



Line pipe for water and wastewater

With water, quality counts

Salzgitter Mannesmann Line Pipe has a long tradition in the production of longitudinally HFI-welded steel tube and pipe and a wealth of experience in correctly balancing all the decisive quality parameters.

Our customers can depend on our seven core competencies.



A wide product range

A comprehensive supply range for gas, oil, water, construction, heat transport, and mechanical engineering - and all of it in steel grades to German and international standards, with a variety of joining techniques. Rounded off with a broad range of accessories.

Expertise and experience

Modern manufacturing processes based on a century of experience in pipe production, high investments in research and development, coverage of all related fields, close cooperation with research institutes and professional bodies, and vast experience of national and international projects.

Quality deliveries

Short delivery times through optimized production programs, extensive stock on hand for all kinds of replacement pipes and small orders, and punctual deliveries and deadline compliance to keep our customers on schedule with their projects.

Quality products

Full control of our entire production chain, strictest quality management at all stages of manufacture, from hot wide strip to shipment of the finished products, all embedded in a state-of-the-art inspection and testing regime.

Customer orientation

A worldwide distribution network, a can-do approach to special application requirements, and an ongoing exchange of insights and experience with customers around the globe.

Quality advice

Specialists for pipeline planning, pipe specification, transport, storage and laying, experience gained in numerous challenging projects, from planning through to implementation.

Flexibility

Two locations for the parallel production of orders of all sizes and degrees of specialization, and production control geared to customer needs.



Naturally perfect

Pipelines are the arteries of our modern industrial society. They transport water, are indispensable in producing and moving energy in many forms over enormous distances, and sustain in countless other ways both life and the economy.

The significance of pipeline networks is so fundamental that even a small error can cause major problems in a very short time. Similar to interference with the eco-system, disorders can lead to a chain reaction. The effects of errors exponentiate: first a single pipe fails - in the end, a whole community grinds to a halt.

That's why we compare ourselves and our work to Nature and the processes in an eco-system. Just like Nature, we produce within a system, where the one process leads smoothly and precisely into the next. This approach brings us closest to our ideal: pipes our customers can rely on, absolutely.

This brochure will tell you more about the pipes we produce for water and wastewater systems. For all their diversity, there is one decisive feature that the products in our range have in common: **top quality**.

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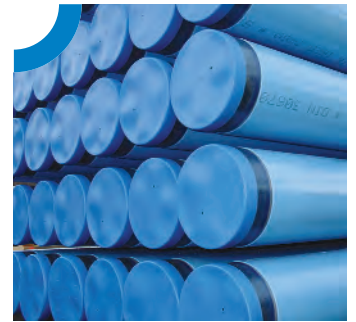
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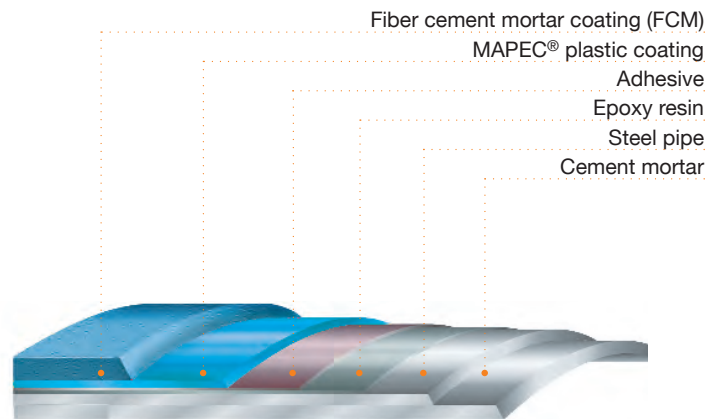
Standardized diversity

With Salzgitter Mannesmann Line Pipe by your side you can be sure of completing your water pipeline project cost-effectively and on schedule. Our wide range of steel grades, pipe lengths and wall thicknesses, coatings and linings and, above all, the many different connection types let you choose the optimum design for every application profile.

Water pipe structure

While the required hygienic properties and corrosion protection for the pipe inside surface are ensured by our cement mortar lining, the pipe outside must additionally be protected against mechanical damage. That's why our CSP (cement mortar-steel-plastic) pipe features not just one coating but is also available with an additional top coat of fibrous cement mortar as required.

