

Hot-rolled tubes from Zeithain



**MANNESMANN**  
**PRECISION TUBES**

A Member of the Salzgitter Group



**MANNESMANN**  
**RÖHRENWERK**

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# Mannesmann Precision Tubes



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## The group

As the leading European producer of cold-drawn seamless and welded precision steel tubes, the Mannesmann Precision Tubes Group offers a wide range of products. We can offer exceptional service in quality, advice, sales and service – with plenty of scope for intelligent solutions.

Our sites in Germany, France, the Netherlands and Mexico provide the preconditions for exceptional delivery performance and customer satisfaction.

## Range of dimensions from Mannesmann Precision Tubes

Seamless precision steel tubes according to EN 10305-1 and EN 10305-4

Outside diameter:	1.5 mm – 178 mm	0.059 – 7.008“
Wall thickness:	0.2 mm – 17.5 mm	0.008 – 0.689“

Welded precision steel tubes according to EN 10305-2

Outside diameter:	16 mm – 120 mm	0.630 – 4.724“
Wall thickness:	0.8 mm – 7.5 mm	0.031 – 0.295“

Size-rolled precision steel tubes according to EN 10305-3

Outside diameter:	25 mm – 114.3 mm	0.985 – 4.5“
Wall thickness:	1.75 mm – 8.5 mm	0.069 – 0.334“

Other dimensions on request

## The Zeithain works

The Mannesmannröhren-Werk GmbH is the seamless tube rolling mill of the Mannesmann Precision Tubes Group. Seamless steel tubes from Saxony have a long tradition reaching back to the year 1907 with the commissioning of the first works in Riesa. The foundation stone for the building of the new VEB Stahl- und Walzwerk Riesa in Zeithain was laid in 1961.

From 1965 to 1990, the first hot-rolling line was operated in Tube Mill III. In 1978, Tube Mill IV was added as a second hot-rolling mill with push bench. The company Mannesmannröhren-Werke Sachsen GmbH, Zeithain was founded in 1991 as a wholly owned subsidiary of the company Mannesmannröhren-Werke AG, Mülheim an der Ruhr, and then purchased the tube mill in Zeithain. Since then, there has been extensive investment in the plant technology and especially in process control and guidance systems.

Since February 2008, a three-roll piercing mill has been combined with a push bench in Zeithain, the first time in the world. With this innovative concept, the production capacity was increased from 170 Tt/year to 205 Tt/year. This makes the works in Zeithain one of the highest capacity producers in the market segment for seamless tubes with small diameters and also the most modern push bench plant in Europe. Continuous investment and the employment of qualified specialists ensure the high quality of the seamless Mannesmann tubes.

## Range of dimensions from Mannesmannröhren-Werk

Hot-rolled, seamless steel tubes – Hollows

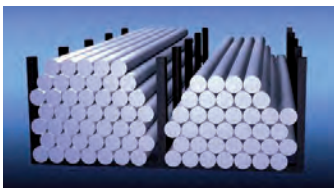
Outside diameter:	17.2 mm – 133 mm	0.677 – 5.236“
Wall thickness:	2 mm – 20 mm	0.079 – 0.787“
Length:	up to 22 m	up to 72.2’



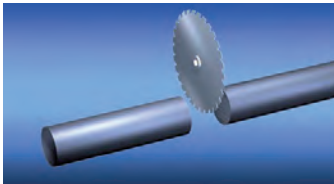
# Mannesmann Tubes from Saxony



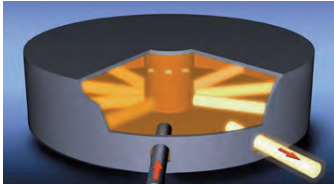
## The production process



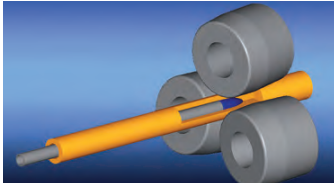
Raw material store - continuous round-cast bars



