

## MT multilayer pipes

The stable combiners

- Drinking water installations
- Radiator connections
- Special applications

# The high-performance partner

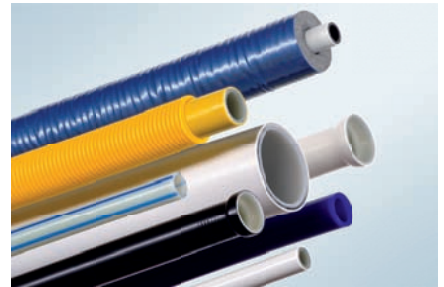
## Hewing – the reliable supplier for high-performance plastic pipe technology.



In Hewing GmbH's plants, all processes are focused on the fulfilment of individual client requirements.



The company maintains strong, successful partnerships with its clients.



Hewing offers an extensive portfolio of pipe solutions. Moreover, we develop customized products for market introduction in close cooperation with our customers.

Here, customers can benefit from a diverse product range, which leaves nothing to be desired. Hewing provides custom manufacturing according to clients' specific requirements. This is ensured via:

- Sophisticated, flexible production of butt welded multilayer pipes (MT multilayer pipes),
- the world's largest manufacturing facility for physically cross-linked polyethylene pipes (PE-Xc pipes), including two plants for physical cross-linking,
- competent and innovative research and development.

The components are used in drinking water installation, radiator connection and surface regulation systems as well as in other special applications. Hewing clearly focuses on supplying companies who provide complete systems. A successful concept on a global scale, the export quota is above 50 %.

### **The service benefit**

When you select Hewing, you select high quality, without compromise. This also applies to the versatile range of services accompanying its products, which is specially designed to support system suppliers in their work. It extends from research and development in co-operation with the client to marketing support, continuously available technical support,

specifically defined training events and flexible logistics.

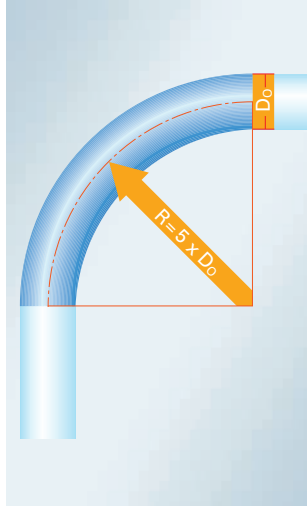
Environmental awareness is a significant quality criterion for Hewing. From product development to manufacture and delivery, it plays a decisive role. For example, thanks to the active environmental policy of the company, production waste is 100 % recycled both in-house and externally.



MT multilayer pipes featuring a PE-Xc inner pipe can be expanded by up to 20 % using special tools – without a loss in quality.



Ideally suitable for construction as well as renovation: durable MT multilayer pipes.



Bend radii of up to five times the external diameter are possible manually.

## MT – combined benefits

MT multilayer pipes are the material of the future, in particular in drinking water installations and radiator connections. Furthermore, the lightweight pipes are also deployed in specific designs for internal gas installations and further applications. The material bond features the positive properties of plastic and aluminium. A plastic inner pipe – generally manufactured from physically cross-linked polyethylene (PE-Xc) – connected to the butt welded aluminium layer via an adhesive is used for the transport of media. A subsequent adhesive layer and the outer plastic layer follow, resulting in a premium product with quality characteristics.

### Corrosion-free and hygienic

Thanks to their plastic medium-carrier pipe, MT multilayer pipes are corrosion-free in addition to preventing incrustations. Furthermore, they minimise pressure losses due to their extremely smooth surface. When manufactured for drinking water installations, they always feature medium-carrying pipes made from PE-Xc – an irreproachable hygienic material – ensuring adherence to regulations for the transport of our primary foodstuff. In turn, the outer plastic layer provides secure

protection against external influences such as mechanical abrasion and construction chemicals.

### Stable in form and expandable

The positive properties of metal pipes are provided by the butt welded aluminium layer. It reinforces MT multilayer pipes in bends and over distances, enabling, for example, greater fixing intervals. They also can be bent easily into tight radii – manually up to 5 times and using bending tools up to 3.5 times the external diameter. This facilitates installation and avoids the need for otherwise frequently required fittings.

Furthermore, the pipes feature minimal thermal expansion similar to those of metal pipes thanks to the aluminium. In addition, they are also absolutely oxygen impermeable – a significant aspect in heating applications. Further benefits derive from the butt welding process. The even layer structure provides for the same properties throughout the entire pipe circumference. Hence, MT multilayer pipes can be expanded by up to 20 % using special tools without a loss in quality, which has already enabled the development of innovative jointing technologies.