Our customers profit from our long-standing expertise and experience and our close links to the ultra-modern steelworks, rolling mills and research activities within our Group.



All standards met

Standards	Application rules	Materials
EN 10224	DIN 2460	L235/L275/L355

Other standards, rules and specifications on request

We keep an extensive stock of pipes to various standards at our warehouse. This enables us to react flexibly to customer requirements, whether it's delivery at short notice in an emergency, or small to medium-scale construction projects.

Salzgitter Mannesmann Line Pipe manufactures flange pipe or

pipe grooved for clamped joints and other special designs to order at both production sites. We also supply pipe to specific requirements, such as special coatings for unburied pipelines or thermal insulation.

Line pipe with butt-weld joint for drinking water and similar media

Pipe outside diameter in mm	Nominal width		Pipe wall thickness* in mm	Pipe length in m	Weight per meter in kg/m**	Operating pressure PFA in bar
	mm	Inches				
114.3	100	4½	3.6	6-14	15.4	89
139.7	125	5½	4.0	6-14	20.5	81
159.0	150	6¼	4.0	6-14	23.5	74
168.3	150	6⅝	4.0	6-14	25.8	67
219.1	200	8⅝	4.5	6-16	36.6	58
273.0	250	10¾	5.0	6-16	49.1	52
323.9	300	12¾	5.6	6-16	65.3	49
355.6	350	14	5.6	6-16	71.9	44
406.4	400	16	6.3	6-16	89.2	44
508.0	500	20	6.3	8-16	112.0	35
610.0	600	24	6.3	8-16	135.0	29

Line pipe with slip-welding joint for drinking water, wastewater and other aggressive waters

Pipe outside diameter in mm	Nominal width		Pipe wall thickness* in mm	Pipe length in m	Weight per meter in kg/m**	Operating pressure PFA in bar
	mm	Inches				
114.3	100	4½	3.6	6-14	17.2	89
139.7	125	5½	4.0	6-14	22.7	81
159.0	150	6¼	4.0	6-14	26.1	74
168.3	150	6⅝	4.0	6-14	27.7	67
219.1	200	8⅝	4.5	6-16	39.1	58
273.0	250	10¾	5.0	6-16	52.3	52
323.9	300	12¾	5.6	6-16	67.3	49
355.6	350	14	5.6	6-16	74.0	44
406.4	400	16	6.3	6-16	91.7	44
508.0	500	20	6.3	8-16	115.1	35
610.0	600	24	6.3	8-16	138.8	29

* Wall thicknesses to DIN 2460 or customer specification

** Weight per meter includes cement mortar linings and PE coating

Other dimensions (outside diameters and wall thicknesses) on request



MAPEC® – the safe coating

MAPEC® is the registered trade mark for plastic coating systems consisting of polyethylene, polypropylene (PE/PP) or polyamide (VESTAMID®). These coatings are made exclusively of proven and approved materials and applied using the blown film extrusion process. It meets all the applicable national and international standards (e.g. EN, ISO, CAN/CSA) and, of course, the most exacting customer specifications.

There are various types of MAPEC® coating available to suit all types of terrain and service conditions up to operating temperatures of 85 °C (PE)/110 °C (PP).

MAPEC® coating (HDPE)

For a long service life under normal to medium thermal, mechanical, or chemical loads; also suitable for severely aggressive soils.

MAPEC® coating (PP)

For applications beyond the loadability of polyethylene, e.g. higher temperatures or hardness requirements.

MAPEC® multi-layer coating systems

For increased mechanical protection, we also supply pipe with a multi-layer coating system, e.g. polyethylene/polyamide (PE/VESTAMID®) or polyethylene/polypropylene (PE/PP) coating.

MAPEC® coating with integrated ribbing (protection against stones)

For special protection requirements, e.g. trenchless pipeline revamps using the pulling technique. The ribbing protects the pipe against damage and ensures a uniform spacing between the old and the new pipe.

