

KEtrix®

PIPE SYSTEM

**The winner
of the industry
triathlon**



Cold water | Compressed air | Cooling



Cold drinking water supplies – PN10

The assured supply of drinking water is an essential part of the quality of modern life.

The problems

Corrosion

- The concentration of ions is increasing. The following ions are a particular risk for metal materials:
Chlorides: stainless steel
Sulphates: galvanised steel
Nitrates: copper
- Even more problematic sources of water are being used for drinking water supplies
- Acid rain lowers the pH value of surface water and spring water to below 7 (=neutral)
External corrosive attacks from new building materials, insulating materials and installation techniques

Deposits

- Hard water leads to the formation of deposits on the inside walls of metal materials

This results in

- Higher friction losses
- Reduced flow rate
- Blockages
- Expensive repairs
- Time-consuming renovation
- Acute supply problems

The solution

The KEtrix® industry pipe system for drinking water supplies.

Plastics are not „replacement materials“. When chosen and applied correctly they often provide the better solution for a defined problem.

Sometimes even the only one.

CRYOLEN® is the answer to the burning questions regarding drinking water supplies.



Internal Corrosion – Copper



External Corrosion – Galvanised Steel



Calcite Deposits

The result

The KEtrix® industry pipe system with many advantages for new building and renovation projects:

- Temperature: + 20°C/10 bar
– 30°C bis +30°C/8 bar
- Range of pipes and fittings for cold water applications: d20 – d160
- Resistant to both internal and external corrosion from all ions found in water or chemicals on the site
- No crystallisation points for mineral deposits
- Secure joint technology which requires no additional material
- Suitable for contact with potable water
- Conforms to hygiene regulations
- Low pressure losses as a result of smooth bore
- Low noise level
- Easy to install, resistant to impact
- Easy to handle
- Saves on labour costs
- No demountable embedded joints
- System can be easily drained
- Stringent testing and monitoring of quality
- Long service life

An important detail for drinking water applications

Special attention has been paid to the choice and quality control of the metal threads.

Metal threads

- Dezincification resistant brass (CW 724 R) for all parts which are in contact with water, ensures a high resistance to aggressive water
- MS 58 brass for components not in contact with water
- Non-porous metall plating prevents stress crack corrosion
- The threads are designed to be resistant to torsion and are suitable for the building site

Plastic threads

The brass in the metal threads is increasingly being replaced by a patented high-tech plastic composite thread. This is the path to a pipe system made completely of plastic.

Compressed air technology - PN16

Compressed air is now an integral part of the manufacturing and processing industries.

There are numerous tasks and the solution is often simple. However, the quality of the piping and its long term properties play a decisive role in the safety and the costs.

Applications

- Driving medium for tools such as drilling machines, hammer-drive screws, grinding machines, pressure cylinders
- Pneumatic control systems for machines
- Driving force for regulating fittings, solenoid valves, shut-off devices, valves ...
- Purification air at the workplace

Advantages

- Range: d 20 – 125mm
All the necessary fittings and adaptor
Pressure rating: PN16
- High chemical resistance to compressor oils
- No corrosion. This ensures that the quality of the compressed air is maintained
- Polyfusion welded joints are clean, leak-proof, secure and homogeneous
- No energy loss caused by leakage through dried seals
- The smooth surface means there are low friction losses and no narrowing of the cross-section in the fitting. As a result of this and the elasticity of the material there is a low noise transmission

The requirements

The compressed air can be divided into different quality categories which can be classified according to the application.

The quality depends on many different factors.

The air must be dried or filtered, or the oil content may need to be changed according to the classification.

The pressure dew point

As a result of the compression of the air the water content in the compressed air rises greatly. Drying the air reduces the formation of condensation inside the system to the minimum possible. The pressure dew point is the temperature at which the water within the compressed air starts to condense and is categorised in different classifications.

Class	Pressure dew point
1	– 70° C
2	– 40° C
3	– 20° C
4	+ 3° C
5	+ 7° C
6	+ 10° C

The solids

Solid impurities found in the air are also present in compressed air and must be reduced by filtration. The particle sizes and concentrations are specified in different classifications.

	Max. size of particle	Max. concentration of particle
Class	micro/m	mg/m ³
1	0,1	0,1
2	1	1
3	5	5
4	15	8
5	40	10

The oil concentration

Compressors require at least some lubricating oil for the working process. Depending on the application various procedures must be undertaken to remove this oil from the compressed air. However, it must be taken into account that in some cases a minimum of oil is required in the compressed air. Appropriate measures are then taken to add oil to the air. The oil concentration is also divided into different categories.

