

# Sectional tubes

The high-level precision of the inner and outer dimensions as well as the extremely constant wall thicknesses make Flender sectional tubes a convincing solution. The exceptional degree of straightness and minimal twisting also offer an optimal base for laser cutting, stamping or punching. Our tubes are also notable for their excellent surface quality which enables elaborate finishes like mechanical chrome-plating, galvanising and powder coating.

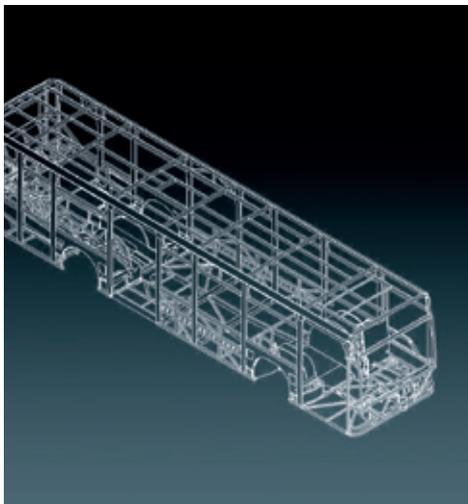
Flender sectional tubes are very often used for static implementation but also in the field of the design for uses in commercial offices, schools or for computer furniture, business facilities, storage and shelving systems as well as in the automotive industry. Excellent quality characteristics and our guaranteed delivery service guarantee a smooth process in your production.

The special advantages of Flender sectional tubes are:

- High-level precision of outer and inner dimensions (telescopic)
- Clean and even formation of edges with radii in accordance with customer specifications
- Extremely constant wall thicknesses
- Excellent surface quality for optimal coating
- Extremely exact degree of straightness and absolutely minimal twisting
- Very good characteristics for laser cutting, stamping, punching and welding
- Manufacture of special section possible on request

The high quality characteristics of our tubes mean we also optimise further processing and therefore the profitability of your production.

Why not try it out?



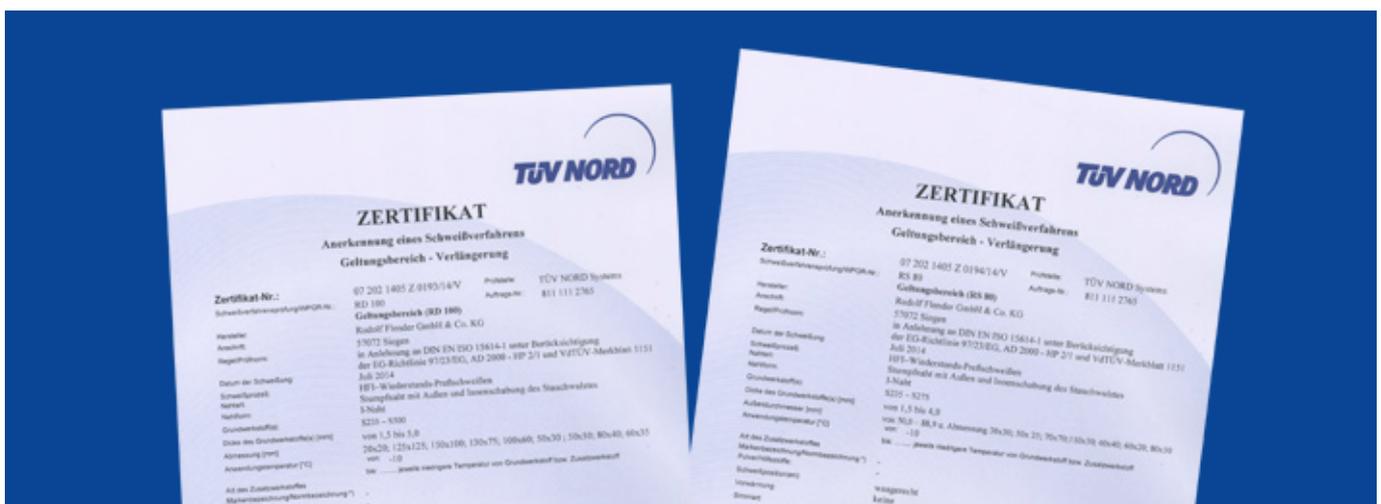


Sectional tubes



## Standards and specials

Standards	DIN EN 10305-5	DIN EN 10219-1/2
<b>Materials</b>	E 235 E 275 E 355 Other materials on request.	S 235 JRH S 275 JOH S 355 JOH Other materials on request.
<b>Length</b>	Lengths: manufactured lengths from 4000 - 12000 mm, cut lengths on request.	
<b>Specials</b>	Square tubes with one rounded edge. Rectangular tubes with one rounded edge. Flat oval tubes, tunnel tubes, special sections. All tubes can also be made by arrangement with special dimensions and thickness tolerances, defined welded seam position, eddy-current leak test. other special customer requirements on request.	