MAPEC® RC – the special rough coat

For special requirements on the surface roughness of plastic coating:

- Onshore pipe-laying: anti-skid property when pipelines or pipe racks have to be walked on
- Offshore pipe-laying: increased pipe-laying safety due to higher sliding friction (prevention of pipe slide-off)
- Offshore/heavy coat: higher shear resistance between concrete and plastic coating

Fiber cement mortar coating - mechanical protection at its best

MAPEC® coating with additional FCM-N top coat

MAPEC® can be complemented with a fiber cement top coat to DVGW worksheet GW 340. Various types are available to match the soil conditions of the project in hand: the standard type FCM-N, FCM-S on a profiled surface, and a special rough coating. For pipelines subject to extremely high mechanical loads in stony or rocky terrain, or in subsidence regions.

Additional benefits include:

- no sand cushioning required (no dumping charges)
- spoil can be used as backfill
- field bending possible

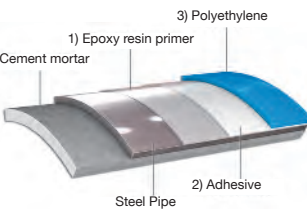
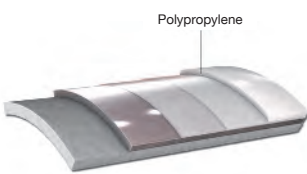
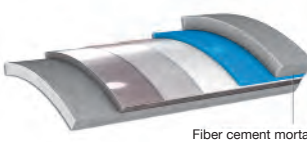
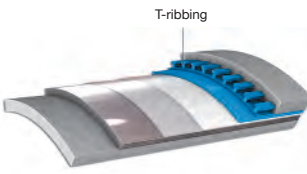
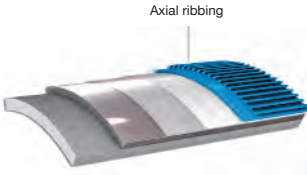
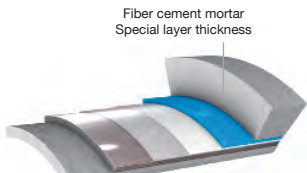
Coating thicknesses for special applications such as offshore pipe-laying are available on request.

MAPEC® coating with interlocking (T-rib) profile and additional FCM coat (FCM-S)

The interlocking T-ribbing with an additional rough coat ensures a firm bond between the PE/PP coating and the FCM coat.

Additional benefits:

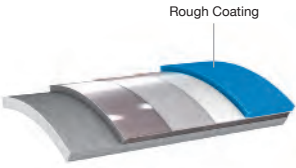
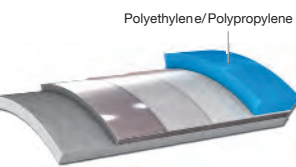
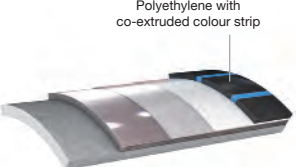
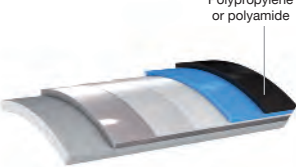
- no excessive stresses between the PE/PP coating and the FCM top coat
- fractures and cracks in the FCM coat are reduced to a minimum
- ideal for trenchless pipe-laying
- increased shear resistance between concrete and plastic coating