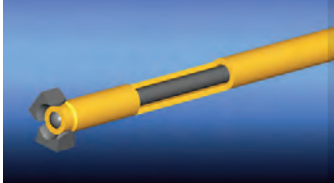
Cold cutting to blocks



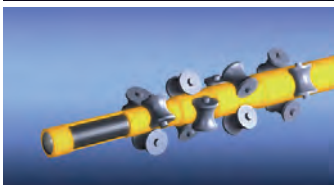
Block heating



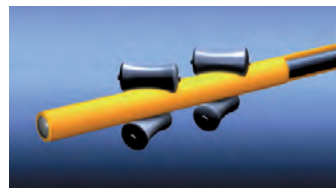
Piercing to hollows



Push bench preparation of the hollows in the dishing press



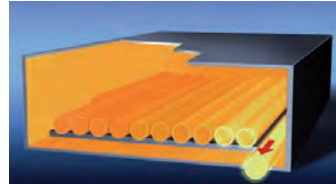
Second stage of forming on the push bench



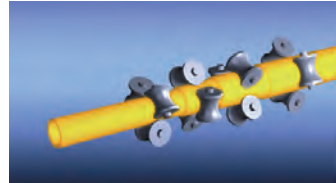
Diameter enlargement in the detaching mill



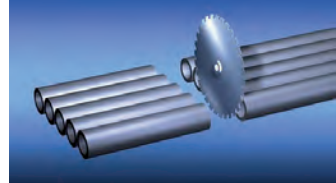
Cutting off the flange shoulder with hot saw (only for certain dimensions)



Reheating of the push bench hollows



Final rolling in the stretch reducing mill



Sawing to ordered length



## Intended uses and applications

- Power generation
  - Boiler tubes
  - Tubes for heat exchangers
  - Tube for superheaters
- Mechanicals
  - Structural tubes
  - Tubes for mechanical working
  - Tubes for steelwork
- Pipes (e.g. for low and high temperatures)

## Production plants and tube production

- Finishing to size with heat treatment
- Non-destructive testing
- End working
- Marking and protective coating

## Production programme

Range of dimensions according to DIN 2448/ASME B36.10M

Outside diameter: 17.2 mm – 133 mm 0.677 – 5.236"

Wall thicknesses: 2 mm – 20 mm 0.079 – 0.787"

Lengths: up to 22 m 72.2'

Other dimensions on request



# Hot-rolled hollow profiles for steelwork

of unalloyed structural steels and of fine grain structural steels

## EN 10210-1

Tubes of requirement class A

Short name	Material number	
S235JRH	1.0039	
S275J2H	1.0138	
S275J0H	1.0149	Unalloyed carbon steel
S355J0H	1.0547	
S355J2H	1.0576	
S275NH	1.0493	
S275NLH	1.0497	Fine grain structural steel
S355NH	1.0539	
S355NLH	1.0549	
S460NH	1.8953	
S460NLH	1.8956	



# Seamless steel tubes for pressure loading



## EN 10216-1

Tubes of unalloyed steel with specified properties at room temperature

Short name	Material number
P195TR1	1.0107
P195TR2	1.0108
P235TR1	1.0254
P235TR2	1.0255
P265TR1	1.0258
P265TR2	1.0259

## EN 10216-2

Tubes of unalloyed and alloyed steels with specified properties at increased temperatures

Short name	Material number
P235GH-TC1	1.0345
P235GH-TC2	1.0345
P195GH-TC1	1.0348
P195GH-TC2	1.0348
P265GH-TC1	1.0425
P265GH-TC2	1.0425
20MnNb6	1.0471
X10CrWMoVNb9-2	1.4901
X10CrMoVNb9-1	1.4903
16Mo3	1.5415
13CrMo4-5	1.7335
10CrMo5-5	1.7338
7CrMoVTiB10-10	1.7378
10CrMo9-10	1.7380
11CrMo9-10	1.7383
14MoV6-3	1.7715





## EN 10216-3

Tubes of alloyed fine grain structural steels

Short name	Material number
P275NL1-TC1	1.0488
P275NL1-TC2	1.0488
P355N-TC1	1.0562
P355N-TC2	1.0562
P355NH-TC1	1.0565
P355NH-TC2	1.0565
P355NL1-TC1	1.0566
P355NL1-TC2	1.0566
P275NL2-TC1	1.1104
P275NL2-TC2	1.1104
P355NL2-TC1	1.1106
P355NL2-TC2	1.1106

## EN 10216-4

Tubes of unalloyed and alloyed steels with specified properties at low temperatures

Short name	Material number
P215NL-TC1	1.0451
P215NL-TC2	1.0451
P265NL-TC1	1.0453
P265NL-TC2	1.0453