# MT – Designed for you

High-quality pipe technology, individually designed and manufactured.

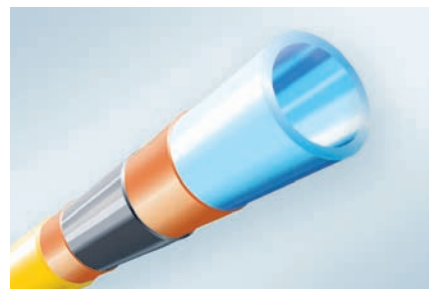
This is one of Hewing's great advantages.



The classic MT multilayer pipe is based on PE-X technology and is deployed in drinking water installations and radiator connections.



MT multilayer pipes are designed specially using PE-Xc medium pipes for drinking water installations.



The yellow MT Gas pipe enables modern multilayer pipe technology in internal gas installations.

Clients can optimise product design to precisely meet their system and application requirements. Numerous parameters can be specified individually for MT multilayer pipes with their material combination of plastic and aluminium. Thus, Hewing provides the opportunity for clients to uniquely design their system technology via these pipes.

## Plastic materials

Hewing can design the plastic layers of MT multilayer pipes (medium carrying inner pipe and outer layer) with different materials. Depending on the application area and the respective requirement profile, these can be:

- PE-Xc (physically cross-linked polyethylene) based on PE-HD
- PE-Xc based on PE-MD
- PE-HD (high density polyethylene)
- PE-MD (medium density polyethylene)
- PE-RT (polyethylene with raised temperature resistance)

## Dimensions

In general, MT multilayer pipes are available in dimensions from 14 to 63 mm – for in-wall or on-wall installation in general as well as for rising mains and cellar distribution pipes. Both the internal and external diameter as well as the thickness of individual layers and overall pipe walls can be adjusted by Hewing to meet client requirements or to fit the desired jointing technology. In particular, the ratio of aluminium to plastic layers is significant: If the aluminium is sufficiently thick, it becomes the pressure-bearing element of the entire pipe.

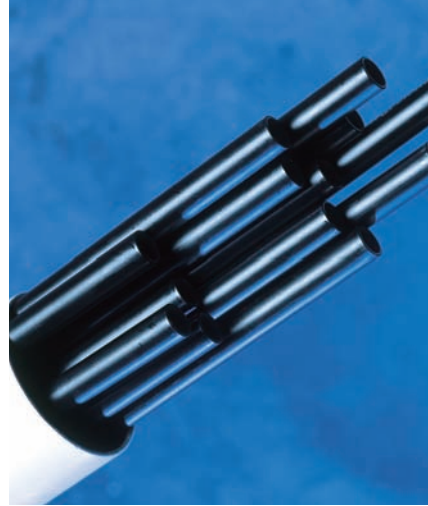




MT multilayer pipes are available in dimensions from 14 to 63 mm.



In-plant pre-insulated MT multilayer pipes provide true added value through noticeable work facilitation on construction sites.



Delivery of MT multilayer pipes is implemented, upon client request, as a coil or in straight lengths (c. f. photo).

## DESIGNED FOR YOU.

MT Gas multilayer pipes represent a special case: These specially designed MT pipes are approved in Germany in the dimensions 16 and 20 mm, and in the Netherlands in five dimensions between 16 and 40 mm (see page 13).

### Fitting compatibility

The precise adjustment of MT multilayer pipes towards the required jointing technology is closely associated with the selection of dimension. In addition to the required know-how, Hewing also provides clients with the corresponding test technology for the assessment of specific pipe / fitting combinations. Professional support regarding system-specific fitting development is also available on request. In general, MT multilayer pipes are suitable for all customary fittings on the market – from press and sliding sleeve fittings to clamp ring and push-fit fittings.

### Pipe lengths

MT multilayer pipes can be supplied as straight length products (according to dimensions) as well as coils of up to 200 m in length. Delivery is generally in customer-specific card boxes or on customer-specific coils.

### Signature

Each pipe receives a special signature with relevant, client-specific information. In addition to necessary technical information e.g. regarding pipe materials, di-

mensions, test and quality marks as well as manufacturer's labels, this can also contain further elements or information such as logos, company descriptions and application area(s). Traceability in the framework of quality assurance is additionally ensured at all times via the inscribed internal identification number and metre marking.