<p>MAPEC®</p>  <p>Labels: 1) Epoxy resin primer, 2) Adhesive, 3) Polyethylene, Cement mortar, Steel Pipe</p>	<p>Type</p> <p>MAPEC® polyethylene (HDPE) coating Service temperatures up to 85 °C</p>	<p>Description</p> <p>3-layer coating, consisting of 1) Epoxy resin primer, 2) Adhesive and 3) Polyethylene</p>
<p>MAPEC® Polypropylene</p>  <p>Label: Polypropylene</p>	<p>Type</p> <p>MAPEC® polypropylene(PP) coating Increased service temperatures up to 110 °C; coatings for higher temperatures on request.</p>	<p>Description</p> <p>3-layer coating, consisting of 1) Epoxy resin primer, 2) Adhesive and 3) Polypropylene.</p> <p>Product properties</p> <p>Efficient corrosion protection.</p> <p>Range of applications</p> <p>Increased (external or internal) thermal loads on the pipe coating. General conditions in pipe-laying, transportation and storage must be observed.</p>
<p>MAPEC® with FZM-N</p>  <p>Label: Fiber cement mortar</p>	<p>Type</p> <p>MAPEC® plastic coating with FCM-N fiber cement mortar top coat</p>	<p>Description</p> <p>3-layer coating (PE or PP) consisting of 1) Epoxy resin primer, 2) Adhesive and 3) PE/PP, plus FCM-N top coat to DVGW Worksheet GW 340.</p> <p>Product properties</p> <p>The FCM-N top coat provides for very high mechanical strength.</p> <p>Range of applications</p> <p>Pipe-laying in stony or rocky terrain.</p>
<p>MAPEC® with T-ribbing and FCM-S</p>  <p>Label: T-ribbing</p>	<p>Type</p> <p>MAPEC® plastic coating with T-ribbing and FCM-S fiber cement mortar top coat</p>	<p>Description</p> <p>3-layer coating (PE or PP), consisting of 1) Epoxy resin primer, 2) Adhesive and 3) PE/PP with co-extruded T-ribbing plus fused-on PE particles (rough coat) and FCM-S top</p> <p>Product properties</p> <p>coat to DVGW Worksheet GW 340. The interlocking effect between the 3-layer coating and the integrated T-ribbing with rough-coat surface on the one hand and the FCM-S top coat on the other generates an extremely strong adhesive bond.</p> <p>Range of applications</p> <p>The combination of mechanical protection and shear force transmission makes this coating type specially suitable for trenchless pipe-laying projects.</p>
<p>MAPEC® with axial ribbing</p>  <p>Label: Axial ribbing</p>	<p>Type</p> <p>MAPEC® plastic coating with integrated axial ribbing</p>	<p>Description</p> <p>3-layer coating (PE or PP) consisting of 1) Epoxy resin primer, 2) Adhesive and 3) Special MAPEC® layer with axial ribbing.</p> <p>Product properties</p> <p>Pipe coating with increased resistance to mechanical impact and abrasion.</p> <p>Range of applications</p> <p>Buried pipe-laying and pipe relining projects, due to the increased abrasion protection provided by the coating.</p>
<p>MAPEC® with FCM top coat</p>  <p>Label: Fiber cement mortar, Special layer thickness</p>	<p>Type</p> <p>MAPEC® plastic coating with thick-layer FCM top coat (FCM-N / FCM-S)</p>	<p>Description</p> <p>3-layer coating (PE or PP), consisting of 1) Epoxy resin primer, 2) Adhesive and 3) PE/PP layer, plus FCM top coat to customer specifications.</p> <p>Product properties</p> <p>The thick-layer FCM top coat generates high mechanical strength and integrated protection against buoyancy.</p> <p>Range of applications</p> <p>The MAPEC® + FCM coating system is particularly well suited as a heavy coat against buoyancy.</p>

MAPEC® advanced solutions for complex challenges in pipe-line construction

For particularly challenging and complex pipe-laying projects, other than fiber cement mortar coats are available as top coats on plastic coatings. Besides a variety of options regarding the plastic coating's

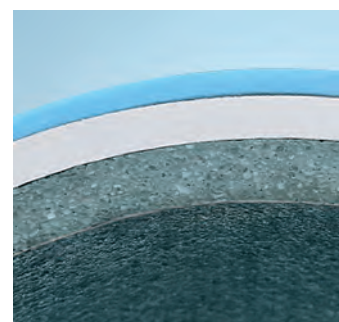
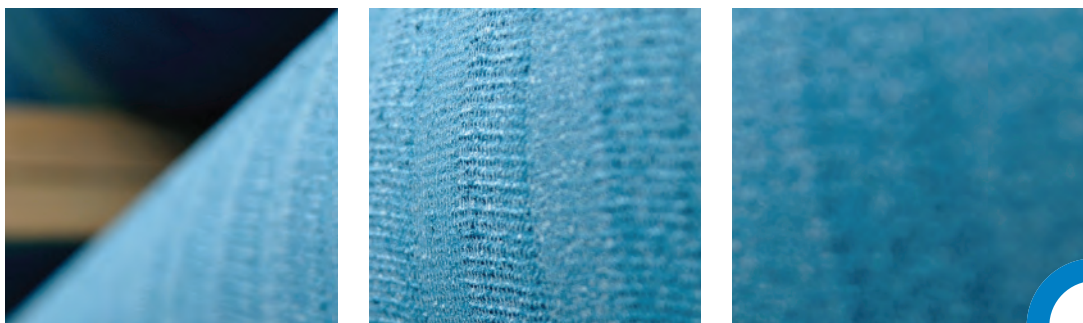
thickness and surface condition we also offer a plastic multi-layer system that meets the most exacting demands on mechanical strength.