# Hollows

## Delivery programme for hollows

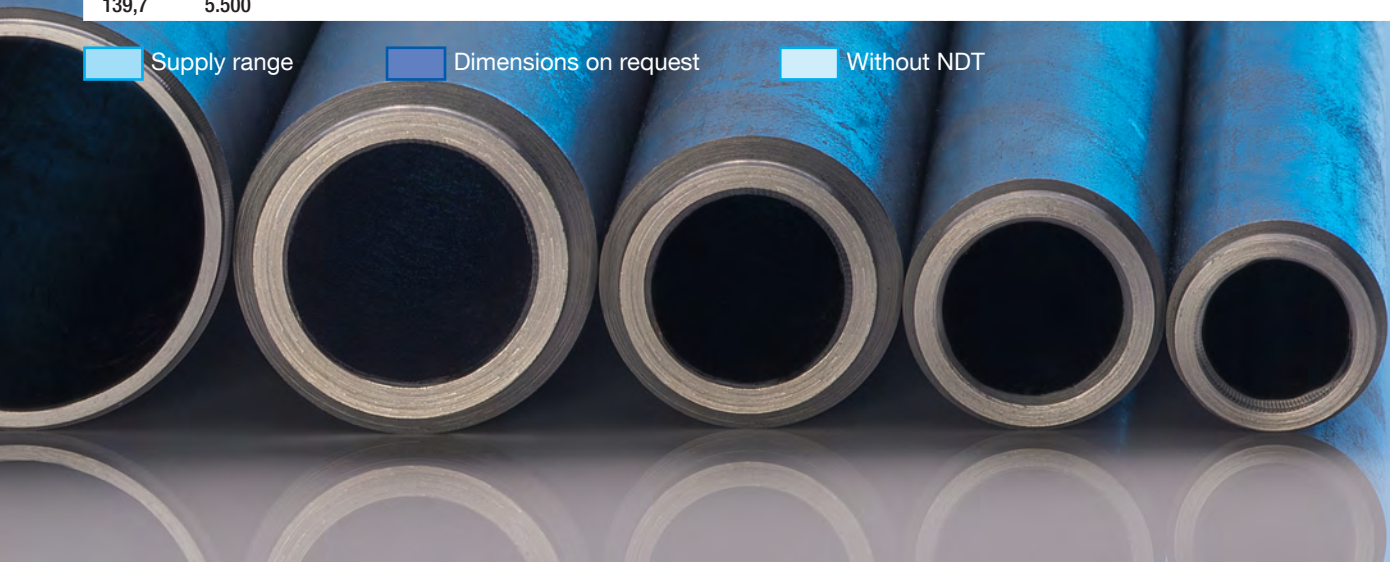
Outside diameter		Wall thickness																					
mm	Inch	1,8	2,0	2,3	2,6	2,9	3,2	3,6	4,0	4,5	5,0	5,6	6,3	7,1	8,0	8,8	10,0	11,0	12,5	14,2	16,0	17,5	20,0
		0.071	0.079	0.091	0.102	0.114	0.126	0.142	0.157	0.177	0.197	0.220	0.248	0.280	0.315	0.346	0.394	0.433	0.492	0.559	0.630	0.689	0.787
17,2	0.677																						
19,0	0.748																						
20,0	0.787																						
21,3	0.839																						
25,0	0,984																						
26,9	1.059																						
28,0	1.102																						
30,0	1.181																						
31,8	1.252																						
33,7	1.327																						
35,0	1.378																						
38,0	1.496																						
42,4	1.669																						
44,5	1.752																						
48,3	1.902																						
51,0	2.008																						
54,0	2.126																						
57,0	2.244																						
60,3	2.374																						
63,5	2.500																						
70,0	2.756																						
73,0	2.874																						
76,1	2.996																						
82,5	3.248																						
88,9	3.500																						
95,0	3.740																						
101,6	4.000																						
108,0	4.252																						
114,3	4.500																						
122,0	4.803																						
124,5	4.902																						
127,0	5.000																						
133,0	5.236																						
139,7	5.500																						

