Multilayer pipes



# Technical data sheet

Technical data sheet of multilayer pipes for gas installations

GENERAL FITTINGS
YOUNIQUE · ITALIAN

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# Technical data sheet of multilayer pipes for gas installations

## Multilayer pipes for gas: METALGAS and METALGAS2



## DESCRIPTION

Multilayer pipe is characterized by a 5-layer structure in which a butt-welded aluminum layer is enclosed between two layers of cross-linked polyethylene (PEX) and fixed to the latter by two layers of adhesive.
Thanks to this feature, multilayer pipe represents a perfect combination of the properties of plastic (cross-linked polyethylene with high mechanical resistance) and ductile metal (highly flexible aluminum), in which the qualities of PEX are added to those of aluminum, giving life to a product with extraordinary and multiple qualities.
PEX confers chemical resistance, corrosion resistance, lightness, hygiene and guarantees a very smooth and polished contact surface, thus reducing pressure drops and avoiding encrustations.
The presence of aluminum makes it possible to shape the pipe with extreme simplicity in order to significantly speed up installation and prevent the passage of oxygen inside the pipeline.
The pipe can be used in methane or LPG supply systems and is combined with the fittings of the TRIDENT series in the gas use systems proposed by General Fittings.

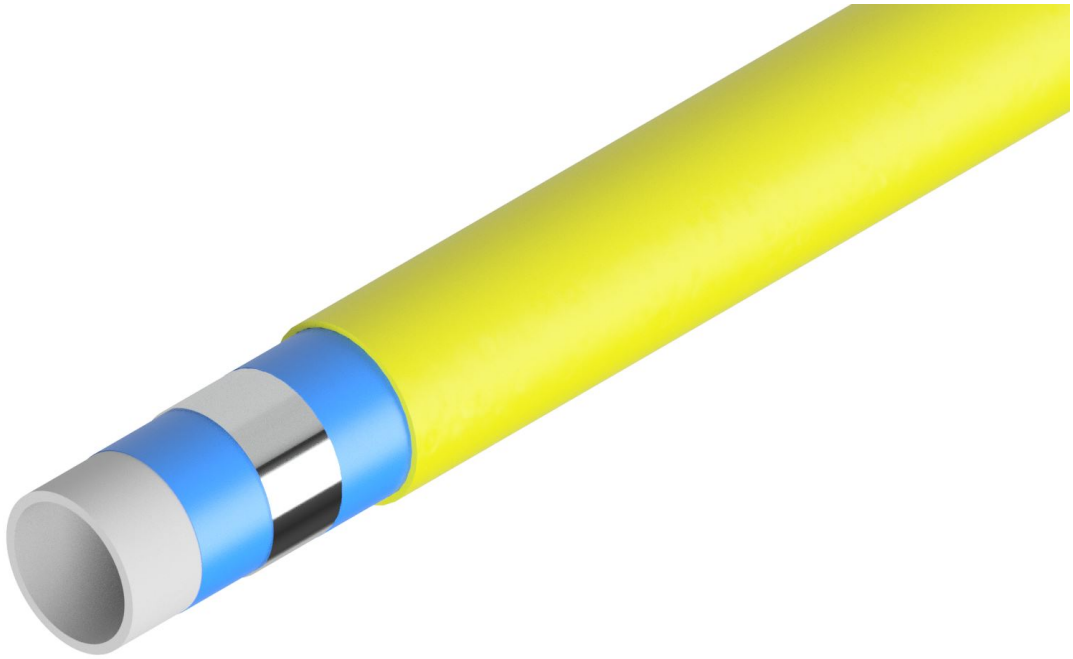
## ADVANTAGES

- Excellent sound insulation: the elasticity of the cross-linked polyethylene allows for excellent absorption of vibrations
- Corrosion resistance
- Lightness: pipes are much lighter than metal pipes
- Reduced pressure drops: the smooth and polished internal surface reduces pressure drops and avoids the formation of encrustations
- Flexibility: the presence of aluminum with a high degree of yield allows the tube to be modeled very easily
- Reduced thermal expansion: thermal expansion is limited to 0.026mm / m °C
- Chemical and electrochemical resistance (PEX being a bad electrical conductor it is not subject to destructive phenomena of stray currents)
- Barrier to oxygen: the butt-welded aluminum layer forms an oxygen barrier that promotes the formation of algae, fungi and corrosion
- Ideal for seismic areas thanks to its flexibility and ability to attenuate vibrations