<p>MAPEC® with Rough Coating</p>  <p>Rough Coating</p>	<p>Type</p> <p>Description</p> <p>Product properties</p> <p>Range of applications</p>	<p>MAPEC® plastic coating with Rough Coating (RC) surface PP corrosion protection coating for higher service temperatures up to 110 °C; coatings for higher temperatures on request.</p> <p>3-layer plastic coating (PE or PP) consisting of 1) Epoxy resin primer, 2) Adhesive and 3) PE/PP top layer with fused-on PE particles for a rough surface structure.</p> <p>Pipe coating system with high friction resistance.</p> <p>Recommended where high friction resistance of the coating surface is a criterion.</p>
<p>MAPEC® with special layer thicknesses</p>  <p>Polyethylene/Polypropylene</p>	<p>Type</p> <p>Description</p> <p>Product properties</p> <p>Range of applications</p>	<p>MAPEC® plastic coating with special layer thicknesses (HDPE) for a max. service temperature of 85 °C, or polypropylene for up to 110 °C</p> <p>MAPEC® 3-layer coating with special layer thicknesses (PE) or with layer thicknesses increased to customer specifications (PP), consisting of 1) Epoxy resin primer, 2) Adhesive and 3) Polyethylene/polypropylene.</p> <p>Special corrosion protection for line pipe (gas/oil, drinking water/waste water/brines, etc.)</p> <p>Buried pipe-laying in rock-free terrain.</p>
<p>MAPEC® with color strip marking</p>  <p>Polyethylene with co-extruded colour strip</p>	<p>Type</p> <p>Description</p> <p>Product properties</p> <p>Range of applications</p>	<p>MAPEC® with color strip marking, for all PE coatings and coating thicknesses (standard, increased, special)</p> <p>3-layer coating consisting of 1) Epoxy resin primer, 2) Adhesive and 3) Polyethylene with 4 or 8 (> DN 355.6 mm) longitudinal strips in the following colors: blue (compressed air), yellow (gas), red (cable), green (water) and brown (flammable liquids); other colors on request.</p> <p>Durable continuous marking according to the intended pipeline medium.</p> <p>In line with customer specifications.</p>
<p>MAPEC® multi-layer system</p>  <p>Polypropylene or polyamide</p>	<p>Type</p> <p>Description</p> <p>Product properties</p> <p>Range of applications</p>	<p>MAPEC® multi-layer plastic coating system</p> <p>4-layer coating, consisting of 1) Epoxy resin primer, 2) Adhesive and 3) Polyethylene layer with 4) polypropylene or polyamide (VESTAMID®) top coat</p> <p>The polypropylene or polyamide (VESTAMID®) top coat serves for mechanical protection. The roughened PE surface provides for increased shear strength.</p> <p>Projects with increased requirements on the coating's mechanical strength, e.g. trenchless pipe-laying.</p>

On request, all coatings can be supplied to other international standards and customer specifications.

Standard thicknesses are in accordance with DIN 30670, DIN 30678 or ISO 21809-1. Greater thicknesses or special thicknesses to customer specifications are available on request. In addition, our plastic coatings can be made to all applicable international standards and individual customer specifications.

The plastic-coated pipes are marked in line with the relevant standard. If required, additional markings can be applied to customer specifications. This also includes colored paint markings. After coating, the pipe ends are usually provided with temporary corrosion protection.