Supply range      Dimensions on request

## Delivery programme for tubes finished to size

Outside diameter		Wall thickness																					
mm	Inch	1,8	2,0	2,3	2,6	2,9	3,2	3,6	4,0	4,5	5,0	5,6	6,3	7,1	8,0	8,8	10,0	11,0	12,5	14,2	16,0	17,5	20,0
		0.071	0.079	0.091	0.102	0.114	0.126	0.142	0.157	0.177	0.197	0.220	0.248	0.280	0.315	0.346	0.394	0.433	0.492	0.559	0.630	0.689	0.787
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124,5	4.902																						
127,0	5.000																						
133,0	5.236																						
139,7	5.500																						

Supply range
  Dimensions on request
  Without NDT



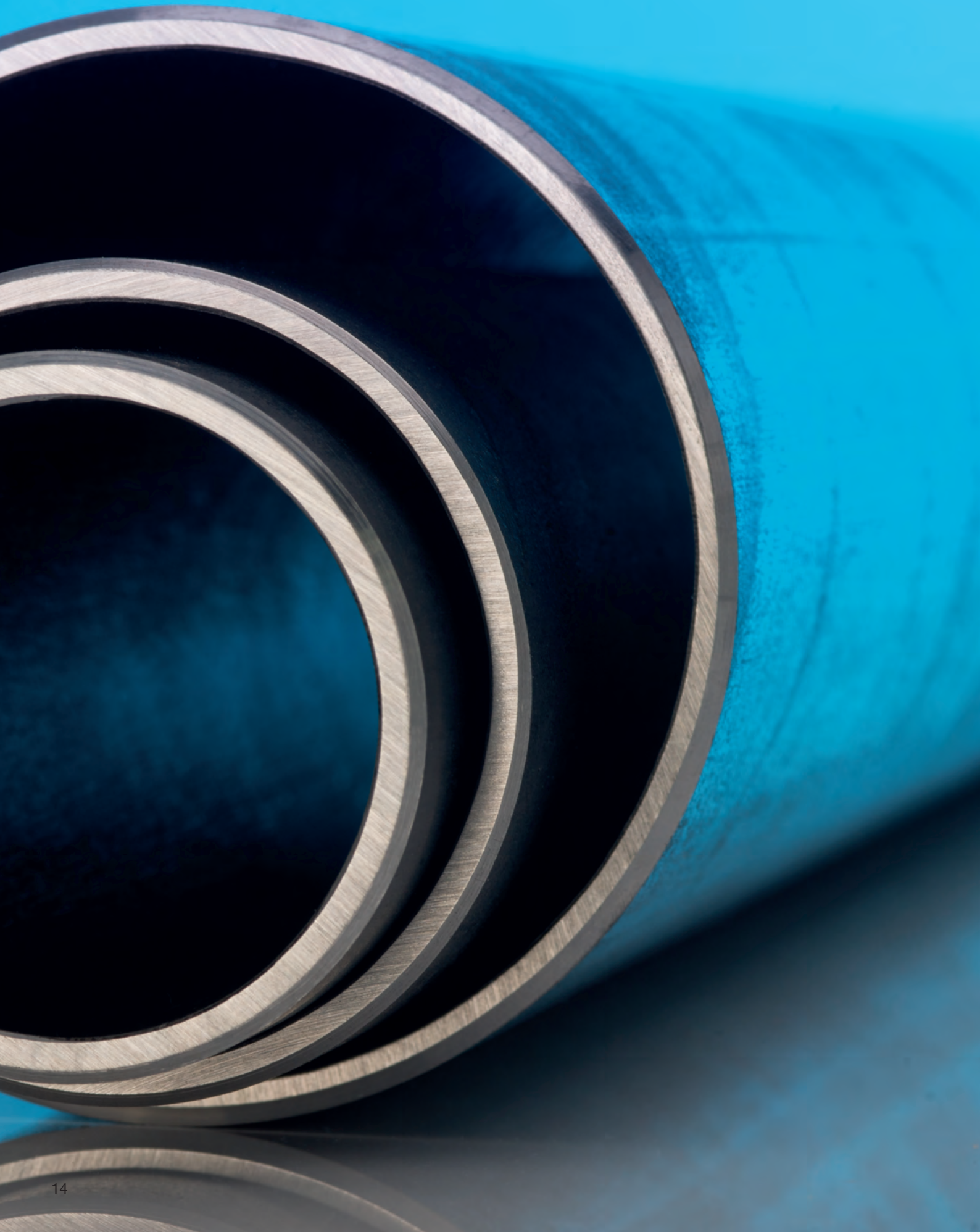


Standards	Description
EN ISO 3183	Petroleum and natural gas industries - Steel pipe for pipeline transportation systems
EN 10083	Steels for hardening and tempering – Part 1: General technical delivery conditions
EN 10084	Case hardening steels – Technical delivery conditions
EN 10255	Non-Alloy steel tubes suitable for welding and threading - Technical delivery conditions
EN 10210-1 und -2	Hot-finished structural hollow sections of non-alloy and fine grain steels
EN 10216-1	Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 1: Non-alloy steel tubes with specified room temperature properties
EN 10216-2	Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 2: Non-alloy and alloy steel tubes with specified elevated temperature properties
EN 10216-3	Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 3: Alloy fine grain steel tubes
EN 10216-4	Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 4: Non-alloy and alloy steel tubes with specified low temperature properties
EN 10297-1	Seamless circular steel tubes for mechanical and general engineering purposes - Technical delivery conditions
DIN 1629	Seamless circular tubes of unalloyed steels for special requirements – Technical delivery conditions
Bulletins	Description
AD 2000 W0	General principles for materials
VdTÜV	Material leaflets



Standards	Description
ASTM A/ASME SA 53	Standard specification for tube, steel, black and hot-dip galvanised, galvanised, welded and seamless
ASTM A/ASME SA 106	Standard specification for seamless tubes of carbon steel for high temperatures
ASTM A/ASME SA 192	Standard specification for seamless boiler tubes of carbon steel for high pressures
ASTM A/ASME SA 209	Standard specification for seamless carbon-molybdenum alloyed boiler and superheater tubes
ASTM A/ASME SA 210	Standard specification for seamless boiler and superheater tubes of steels with medium carbon content