## Sizes and weights

Wall thickness	1.5	2.0	2.5	3.0	4.0
Diameter					
Square tubes					
30 x 30	1.340	1.750	2.150		
34 x 34	1.530	2.000	2.460	2.770	
35 x 35	1.570	2.070	2.540	2.860	
40 x 40	1.810	2.380	2.930	3.330	4.250
45 x 45	2.050	2.690	3.330	3.800	
50 x 50	2.269	3.010	3.720	4.280	5.510
55 x 55		3.320	4.110	4.750	6.140
60 x 60		3.640	4.500	5.220	6.760
70 x 70		4.260	5.290	6.160	8.020

Wall thickness	1,5	2,0	2,5	3,0	4,0
Diameter					
Rectangular tubes					
35 x 25	1,340	1,750	2,150	2,390	
40 x 20	1,340	1,750	2,150	2,390	
40 x 25	1,460	1,910	2,350		
40 x 30	1,570	2,070	2,540	2,860	
45 x 20	1,460	1,910	2,350		
45 x 25	1,570	2,070	2,540	2,860	
50 x 20	1,570	2,070	2,540	2,860	
50 x 25	1,690	2,220	2,740	3,100	
50 x 30	1,810	2,380	2,940	3,330	4,250
50 x 34	1,900	2,510			
50 x 35	1,930	2,540			
50 x 40	2,050	2,690	3,330	3,810	4,880
55 x 34	2,020	2,660			
60 x 20	1,810	2,380	2,940	3,330	
60 x 25	1,930	2,540	3,130		
60 x 30	2,050	2,690	3,330	3,810	4,880
60 x 40	2,280	3,010	3,720	4,280	5,510
60 x 50		3,320	4,110	4,750	6,140
70 x 20		2,690	3,330	3,810	
70 x 30		3,010	3,720	4,280	
70 x 40		3,320	4,110	4,750	6,140
70 x 50		3,640	4,500	5,220	6,760

## Sizes and weights

Wall thickness	1,5	2,0	2,5	3,0	4,0
Diameter					
<b>Rechteckrohre</b>					
80 x 20		3,010	3,720	4,280	
80 x 30		3,320	4,110	4,750	6,140
80 x 40		3,640	4,510	5,220	6,760
80 x 50		3,950	4,900	5,690	7,390
80 x 60		4,260	5,290	6,160	8,020
90 x 30		3,640	4,510	5,220	6,760
90 x 50		4,260	5,290	6,160	8,020
100 x 40		4,260	5,290	6,160	8,020



## Sizes and weights

Wall thickness	1,5	2,0	2,5	3,0	4,0
Diameter					
<b>Tubes with one rounded edge</b>					
30 x 30	1,310	1,715			
40 x 25	1,430	1,900			
40 x 28	1,520	1,980			
<b>Flat oval tubes</b>					
50 x 25	1,458	1,919	2,950		
50 x 30	1,484	2,028			
60 x 30		2,323			

Tubes with other outside diameters and wall thicknesses on request and technical scope.

Standard dimensions
  Other dimensions on request

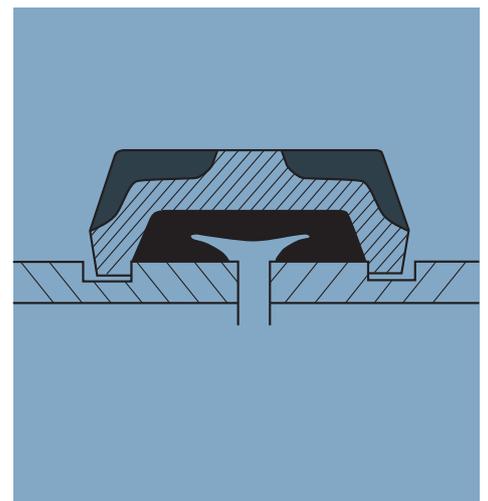


# Roll grooved tubes

We also manufacture pipes with grooves directly rolled into the pipe ends. This is achieved using a new processing station which mainly consists of two automatic groove rolling systems which clamp the pipe, turn it and thereby produce the groove using hydraulically controlled sets of rollers.

The economic advantage compared with weld-on grooved sockets results from the saving in costs incurred for preparing separately turned pipe ends and for welding them to the pipe. This type of pipe is especially suitable for the transport of water, air or

solid matter under the rugged conditions prevailing on construction sites, which necessitate swift and easy connection of pipes using commercially available couplings without any special tools. The groove is compatible with all commercially available couplings, fittings and fasteners. These pipes are preferred for use in the construction of sprinkler systems, in the construction of ducts for air as well as for cooling or service water, in mining and civil engineering, e.g. for dewatering systems, carbon and mud pipelines, etc. as well as in agricultural applications for irrigation plants.



Pictures: Victaulic Europe



## Sizes and tolerances

Diameter	Wall thickness		Pos. of seal A	Wideness of Groove B	Diameter of Groove C		Depth of Groove D
	min.	max.			Base	Tolerance	
<b>60.3</b>	2.6	3.6	+/- 0.76	+/- 0.76	57.15	- 0.38	1.60
<b>76.1</b>	2.6	3.6	15.88	8.74	72.26	- 0.46	1.98
<b>88.9</b>	2.9	4.0	15.88	8.74	84.94	- 0.46	1.98
<b>114.3</b>	2.9	4.0	15.88	8.74	110.08	- 0.51	2.11
<b>139.7</b>	3.2	4.0	15.88	8.74	135.48	- 0.51	2.11
<b>168.3</b>	3.2	4.5	15.88	8.74	163.96	- 0.56	2.16
<b>219.1</b>	3.2	5.0	19.05	11.91	214.40	- 0.64	2.34

Other diameters, wall thicknesses or standards on request.

Standard dimensions
  Other dimensions on request



**Flender**

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