## FIELDS OF APPLICATION

| APPLICATIONS | | System T. | Pres. Max |
|---|---|---|---|
| | GAS / LPG | -20°C/+70°C | 0.5 MOP |

## COMPOSITION



| LAYER COMPOSITION |
| --- |
| Un tubo interno in polietilene reticolato, estruso con polietilene ad alta densità reticolabile. Nel METALGAS la reticolazione avviene mediante radiazioni ionizzanti (PEX-c), mentre nel METALGAS2 la reticolazione avviene mediante catalizzatore a silani (PEX-b) |
| A layer of high quality glue to ensure a homogeneous connection between the aluminum pipe and the internal PE-X pipe |
| An aluminum tube, longitudinally welded and electronically controlled |
| A high-quality adhesive layer to ensure the homogeneous connection between the aluminium pipe and the PEX-b pipe |
| An outer pipe in catalyst cross-linked polyethylene (PEX-b), extruded with cross-linkable high-density polyethylene |
| The outer layer of the pipe is yellow |

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## CERTIFICATIONS

| COUNTRY | CERTIFICATION |
| --- | --- |
| | |

## REGULATIONS

• UNI 11344
Metal-plastic multilayer piping systems and fittings for the distribution of gaseous fuels for internal plants

• UNI 7129
Gas systems for domestic and similar use powered by the distribution network - Design, installation and commissioning

## CROSS-LINKING PROCESS

The METALGAS multilayer pipe is made by extrusion of a cross-linked high-density polyethylene pipe by ionizing radiation process (PEX-c) to which a butt-welded aluminum sheet is superimposed and a subsequent cross-linked polyethylene extruded covering (PEX- b).
The METALGAS 2 multilayer pipe is made by extrusion of a cross-linked high-density polyethylene pipe by means of a silane catalyst (PEX-b) to which a butt-welded aluminum sheet is superimposed and a subsequent cross-linked polyethylene extruded covering (PEX- b).

In both processes, the different layers of material are joined thanks to adhesives specifically designed to provide the finished product with a homogeneous structure with high resistance characteristics to high pressures and high temperatures.
The crosslinking process enhances the natural structural characteristics of polyethylene, in fact this material in normal conditions appears at the microscopic level as a set of polymer chains arranged in a disordered way and interacting through weak intermolecular forces.
The crosslinking process induces the formation of chemical bonds between the molecules to give the structure the optimal degree of crosslinking to enhance its characteristics of abrasion resistance, chemical resistance and durability.
The process induces a reduction in the fluidity index of the material with a marked improvement in the performance characteristics of the pipe at high temperatures.

# METALGAS PIPE: TECHNICAL DATA

| FEATURES | Ø 16 | Ø 20 | Ø 26 | Ø 32 |
|---|---|---|---|---|
| Water content in one meter | 0.113 | 0.201 | 0.314 | 0.531 |
| Bending radius without tools in mm | 5 times the Ø | | | --- |
| Bending radius with pipe bending spring in mm | 2 times the Ø | 3 times the Ø | --- | |
| Bending radius with bending machine in mm | --- | | 3.6 times the Ø | |
| Degree of crosslinking | > 65% | | | |
| Operating temperature | from -20°C to +70°C | | | |
| Maximum working pressure | 0.5 bar | | | |
| Coil length | 100m | | 50m | |
| Bar length | 5m | | | |
| Sheathed roll length | 50 mt | | | --- |