### Colour

Both the medium carrying plastic inner pipe and the plastic outer layer of MT multilayer pipes can be produced in colours entirely according to client requirements at the flexible Hewing plant. Thus, pipe colour can be easily coordinated to match the client's corporate design.

### Insulation

Pre-insulated MT multilayer pipes facilitate the installation on the construction site. They also simplify compliance with the relevant insulating standards and regulations. They are available with strong PE all-round insulation (with or without additional moisture protection), asymmetrical insulation or even with corrugated protective pipes / in a Twinpipe as a 'pipe-in-pipe' solution.

# Two materials in perfect harmony

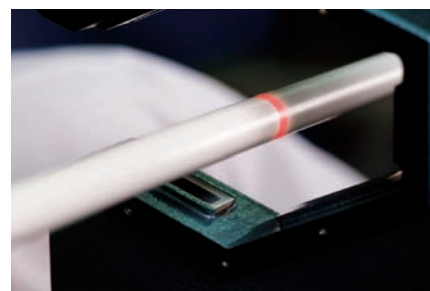
Five layers are unified as a homogenous, high-quality product in the flexible MT multilayer pipe production.



Hewing uses aluminium bands featuring thicknesses of up to 1.5 mm for the manufacture of MT multilayer pipes.



Aluminium is butt welded in a TIG process.



Production incorporates many quality control checks: e.g. dimension monitoring on the external diameter.

A sophisticated production process is available at Hewing for the manufacture of different types of MT multilayer pipe enabling flexible production according to client requirements – featuring optimal quality at all times. The durable, solid connection of the plastic layers with the embedded aluminium layer is ensured using optimised adhesives.

A unique aspect of the Hewing production process is the manufacture of the medium carrying inner pipe, the two adhesive layers and the plastic outer layer with separate extruders. Only this sophisticated production technology enables the exact adjustment of the individual layer thick-

nesses and the use of different plastic materials for the medium carrying inner pipe and the outer layer.

## **Butt welded for impressive benefits**

A significant core process in the manufacture of all types of Hewing MT multilayer pipes is the longitudinal butt welding TIG process. No overlapping of material is needed and the finished pipe features identical properties at every point around its entire circumference thanks to this processing. A test immediately subsequent to this production step ensures that the welding seam is implemented irreproachably at all times. Hewing processes aluminium bands with thicknesses

between 0.2 and 1.5 mm for MT multilayer pipes according to pipe dimensions and client requirements.

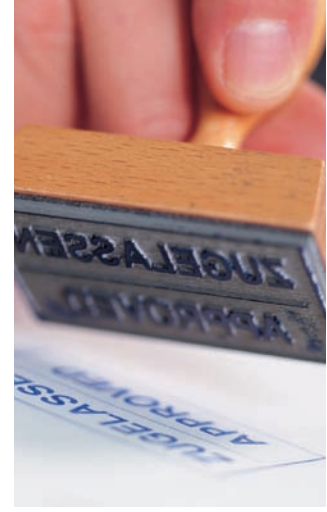
Finished MT multilayer pipes are marked at the end of the production lines and cut to length as straight lengths or wound into coils according to client requirements. Subsequent insertion into corrugated pipes and/or insulation with symmetrical all-around or asymmetrical jacket are possible. Finally, packaging is implemented according to the respective requirements of the client.



The secure bond between all layers is monitored in the scope of tensile tests.



MT multilayer pipes must withstand more than 100,000 load changes during the flexural fatigue test.



On request, Hewing coordinates entire certification projects for clients and carries out the required tests on in-house test facilities.

## Proven and tested Hewing quality

Stringent quality controls accompany the entire MT multilayer product supply process in the scope of in-plant and third-party monitoring. These commence with monitoring of incoming raw materials and continue until distribution of the finished products. Thus, even the raw materials supplied are thoroughly checked upon delivery for absolute adherence to Hewing specifications. During production monitoring units check every detail such as dimensions, layers and wall thickness as well as the quality of the aluminium welding seam automatically.

Samples from each batch of MT multilayer pipes must complete numerous high performance tests and application simulations successfully: e.g. thermal cycling and flexural fatigue tests, vibration load and pressure surge tests as well as simulated radiator connections. Furthermore, adhesive tests monitor the secure, durable bond between all layers. The outstanding durability of MT multilayer pipes is proven continually in the scope of creep strength tests. All test records are archived for at least ten years and maintain records of every metre of pipe manufactured.