The right protection for every application profile

Steel line pipe for the transportation of aqueous media is a composite product made from various materials. Each of these materials plays its specific role in the design, contributing to the pipe's outstanding service behavior. Our MAPEC® plastic coatings are extremely resistant to chemical attack, which means the steel pipe they protect can be laid in all classes of soil without any restriction. For mechanical protection, a cement mortar coating can be used. Optimum corrosion protection on the pipe inside surface is provided by cement mortar linings matched to the intended medium.

Type	Cement mortar lining CM-S
Description	Lining according to DIN 2880, EN 10298 Based on CEM I (Portland cement)
Properties	Excellent hygienic characteristics, optimally suited to drinking water through the use of CEM I, resistance to sulfate (variety S)
Application example	Standard lining for drinking water line pipe

Type	Cement mortar lining CM-S
Description	Lining according to DIN 2880, EN 10298 Based on CEM III (blast furnace cement)
Properties	Increased resistance to chemical attack
Application example	Pressurized wastewater mains

Type	Cement mortar lining CM-R
Description	Lining according to DIN 2880, EN 10298 Based on CEM III (blast furnace cement)
Properties	High resistance to chemical attack
Application example	Sewers (open channels)

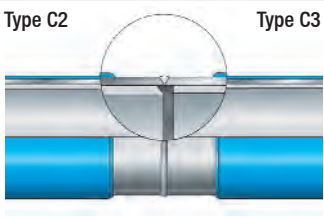
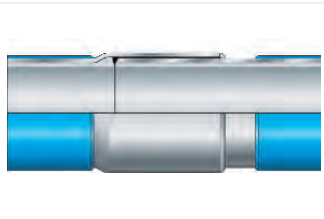
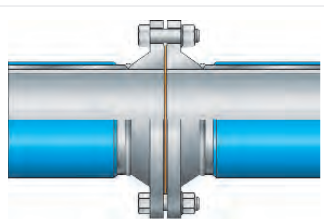
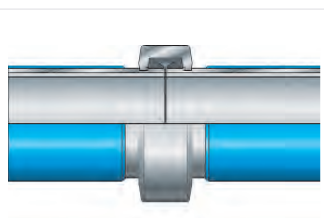
Other linings to customer specifications
Hot-dip galvanizing to DIN EN 10240

Joining techniques

Connections for all applications

Steel line pipe for water and wastewater systems is available with a full range of connections to suit the intended application. The requirements and designs are standardized in DIN 2460 and EN 10311.

We also supply non-permanent connections such as flanges or couplings. These types are predominantly used in unburied pipelines.

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Fittings for pipes with welded joints

Make: The fittings are prepared for butt welding (end design to EN ISO 9692-1: beveled, 1.6 (±0.8) mm web height) or for a slip-welding joint to DIN 2460. They are made from seamless steel pipe to EN 10216-2 (material P235GH) or longitudinally welded steel pipe to EN 10217-1 (P235TR1/TR2). Technical delivery conditions for fittings: DIN EN 10263-1/2.

Lining and coating: The fittings are lined with cement mortar (Portland cement) as standard. The fitting end design can be selected in EN 10298, Appendix A. The lining is manually applied in accordance with Table I-III.

Butt-weld fittings or couplings can be field-coated with polyethylene corrosion protection tapes. We also supply fittings with a single-layer PE coating. This is applied as PE powder sintered onto the hot steel surface which has previously been sand-blasted to SA 2.5.

Service pressure stages must be agreed when ordering. Further information is contained in our handbook "Steel line pipe for the water supply industry", which can also be downloaded at www.smlp.eu/english/Service/Downloads.

Dimensions of weld-on fittings

Fitting type	Technical delivery conditions	Special features
Bend, elbow	EN 10253	Cement-mortar lining
Tee	EN 10253	Cement-mortar lining
Reducer	EN 10253	Cement-mortar lining

Other designs and fitting types on request

Pipe-laying accessories

As a system supplier, Salzgitter Mannesmann Line Pipe delivers pipes complete with all the materials required for pipe-laying right to your construction site.

Our supply range includes field coating materials as well as all the necessary tools and devices.