	Oil concentration
Class	mg/m ³
1	0,01
2	0,1
3	1
4	5
5	25

Cooling technology

Chilled water

Pipe systems for chilled water cooling systems must be safe to use, flexible in design and quick to install.

KETRIX® meets all these requirements:

- The highly secure welding joint technology with a safety factor > 3
- Resistant to chemicals, aqueous solutions and water hammer, also at cold temperatures
- Resistant to corrosion, even at points where there is unwanted condensation
- Complete fitting programme which has been adapted for each application Range: d20 – 160mm
- The low weight and easy handling means that many joints can be pre-manufactured in the workshop. This saves time and costs
- KE KELIT pre-manufactures fitting components which are required in large numbers

Refrigerants

There are only a few types of plastic which are resistant to hammer from refrigerants, resistant to corrosion and which have a favourable price to quality ratio.

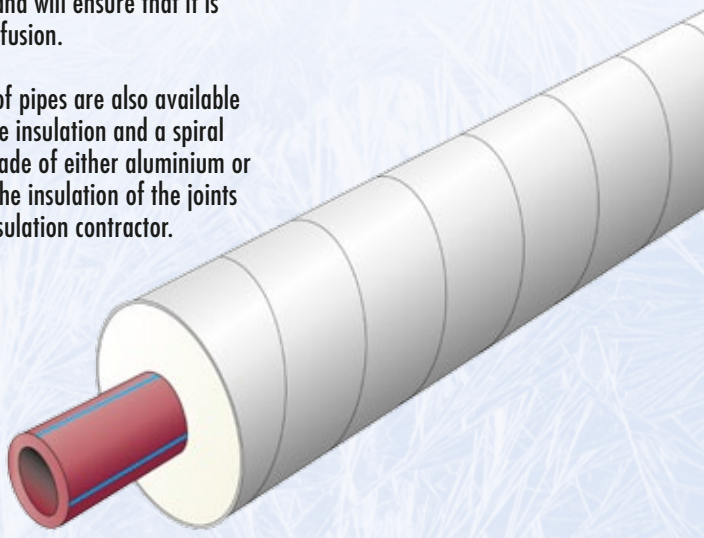
CRYOLEN® is a polypropylene alloy (POB = polyolefine blend) and has the following properties:

- Resistant to temperatures down to -30°C
- Resistant to all concentrations of glycol brines
- Resistant to corrosion even at points which have fallen below the temperature of dew point, and at the aggressive temperature of $+ - 0^{\circ}$
- No pre-treatment or painting of the pipes is necessary
- Secure welded joint which is very quick compared to steel/copper/stainless steel
- Flange connection with EPDM O ring seal is resistant to freezing or flat flange for fittings with integrated sealing surface

Insulation

In most cases with cooling systems a specialist insulating contractor will install the insulation with a suitable and approved elastomer foam and will ensure that it is sealed to stop diffusion.

Straight lengths of pipes are also available with polyurethane insulation and a spiral pipe covering (made of either aluminium or stainless steel). The insulation of the joints is done by the insulation contractor.



4 methods of joining

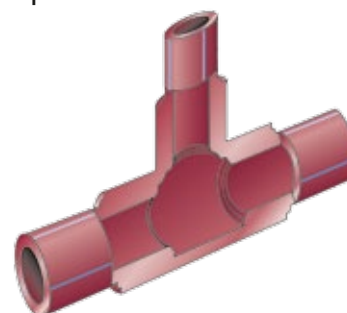
1. Polyfusion welding

Range: d20 – d125mm

1.1 Butt welding

Range: d160mm

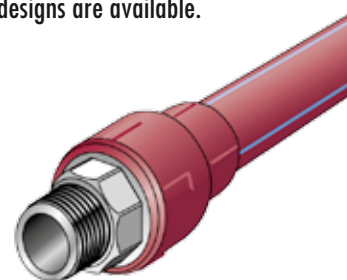
Pipes and fittings made of identical raw material. The joint is homogenous and requires no extra materials.



2. Threaded joints

Range: d20 x 1/2" – d75 x 2 1/2"

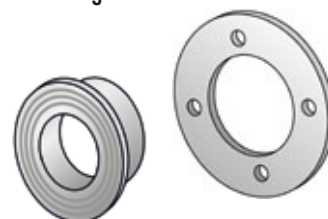
Threads are manufactured to DIN 16962 and are made of dezincification resistant brass (CW 724 R). They are coated with non-porous metall plating. This prevents stress crack corrosion. Both male and female threads in straight and elbow designs are available.