### Testing programmes for clients

The Hewing testing and quality assurance laboratory also supports clients in the integration of Hewing products into their complete systems. Client-specific testing programmes can comprise of both approval tests and tests during development. This enables Hewing to implement virtually all relevant required certification tests on accredited test facilities. This saves valuable time and money. Tests during the development generate clarity regarding the functionality and practicability of new pipes, fittings and components. This ensures that only optimised products and systems, which meet the specified requirements, reach the official approval tests.

Clients have real experts at their disposal with Hewing: They possess exceptional know-how in development and certification projects through intensive cooperation with national and international testing institutes, and collaboration with numerous standardisation and specialist panels as well as expert organisations.

# MT multilayer pipes in drinking water installations

The layer composition of hygienically irreproachable MT multilayer pipes is predestined for implementation in drinking water installations.



MT multilayer pipes have no impact whatsoever on the quality of our primary foodstuff.



Even exposed on masonry, MT multilayer pipes provide for clean installations.



Featuring a PE-Xc inner pipe, MT multilayer pipes are also ideally suited both for radiator connections and drinking water installations.

Hewing MT multilayer pipes for the transport of drinking water always incorporate PE-Xc medium carrying inner pipes. Hence, they are absolutely hygienic and do not impact the quality of drinking water in the slightest. The water only comes into contact with PE-Xc, which is particularly suitable for this application. Pitting or tensile fracture corrosion as well as resulting pipe bursts do not occur, the pipes do not react with substances dissolved in water and no harmful metal ions are deposited into our primary foodstuff. Incrustations are prevented effectively thanks to the smooth inner pipe surface and algae growth is also eliminated as the aluminium layer is light impermeable, protecting the drinking water against the influence of UV rays.

The pipes are even resistant against possible future modifications to drinking water properties – as in contrast to many alternative materials, they are unaffected by fluctuating or permanently low pH values.

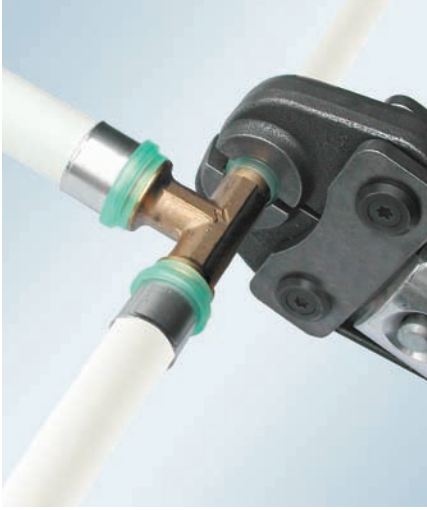
## All requirements met

MT multilayer pipes featuring a PE-Xc inner pipe adhere to all relevant regulations and guidelines: e.g. in Germany, the drinking water regulation (TrinkwVO) as well as the requirements of the KTW recommendations for health evaluation of plastics within the framework of the German Foodstuffs and Commodities Act for the drinking water sector (BGVV).

The proof that regulations and limit values are adhered to is provided via continuous

third-party monitoring on both raw materials and finished pipes implemented by the German Technical and Scientific Association for Gas and Water's (DVGW) Water Technology Centre, Water and Corrosion Test Laboratory, Karlsruhe (TZW). Furthermore, it is ensured the pipes adhere to requirements regarding the growth of microorganisms on materials for the drinking water sector according to DVGW work sheet W 270. Additional ongoing third party monitoring is implemented by e.g. the Materialprüfanstalt Darmstadt (MPA DA), the Materialprüfungsamt NRW (MPA NRW), the Süd-deutsche Kunststoffzentrum (SKZ), Hygieneinstitut des Ruhrgebietes (HY), the DVGW as well as the Dansk Teknologisk Institut (DK), KIWA (Ned.) and NSF (US).

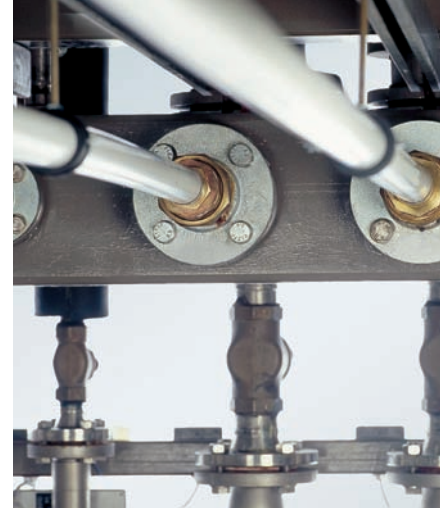




MT multilayer pipes enable “cold” connection techniques such as press connections: soldering or welding is unnecessary.