Pipe-laying accessories
Heat-shrink tubes, corrosion protection tapes
Casting mortar, cement wraps
Sealing materials (slip-welding joint)
Angle grinder with an attachment for cutting back the cement mortar lining



Tried and tested

Salzgitter Mannesmann Line Pipe can draw on a century of experience in the use of steel pipe for the transport and distribution of drinking water. And we're happy to pass on our knowledge. In fact, outstanding expert advice is part of our supply program. It is also a central element of our quality philosophy.

Talking with the customer is important to us. We listen attentively, because we know that many of the product designs established in the market today were inspired by our customer's suggestions.

Technical advice

The main pillars of our competence and success include:

- direct exchange of experience with our customers
- our own research and development activities
- cooperation with external research institutes
- participation in professional engineering bodies and standards committees

The service life of our products is determined by the customer. We help with the selection of the type of pipe required for the application in question and can supply pipes for every conceivable safety level. Our customers in the water industry have such strict standards to comply with, they need a partner who will advise them well, from the definition of the appropriate pipe and the necessary corrosion protection and joining technology right through to pipeline construction and start-up.





Why you always get the quality you expect from us

We are your partner - leading the field for decades in terms of innovative powers, production and service.

Uncompromising quality across the board

The first precondition for pipe longevity is continuous high quality in production right through to application. That is why the quality philosophy of Salzgitter Mannesmann Line Pipe covers the entire process - from the production of the hot wide strip as the starting material for our pipes through all the various stages of production right up to the technical support we provide to the completion of pipeline projects.

Technology leader

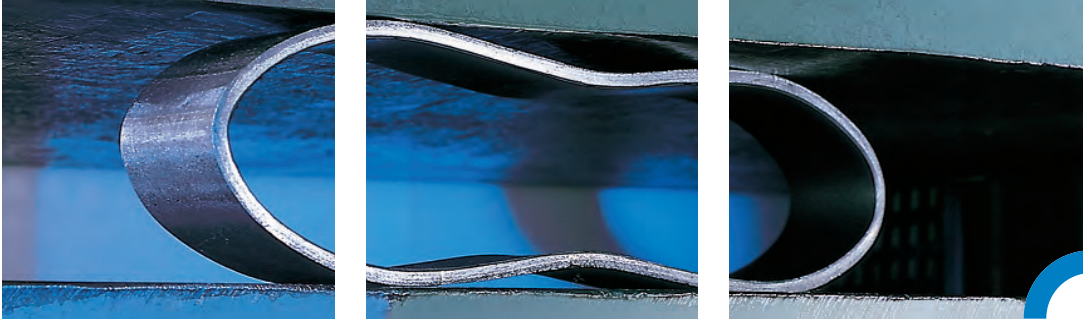
We are experts in all the technologies used in steel pipe production. In the 1950s, we were the first manufacturer anywhere to produce plastic coating for pipe. And we know that ongoing improvement of the materials and processes we use is essential if we are to maintain and build on our leading position in the industry.

Seamless quality management

Each pipe is manufactured with the same care and passes through the same quality management system from the starting material to final inspection. Our quality assurance is an integral part of all aspects of the process flow, governing our daily work to an extent far beyond the requirements laid down in the applicable standards.

Tested safety

Start-to-finish monitoring gives our customers the assurance that every single pipe complies with the applicable specifications and maintains its outstanding properties for a long service life. Each pipe is given its unique quality seal: the pipe number, which is stamped on the pipe outside surface and also applied to the pipe inside surface as well as included in the barcode label. This means the entire manufacturing process can be traced back, right through to the steel mill. With the pipe number, the digitally stored test data can be called up for each pipe and the precise status before and after each production step can be ascertained.

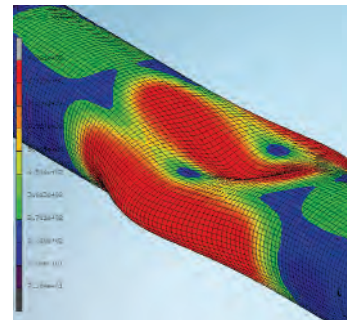
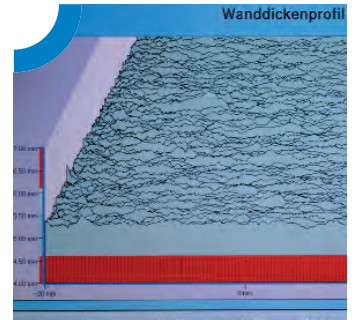


Monitoring fosters confidence

Tests and checks at Salzgitter Mannesmann Line Pipe are not restricted to those prescribed by the various standards. We carry out a large number of additional internal in-process checks and tests in order to ensure the compliance of the processes with our own much higher standards.