# METALGAS PIPE: DIMENSIONS

| EXTERNAL DIMENSION | Ø 16 | Ø 20 | Ø 26 | Ø 32 |
|---|---|---|---|---|
| =LOWER(B2125) | 12 | 16 | 20 | 26 |
| Wall thickness mm | 2.0 | | 3.0 | |
| Aluminum thickness mm | 0.4 | | 0.6 | 0.8 |
| Maximum operating temperature °C | +70 | | | / |
| Minimum operating temperature °C | -20 | | | |
| Maximum working pressure (bar) | 0.5 | | | |
| Internal pipe roughness K mm | 7 | | | |
| Oxygen diffusion mg / l | 0 | | | |
| Minimum manual bending radius with internal pipe bending spring in mm | 3XDE | | | / |
| Minimum manual bending radius with external pipe bending spring in mm | 5XDE | | | / |
| Degree of crosslinking % | 65 | | | |

## METALGAS PIPE: MARKING

| MARKING | LEGEND |
|---|---|
| UNI/TS11344 | Reference standard |
| METALGAS | Commercial name |
| MULTILAYER PIPE | Type of pipe |
| IIP UNI 134 | Conformity mark |
| Ø__xSp | Dimensions |
| M.O.P. 0.5 Bar | Maximum operating pressure |
| PEX-c AL PEX-b | Type of layers |
| –20°C +70°C | Limit operating temperature |
| date time mt line = aluminum code = | Manufacturer traceability |
| made in Germany | Made in Germany |

## METALGAS2 PIPE: AVAILABLE DIMENSIONS

| Ø est. Nominal | wall thickness | aluminum thickness | minimum thickness | maximum thickness | Ø est. Minimum | Ø est. Maximum | Ø int. Minimum | Ø int. Maximum |
|---|---|---|---|---|---|---|---|---|
| 16 | 2.0 mm | 0.2 mm | 2.0 | 2.3 | 16.0 | 16.3 | 11.4 | 12.3 |
| 20 | 2.0 mm | 0.25 mm | 2.0 | 2.3 | 20.0 | 20.3 | 15.4 | 16.3 |
| 26 | 3.0 mm | 0.3 mm | 3.0 | 3.4 | 26.0 | 26.3 | 19.2 | 20.3 |

# METALGAS2 PIPE: TECHNICAL DATA

| FEATURES | Ø 16 | Ø 20 | Ø 26 |
|---|---|---|---|
| Linear thermal expansion in mm / m x k | 0.026 | | |
| Coefficient of thermal conductivity W / mK | 0.45 | | |
| Coefficient of linear expansion mm / mK | 0.025 | | |
| Water content in one meter | 0.113 | 0.201 | 0.314 |
| Bending radius without tools in mm | 5 times the Ø | | |
| Bending radius with bending machine in mm | 2 times the Ø | 3 times the Ø | --- |
| Bending radius with bending machine in mm | --- | | 3.6 times the Ø |
| Pipe roughness K mm | 0.007 | | |
| Oxygen diffusion mg / l | 0 | | |
| Degree of crosslinking | > 65% | | |
| Operating temperature | from -20°C to +70°C | | |
| Maximum working pressure | 0.5 bar | | |
| Coil length | 100m | | 50m |
| Bar length | 5m | | |
| Sheathed roll length | 50 mt | | |

## METALGAS2 PIPE: MARKING

| MARKING | LEGEND |
|---|---|
| UNI/TS11344 | Reference standard |
| METALGAS | Commercial name |
| MULTILAYER PIPE | Type of pipe |
| IIP UNI 134 | Conformity mark |
| Ø__xSp | Dimensions |
| M.O.P. 0.5 Bar | Maximum operating pressure |
| PEX-b AL PEX-b | Type of layers |
| –20°C +70°C | Limit operating temperature |
| date time mt line = aluminum code = | Manufacturer traceability |
| made in Italy | |

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