Permanent organoleptic tests with regard to odour and flavour prove that the materials deployed do not impact drinking water.



The pipes resist temperatures of up to 95° C and pressures of up to 10 bar – substantiated by the thermal cycling test according to DVGW work sheet W 534, which is an obligatory test for approval in drinking water installations in Germany.



Hewing MT multilayer pipes designed for drinking water installations are approved by the DVGW amongst others for this sensitive application area.

### Easy bending, saving fittings

In particular, MT multilayer pipes feature installation advantages vis-à-vis metal pipes – not least as they are easy to bend and stable in form. Hence, obstacles can be circumvented with ease, pipes can be laid around corners as well as enabling changes of direction in restricted spaces – without the complicated, expensive use of additional fittings.

Thus, they are ideally suitable for use in renovation projects. An additional reason is fire protection, as MT multilayer pipes are processed featuring “cold” connection techniques. Furthermore, the “flow rule” defining the sequence in which certain pipe materials must be installed in the flow direction can be disregarded in connection to existing pipe networks. This rule must be observed with regard to most metal pipes for the prevention of electrochemical corrosion.

### Installation also in low constructions

The relatively low external diameter of the MT multilayer pipe is particularly positive with regard to the T-piece or distributor installations. Hence, they can be integrated easily in low floor or wall constructions. Thanks to the plastic outer layer of the pipes for protection against external corrosion, free installation on the wall is possible with just a few attachment points. This on-wall installation option is

often selected e.g. for the connection of armatures in basements, garages or attics.

For floor distribution, MT multilayer pipes are generally deployed as a “pipe-in-pipe” solution inserted in protective pipes. With the insulating air barrier between the water carrying pipe and the protective pipe, they comply with the requirements of DIN 1988. In order to adhere to special insulation regulations, e.g. on heating and the build-up of condensation, Hewing also supplies pre-insulated MT multilayer pipes featuring symmetrical or asymmetrical insulation, eliminating unnecessary work steps on the construction site.

# MT multilayer pipes for radiator connection

Radiators are connected securely, rapidly and cleanly using MT multilayer pipes.



Installation in skirting boards is easy with MT multilayer pipes.



The pipes can be fed around corners without additional fittings due to their excellent bend properties.



Hewing also provides MT multilayer pipes for radiator connection with insulation applied in-plant in order to meet insulation requirements.

Multilayer pipes featuring PE-Xc medium carrying inner pipes meet high temperature and pressure requirements for applications of up to 95° C and 10 bar. This is proven by tests implemented under permanent in-plant and third party monitoring. The very low noise transmission, in particular vis-à-vis metal pipes, is especially beneficial to subsequent users: disturbing noises caused by the flow of water are a thing of the past.

Furthermore, MT multilayer pipes from Hewing are also ideal with regard to installation – not least thanks to their combined flexibility and stability. In addition, the lightweight pipes are easy to handle and enable rapid, clean and efficient assembly – even in a cold installation. As pipes can be produced on request in extensive supply lengths as coils rather than straight lengths, even long-distance connections without fittings are possible. Furthermore, this also results in minimal cutting on construction sites.

## **“Cold” connections for increased security**

A further argument in favour of MT multilayer pipes are “cold” connection techniques, e.g. using press or clamp fittings. Installation of these connections is rapid and safe, permanently tight and to be recommended with particular regard to fire protection. Welding or soldering is no longer required, removing a potential source of risk for fires and injuries.

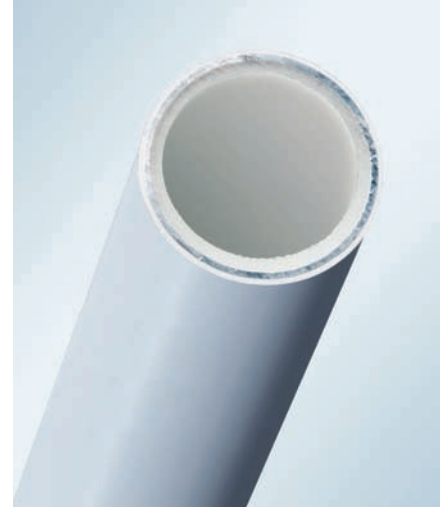
Adherence to national and global insulation regulations – e.g. with regard to



MT multilayer pipes remain “in permanent shape” after being bent in the correct direction.



In vibration tests the pipes demonstrate their resistance to such loads, which cause problems for many other materials.