3. Flange connection

Range: d20 – d160mm

The solution for joining to flanged fittings. Backing ring is joined by polyfusion- or butt welding.



4. Electrofusion welding

Range: d20 – d160mm

For places which are difficult to access by polyfusion welding KELIT Universal E-sockets can be used.

Triathlon

You have seen the pictures of athletes competing in 3 disciplines. The demands are different but the desire to win is the same. Each discipline is evaluated. Only the best survive!

Industry-triathlon

Pipe applications other than hot water and heating installations with high requirements regarding resistance to corrosion, speed of installation and strength.

The winner in the industry triathlon

KETrix® is made of CRYOLEN®, a polyolefine blend.
A polypropylene alloy with excellent properties.

- Resistant to cold temperatures to -30°C
- Elastic at a relatively high rigidity
E-module 1500 N/mm^2
- Excellent resistance to chemicals in the defined area of application
- Raw material suited for foodstuff (LMG 1975) ON B 5014
- Low specific weight: density of 0.9 g/cm^3
- Four methods of joining for all applications
- Complete range of fittings from d20 – d160
- Colour: claret with blue stripes
KETrix® is unmistakable
- Resistant to corrosion caused by drinking water

Testing

KETrix® is tested as a polypropylene alloy to the same conditions as DIN 8077/78, type PP-B.

The industrial pipe system is subjected to both internal and external testing.

Pipe sizes

TRI02 KETrix® Pipe PN10 SDR 11

d x s	Waterquantity l/m
20 x 1,9 mm	0,21
25 x 2,3 mm	0,33
32 x 2,9 mm	0,54
40 x 3,7 mm	0,83
50 x 4,6 mm	1,31
63 x 5,8 mm	2,07
75 x 6,8 mm	2,96
90 x 8,2 mm	4,25
110 x 10,0 mm	6,36
125 x 11,4 mm	8,20
160 x 14,6 mm	13,44

TRI08 KETrix® Pipe PN16 SDR 7,4

d x s	Waterquantity l/m
20 x 2,8 mm	0,16
25 x 3,5 mm	0,25
32 x 4,4 mm	0,42
40 x 5,5 mm	0,66
50 x 6,9 mm	1,03
63 x 8,6 mm	1,65
75 x 10,3 mm	2,32
90 x 12,3 mm	3,36
110 x 15,1 mm	5,00
125 x 17,1 mm	6,48

TRI01 KETrix® ALU-Stabil-Pipe PN16 No oxygen diffusion

d x s	Waterquantity l/m
20 x 2,3 mm	0,19
25 x 2,8 mm	0,30
32 x 3,6 mm	0,48
40 x 4,5 mm	0,75
50 x 5,6 mm	1,18
63 x 7,1 mm	1,87
75 x 8,4 mm	2,66
90 x 10,1 mm	3,83

The polyfusion welding technology means that there no narrowing of the pipe through the fittings.

Drinking water (cold)

Clean and uncontaminated water is an essential foodstuff. Only the best pipe system is sufficient.

Temperature: $+20^{\circ}\text{C}/10 \text{ bar}$
 -30°C bis $+30^{\circ}\text{C}/8 \text{ bar}$

Compressed air

Pneumatic (up to 16 bar)
Medium for driving, controlling and processing. In all areas of industry.

Chilled water

(to $+2^{\circ}\text{C}$)
Room cooling in accordance with modern architecture design.
For fan coil systems or cooling pipe work in the ceiling.

Refrigerants

(to -30°C)
Brine pipelines (e.g. glycol technology) for intensive cooling in the food industry, in research and high-tech industries.

welding method

d20–125: Polyfusion welding
d160: Butt welding

The applications

Pressure rating PN10

20°C nominal pressure 10 bar

-30°C to $+30^{\circ}\text{C}$ 8 bar

Pressure rating PN16

20°C nominal pressure 16 bar

-30°C to $+40^{\circ}\text{C}$ 10 bar



Certified Quality Assurance System
by ÖQS
ÖNORM EN ISO 9001:2000
Reg. No. 366/0



EU registered design
Austrian trademarks 580 881



Member of the
AUSTRIAN WORKING GROUP
FOR PLASTIC PIPE RECYCLING
ARA-Licence No. 9087



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INNOVATIVE PIPE SYSTEMS