ASTM A/ASME SA 213	Standard specification for seamless ferritic and austenitic alloyed steel tubes for boilers, superheaters and heat exchangers
ASTM A/ASME SA 333	Standard specification for seamless and welded steel tubes for low temperatures and other applications with impact toughness requirements
ASTM A/ASME SA 335	Standard specification for seamless ferritic alloyed steel tubes for high temperatures
ASTM A/ASME SA 450	Standard specification for general requirements for carbon and low alloy steel tubes
ASTM A/ASME SA 501	Standard specification for hot-rolled welded and seamless structural tubes of carbon steel
ASTM A/ASME SA 519	Standard specification for seamless carbon and alloyed tubes for mechanical working
ASTM A/ASME SA 530	Standard specification for general requirements for specialised carbon and alloyed steel tubes
ASTM A/ASME SA 999	Standard specification for general requirements for alloyed and stainless tubes
ASTM A/ASME SA 1016	Standard specification for general requirements for ferritic alloyed steel, austenitic alloyed steel and stainless steel tubes

Quality



**Testing during production:**

- Visual and dimensional checks
- Identity checking
- Non-destructive testing
  - Ultrasound
  - Eddy current
- Water pressure testing

**Testing in the laboratory:**

- Destructive testing
  - Technological testing (ring flattening, ring drifting and ring expansion tests, bending test)
  - (tension test at room temperature and increased temperatures, Charpy impact test at room temperature and low temperature, hardness testing)
- Chemical analysis
- Metallographic determination of:
  - Internal structure
  - Degree of purity
  - Grain size
- Post Weld Heat Treatment (PWHT) – heat treatment simulation



**Quality**

Mannesmannröhren-Werk GmbH has an integrated management system with the components:

- Quality according to ISO 9001: 2015
- Environment according to ISO 14001: 2015
- Energy according to ISO 50001: 2018
- Occupational safety according to ISO 45001: 2018

Mannesmannröhren-Werk GmbH can provide test certificates according to EN 10204:2004 for:

- Declaration of compliance 2.1
- Test report 2.2
- Inspection certificate 3.1
- Inspection certificate 3.2

Mannesmannröhren-Werk GmbH has the following certificates and approvals:

- Aramco
- Pressure equipment directive 2014/68/EU
- AD 2000 bulletin W 0 / TRD 100
- Construction Products Regulation – CPR
- LRQA Germany
- Shell International B.V.

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**MANNESMANN. Das Rohr.**