The aluminium layer integrated in plastic ensures 100 % oxygen impermeability of MT multilayer pipes.

heat insulation and condensation – can also be “provided” in-plant by Hewing: with directly applied symmetrical or asymmetrical insulation solutions. They avoid difficult, time-consuming insertion of the pipes into insulation sleeves on-site.

#### **Flexible installations**

Implementation of entire pipe installations with MT multilayer pipes is possible with the range of dimensions between 14 and 63 mm – from heat source to radiators. Furthermore, they are suitable for diverse installation techniques, for example, for the most popular floor distribution variant from the floor manifold or from the risers underneath the screed to the radiator. The multilayer pipe, which can also be deployed inserted into a corrugated pipe as a “pipe-in-pipe” solution, is installed either in the insulation layer below the screed or directly in the screed if no insulation layer is present. Here, the pipes benefit from their chemical resistance due to the plastic outer layer, providing protection against e.g. sometimes aggressive screed components.

Even on-wall installation of the floor distribution to radiators, of pipes under the cellar ceiling or of risers to the different floors is easily possible. MT multilayer pipes are protected against external cor-

rosion by their plastic outer layer whilst the stable aluminium layer enables greater fixing distances. This reduces the complexity and expense of assembly significantly.

#### **Renovation professionals**

As bracing walls as well as subsequent wallpapering or painting are not required, free laying of pipes is particularly popular in renovation projects. Hence, MT multilayer pipes can be adapted easily to all areas: featuring tight bend radii of up to 5 times the external diameter manually and 3.5 times external diameter using a bending tool. Elbow shaped fittings – for example in internal and external corners, bumps as well as bypasses – are therefore unnecessary in general, saving time and expenses. This is even more significant as freely installed pipes are mainly fed to radiators under flat and optically appropriate skirting boards. MT multilayer pipes further benefit from minimal thermal expansion thanks to their aluminium layer.

# MT multilayer pipes for special applications

Thanks to their special material combination, MT multilayer pipes are suitable for many additional applications.



The expandability of MT multilayer pipes features significant benefits e.g. for compressed air applications.



The stability also provides advantages in assembly of networks, for example for the transport of compressed air: Bends can be produced easily without fittings.



Pre-insulated MT multilayer pipes are also perfectly suitable for use in cooling networks.

The combined advantages of plastic and aluminium are also beneficial in numerous special applications for the transport of diverse media – e.g. for compressed air as well as cooling ducts and internal gas installations. The broad range of possibilities is virtually unlimited. Hewing experts determine the most suitable layout of MT multilayer pipes for each individual deployment based on requirement profiles. System providers frequently even have the opportunity to design their complete systems multi-functionally for diverse applications, thus generating additional benefits for their clients.

## Economical transport of compressed air

Thanks to their expandability and smooth surfaces, MT multilayer pipes are outstanding in the minimisation of pressure

losses. Cross-section constrictions can be reduced significantly or even avoided completely depending on the jointing technology. Thus, energy consumption and expenses for the supply of compressed air are reduced. Furthermore, the stable pipes even provide benefits in the assembly of comprehensive compressed air networks. Delivery on coils enables easy installation featuring just a few attachment points, also for longer distances. The durability of MT multilayer pipes in compressed air applications up to 16 bar is ensured by their resistance, e.g. against oil contaminated compressed air as well as corrosive external media and exhaust fumes from machines.

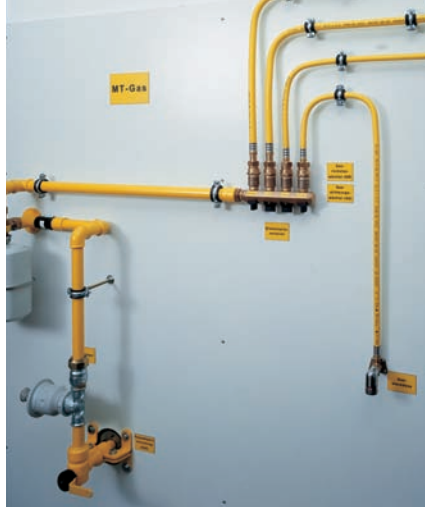
## Pre-insulated cooling ducts

A further example of special applications using MT multilayer pipes are cooling ducts and networks. Deployment generally features in-plant symmetrical or asymmetrical insulation of PE foam. Furthermore, an outer PE layer applied to the insulation jacket provides effective protection against external moisture and mechanical damage. The transported media are securely protected against heat via the installation of these pre-insulated solutions. Several benefits are also demonstrated during installation. Thus, the complex application of insulation prior to installation is no longer required. In addition, there are no critical gaps between adjoined jackets reducing heat insulation thanks to the continuous insulation when coils are laid – even in difficult-to-access installation areas.