Both our locations are fully equipped with state-of-the-art measuring and testing facilities. It's almost like in a modern diagnosis clinic, the way the pipes are subjected to a thorough-going "check-up": they're measured, weighed, and subjected to ultrasonic testing and visual inspection, followed by microscopic and macroscopic evaluation of the results. They also undergo destructive testing, so nothing at all is left to chance.

In very complex diagnosis cases, we have the full backing of our Group's own research institute with its specialists in every area of pipe science and technology.



Heat analysis

Ultramodern equipment and facilities in conjunction with mature technologies and strict process monitoring ensure chemical analyses to the closest tolerances. Steel produced in this way is extremely homogeneous and offers all that is required for the production of tube and pipe to customer specifications.

Cement mortar testing

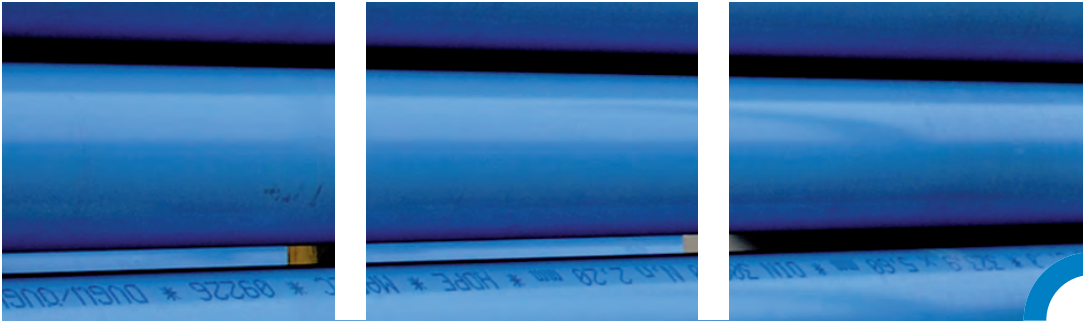
In the course of its long service life, the lining of a CSP pipe is exposed to many stresses, including erosion, temperature variations, pressure and vibration. Compression and tensile bending tests in compliance with DIN 1164 are carried out regularly to check the resistance of the lining material to such loads. In addition, the materials we use have been analyzed and approved by external testing laboratories to verify their suitability for drinking water applications.

Peel resistance of plastics

Plastic coatings have to protect the steel body in particular against corrosion, so they must be very tough in their resistance to external influences (pressure, impact, etc.). They must adhere firmly to the steel structure and not peel off or come loose at all. This is verified by testing according to DIN 30670/DIN 30678 or ISO 21809-1. In addition, all our coatings have been approved for the given application by external laboratories.

In-process checks

At every stage of the production process, checks are performed to verify a pipe's compliance "in all its essential characteristics" with the applicable specifications. This includes dimensional checks (length, diameter, wall thickness), mechanical-technological tests, hydrostatic testing for leaks, and measuring the layer thicknesses both of the MAPEC® PE coating and the cement mortar lining. Statistical evaluation of the results forms the basis for any necessary preventive measures to ensure the continuous high quality of the processes.



Questions are best discussed directly with us

We can advise you in every aspect, from the definition of the pipe you need and joining techniques through detailed project planning and right on to the pipe-laying operations and start-up of the pipeline.

Partnering the water industry

We have proved our all-round competence for infrastructure projects of every size in countless projects in the water sector. With Salzgitter Mannesmann Line Pipe, you have a pipe producer by your side whose role is a partnering one. Our aim is to do everything in our power to ensure the success of your undertaking.

We look forward to contact with you

You can best turn our competencies and experience to account if you contact us at the early stages of projects. If you wish, we'll be happy to let you have detailed particulars of our technical capabilities, our quality assurance and our references. Get in touch with us.

You'll find your contact for water line pipe in the Internet at

www.smlp.eu



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