

TECHNICAL INFORMATION - THE URTECH SYSTEM

URTECH preinsulated pipe

IPI has developed a unique process to pre insulate pipes with polyurethane foam for liquid or steam distribution systems. The polyurethane foam prevents the harmful effect of freezing and keeps the water at a constant temperature.

THE COMPONENTS OF THE URTECH SYSTEM

PIPE	All diameters and all kinds of pipe can be insulated with the Urtech System technology: PVC, CPVC, steel, iron, copper, polyethylene and others.
POLYURETHANE FOAM	The standard thickness of the polyurethane foam applied on the pipes is 50mm (2 "). It is possible to increase or reduce the thickness of the polyurethane foam depending on the environment conditions where the pipes will be located.
PROTECTIVE POLYETHYLENE MEMBRANE	Tow layers of polyethylene membrane of 0,635mm are applied around the insulated pipe. The polyethylene membrane protects the polyurethane foam against water infiltration and any punching which may occur during the installation of the pipes. It is also possible to use other kinds of protective membrane and jacketing: i.e. spiral galvanized steel, aluminium, stainless steel, PVC, HDPE casing and others.
TRACING CHANNEL	When the insulated pipes are placed in extreme cold conditions, it is recommended to use an electrical heating system placed on the pipes to prevent frost. PVC tracing channels are installed on the pipes before the application of the polyurethane foam. The electrical heating cable will then be inserted on site by the client into the PVC channel.
EXTREMITIES PROTECTION	A bitumen layer is applied on the extremities of the polyurethane foam on each pipe.
ELECTRICAL HEATING SYSTEM	IPI can provide, if needed, a complete heating electrical system (i.e. heating cable, controller, connections) pursuant to a certified manufacturer's recommendation.

TECHNICAL DATA

POLYURETHANE FOAM		
ASTM	DESCRIPTION	VALUE
D-1622	Density	48 kg/m ³ (3 pds/ft ³)
C-518	Thermal resistance R (initial)	1,14 m ² ·°C/W 6,45 ft ² ·h·°F/BTU·in
C-518	Thermal conductivity K (initial)	0,022 W/m·°K 0,155 BTU·in/ft ² ·h·°F
D-1621	Compressive strength	300 kpa (43,5 psi)
D-1621	Compressive strength for system with 1,27mm coating and may vary depending of the type of pipe	679,5 kpa (98,56 psi)
D-2842	% of water absorption (volume)	Max 2,5%
D2856	Closed cell	>92%
	Service temperatures	-76°F @ 275°F (-60°C @ 135°C)

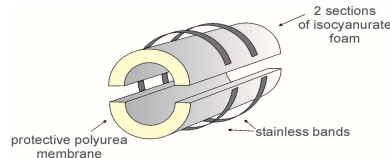
POLYETHYLENE MEMBRANE		
ASTM	DESCRIPTION	VALUE
	Backing	Polyethylene
	Adhesive	Butyl rubber and resin
	Thickness	0,635 mm (25 mils)
D-1000	Tensile strength	8,93 kg/cm width (50 pds/in width)
D-1000	Elongation	400%
D-1000	Adhesion backing	0,56 kg/cm width (3,125 pds/in width)
	Service temperatures	-49°F @ 185°F (-45°C @ 85°C)

TECHNICAL INFORMATION - THE URTECH SYSTEM

URTECH Insulating shell

URTECH INSULATING SHELL

IPI manufactures two-parts insulating shell to insulate distribution system joints and connections. The shells are custom designed in our plant and installed on site by the client to perfectly cover pipe ends. The URTECH insulating shells reduce labor required on site. The URTECH insulating shells are made of isocyanurate foam and entirely covered with a protective polyurea membrane. The two insulating sections are held in place by stainless steel bands, heat shrinkable membrane or polyethylene adhesive bands.



DIFFERENT TYPES OF URTECH SHELL

URTECH insulating shell with polyurea membrane

Isocyanurate foam or polyurethane foam	Two insulating sections are pre formed to perfectly cover the joints of the pipes or different kinds of accessories.
Polyurea membrane	A polyurea membrane is sprayed onto the entire surface of the insulating shell to seal completely the surface of the shell. The polyurea membrane protect the isocyanurate foam.
Stainless bands or Integrated aluminum bands	The stainless bands maintain the two insulating sections. The integrated aluminum straps are screwed to close the two insulating sections.
Silicone	A silicone tube is supplied with the URTECH insulating shell to perfectly seal all joints.

URTECH insulating shell with a heat-shrinkable sleeve

Isocyanurate foam	Two insulating sections are pre formed to perfectly cover the joints of pipes or different kinds of accessories.
Heat-shrinkable sleeve	Heat shrinkable sleeve is supplied with the URTECH shell. The sleeve is wrapped around the shell and through a heat source projected on the sleeve, the membrane shrinks and takes the shape of the part to be covered.

TECHNICAL DATA

ISOCYANURATE FOAM		
ASTM	DESCRIPTION	VALUE
D-1622	Density	32.8 kg/m ³ (2.05 pds/ft ³)
D-1621	Compressive strength (parallel to expansion)	165 kPa (24 pds/in ²)
D-1621	Compressive unit (parallel to expansion)	3790 kPa (550 pds/in ²)
D-2856	Closed cells	92%
D-2842	Water absorption	0.02 g/cm ² (0.04 pds/ft ²)
C-518	Factor K (180 days @ 75°F)	0.027 W/m ² ·°C (0.19 BTU·in/ft ² ·h·°F)
	Service temperatures	-297°F @ 300°F (-183°C @ 149°C)

HEAT-SHRINKABLE SLEEVE		
ASTM	DESCRIPTION	VALUE
D-638	Tensile strength	20 Mpa (2900 psi)
D-638	Elongation	600%
D-2240	Hardness	46 shore D
D-570	Water absorption	0.05%

POLYUREA MEMBRANE		
ASTM	DESCRIPTION	VALEUR
D-2240	Hardness	85 - 90A
D-412-C	Tensile strength	1500 - 2000 psi
D-412-C	Elongation	700 - 800%
D-624-C	Tear resistance	260 - 280 pli
D-570-81	Water absorption (168 hours of immersion)	1.55 - 1.65%
E-96	Permeability	0.327 g/m ² /24 hrs (0.045 perm/inch)
	Service temperature	-30°F @ 350°F (-34°C @ 177°C)



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