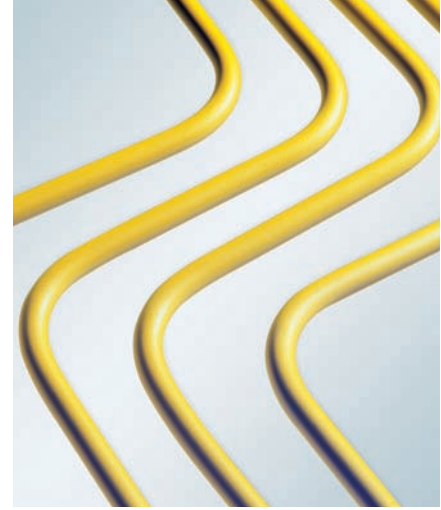




MT GAS multilayer pipes are leak-impermeable against odorizers and methane thanks to their aluminium layer.



The pipes are to be integrated in complete internal gas installation systems, which meet the laying regulations of the relevant countries and supply companies.



Installation of gas pipes is more rapid with MT GAS vis-à-vis alternative pipe materials – not least as pipe bends can be implemented without further fittings.

### Internal gas installations

System providers can also benefit from the advantages of multilayer pipes in internal gas installations with MT GAS from Hewing. The pioneering multilayer pipe, which is certified according to German (dimensions 16 mm and 20 mm) as well as Dutch (dimensions 16 mm, 20 mm, 26 mm, 32 mm and 40 mm) standards now also enables the benefits of PE-Xc and aluminium material combinations to be used in this application area. In particular, the installation benefits responsible for the success of MT multilayer pipes in tap water installations and radiator connections are significant.

Thus, MT GAS enables rapid and secure installation as pipe bends can be manufactured quickly without any additional fittings. Furthermore, the pipe is absolutely leak-impermeable against odorizers as well as methane, and ensures minimal pressure loss in the transport of gas thanks to its smooth surfaces.

### Deployment in complete systems

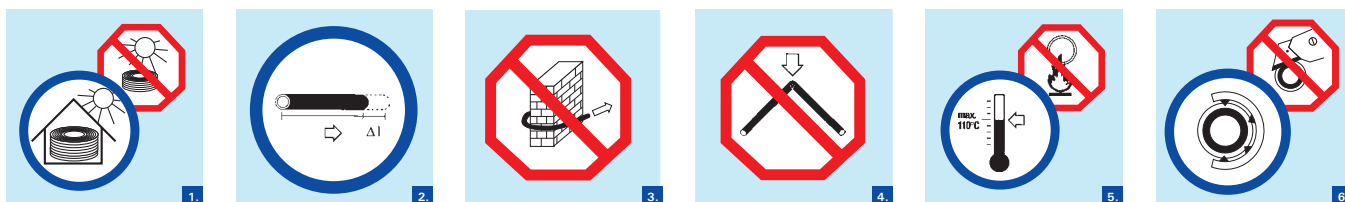
The MT GAS multilayer pipes are to be integrated in complete systems for internal gas installation. In Germany, these must feature variants of flow control devices in the home to prevent manipulation. Today, these must be used at all times independent of the pipe material deployed regardless whether metal internal gas installations or other approved materials are concerned. In principle, all new gas

installation facilities and extensions in new or existing buildings must be fitted with preventive measures. Pipe-laying regulations for non-metal internal gas installations in the respective countries – in Germany the TRGI (Technical Guidelines for Gas Installations) – and of supply companies must be observed.

Further information on MT GAS multilayer pipes can be obtained from the relevant Hewing GmbH product data sheet.

# Tips for users

## Ensuring a sustainable installation.



### 1. UV protection

MT multilayer pipes should be protected from direct, intense sunlight during storage and installation. UV radiation cannot attack the entire pipe, but rather the external plastic coating in the case of long-term exposure.

### 2. Thermal expansion

Thermal expansion of MT multilayer pipes is minimal and corresponds approximately to metal pipes. However, in principle, the following must be observed during pipe installation: Pipes must be granted sufficient scope for potential expansion to avoid a mechanical bending-strength overload of screwed joints. "Pipe-in-pipe" installation featuring angular deflection represents a potential solution. Further tools include pipe guide bends in the area of the manifold or junction boxes on the

radiator / tap which axially channel pipe loads onto connection points. (also see relevant chapter in Hewing's Technical Manual)

### 3. Uncoiling facilities

Stationary uncoiling facilities should be located as close as possible to the installation area. This avoids feeding pipes around too many corners (e.g. doorways) and minimises the distance the pipe is pulled across the ground. Items with sharp edges should be removed from the area or covered.

### 4. Pipe buckling and deformations

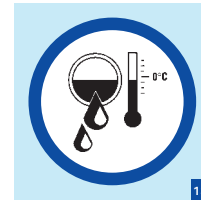
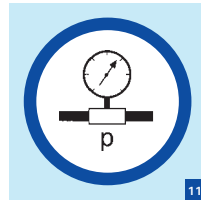
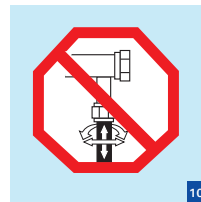
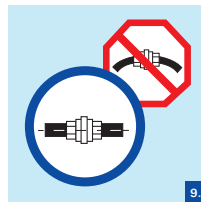
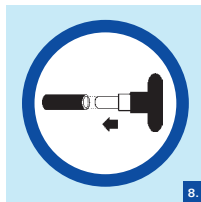
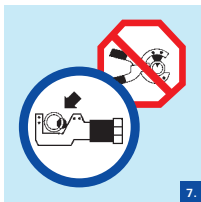
Buckles and deformations should be avoided. If MT multilayer pipes are unintentionally damaged in this way, the sections concerned must be removed.

### 5. Open flame / heating

All sources of heat which can heat MT multilayer pipes in excess of 110° C must be kept at a distance. This also applies to open flames – these are not required for bending or jointing technology.

### 6. Cutting the protective pipe

Protective pipes should generally be cut to length with special protective pipe cutters. If such a tool is not available, normal knives can also be used – however, the internal MT multilayer pipe should be protected by a metallic cutting sleeve whilst cutting the corrugated pipe.



### 7. Cutting the MT multilayer pipe

MT multilayer pipes should only be cut to length using pipe cutters provided or recommended by the system providers or a fine-bladed saw. Cutting pliers for plastic pipes are not suitable as they generally deform the pipe ends of the multilayer pipes strongly, greatly hampering correct fitting assembly.

A clean, burr-free execution of the cut perpendicular to the pipe axis is important – a significant requirement for permanently leak tight connections. Potential splintering must be removed prior to further processing. If a MT multilayer pipe is cut at the wrong point, this pipe section should be removed.

### 8. Deburring and calibrating

In particular with regard to fittings featuring O-rings, the internal edges of the end of the pipe must be deburred (protection of the O-ring) and the end of the pipe must be calibrated. This also facilitates mounting the pipe on the insert of the fitting.

### 9. Fittings

Due to the usually relatively short connection length, pipe fittings are generally not required between the manifold and the

consumption point. If the installation of a fitting is unavoidable, e.g. whilst laying remaining lengths of pipe, it may only be positioned on a straight pipe, not in a bend.

### 10. Manifold connection points

Pipes must always be connected axially aligned and securely fastened to the manifold. Installation must occur under as little stress as possible, i.e. without notching, bending, tensile and torsional stress.

### 11. Pressure test

Following completion of installation MT multilayer pipes must undergo a pressure test according to the data of the relevant system provider and/or technological standards.

### 12. Solvents

Direct contact of MT multilayer pipes with solvents or paints, sprays, pens, tapes etc. containing solvents should be avoided as these can damage the pipe surface.

### 13. Antifreeze

Filled MT multilayer pipes must not be frozen as this can produce internal pressure in excess of 120 bar. They should therefore be emptied or otherwise protected from freezing should there be a risk of frost.

### 14. Installation instructions

The installation instructions of the relevant system provider must be observed.

### 15. Utilisation opportunities in sanitation, heating and air conditioning

In Germany, the product residue, packaging material and worn-out products which accumulate on users' premises can be efficiently recycled using the Interseroh Recycling System. An Interseroh directory provides information regarding the location of the nearest Interseroh waste disposal partner.



System providers from the sanitary and heating industry rely on Hewing as a strong OEM partner in the development and production of crosslinked polyethylene pipes and aluminium multilayer pipes. Hewing also offers and develops special solutions for different industrial applications and transport of liquid or solid matters.

Hewing GmbH  
Industriegebiet Ost 1  
Waldstraße 3  
48607 Ochtrup, Germany  
Phone: +49 (0) 2553 70-01  
Fax: +49 (0) 2553 70-17  
[www.hewing.com](http://www.hewing.com)  
[info@hewing.com](mailto:info@hewing.com)

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