Introduction

The HeatLink PEX products are constructed with a unique high density polyethylene and uses special additives to prevent thermal degradation at high temperatures and inhibit UV degradation. Tubing used for radiant floor heating systems may be coated with an optional oxygen diffusion barrier to assist with inhibiting corrosion. The HeatLink production facility has invested in state-of-the-art quality control systems that continuously monitor product quality in real time in addition to the strict quality control testing performed in the two in-house laboratories. Independent testing and certification agencies assure the high quality of the product and conformity to standard requirements as outlined by ASTM International, NSF International, and CSA International to name a few.

HeatLink cross-linked polyethylene tubing exhibit important qualities:

- Minimum bending radii of 6× the tubing diameter at 68°F (20°C)
- Unique flexibility
- Unique chemical resistance
- UV resistance
- Low friction coefficient
- Excellent abrasion resistance
- Very good resistance to heat
- Long useful life
- Low creep rates

The Material

Polyethylene was discovered in Britain in the 1930's by a series of mistakes and observations made at the ICI Laboratories who were investigating new high pressure reaction types. The raw material, ethylene, is a gas compound that is prepared from petroleum. Under high pressure, and in the presence of oxygen and a catalyst, a polymerization reaction takes place and the small ethylene molecules are linked together creating large chain molecules. These chain molecules are very long and can contain hundreds or thousands of ethylene units. The material resulting from this chemical process is our base plastic material, polyethylene.

Depending on the polymerization process, polyethylene is divided into three groups, low-density PE (LDPE), medium-density PE (MDPE) and high-density PE (HDPE). Due to their denser crystalline structure, HDPE and MDPE show better mechanical and thermal properties than LDPE.

Non-cross-linked polyethylene and polybutylene belong to a group of plastic materials called thermoplastics. The term thermoplastic describes the polymer’s ability to be softened at high temperature and then formed by extrusion or injection molding. When the material is cooled, the form given to it during the molding process is retained. However, if the material is heated and cooled repeatedly, it begins to lose its mechanical properties until the product can no longer fulfill its purpose. Thermosets, as opposed to thermoplastics, are materials that cannot be softened by heat once they are formed. These materials include the unsaturated polyester resins, epoxy, phenolic resins, and crosslinked polyethylene.

The most desirable product between thermosets and thermoplasts would be one that contains the characteristics and advantages of both types of plastics. This would create a thermoplast that could be formed by a simple molding process like extrusion, and then could be crosslinked to produce the characteristics and advantages of the thermoset plastics. This is exactly what is achieved by crosslinking polyethylene. During cross-linking, the individual polyethylene molecules are linked together, creating a network which improves on the properties of ordinary, uncrosslinked polyethylene tubing and giving it the characteristics and advantages of both thermosets and thermoplastics. Crosslinking causes the retention of the desired PE properties at higher temperatures and enhancement of the room temperature properties. After cross-linking the polyethylene changes from a thermoplastic to a thermoset plastic. This plastic has a very stable molecular structure, enabling it to withstand adverse temperature and pressure conditions and has an unsurpassed resistance to abrasion and chemical attack.

PEX Tubing Standards & Testing

Most materials tend to lose part of their physical and mechanical properties over time. This loss is caused by changes to the chemical structure as the product begins to break down. The chemical change can be caused by many different factors such as UV radiation, elevated temperatures, or mechanical stress. The problem is accelerated if the material is exposed to an aggressive environment for extended periods of time, which can lead to a decline in some physical properties such as tensile strength, flexible strength and impact strength.

Within the big family of plastic materials the thermoplasts are the most sensitive to aging and show, with the passage of time, a sharp decline in strength that causing a quicker failure of the material. Crosslinked polyethylene, which is thermoset material, is characterized by extremely high long-term stability. In the graph below, long-term pressure and temperature tests show that PEX tubing has a very gradual weakening of the tubing wall over an extended period of time. This is in contrast to polybutylene which shows a more dramatic loss of performance over time. A sharp change in direction in the graph (circled) indicates that a weakening of the tubing wall has taken place, as in the case of polybutylene.

To ensure the long-term stability of the HeatLink® PEX products, the tubing is tested and certified to many different industry accepted performance standards from agencies such as ASTM International (www.astm.org), CSA International (www.csa-international.org), NSF International (www.nsf.org), International Association of Plumbing and Mechanical Officials (IAPMO) (www.iapmo.org), and the Plastics Pipe Institute (www.plasticpipe.org).

HeatLink® PEX-a Tubing

Standards

- ANSI/NSF-61
- ANSI/NSF-14
- ANSI/UL 263
- ASTM F876
- ASTM F877
- ASTM F1807
- ASTM F1960
- ASTM F2080
- ASTM F2098
- ASTM F2159
- ASTM F2657
- ASTM E84
- CAN/ULC S101 (all but ⅝")
- CAN/ULC S102.2-2007/2010
- CSA B137.5
- DIN 4726/9 (EVOH oxygen barrier)

Listings

- cNSF®us-rfh – PEX 0306
- NSF U.M.Code
- CSA B137.5 RFH
- ICC-ES
- ICC-PMG
- IAPMO UMC
- PPI TR-4
- Warnock Hersey

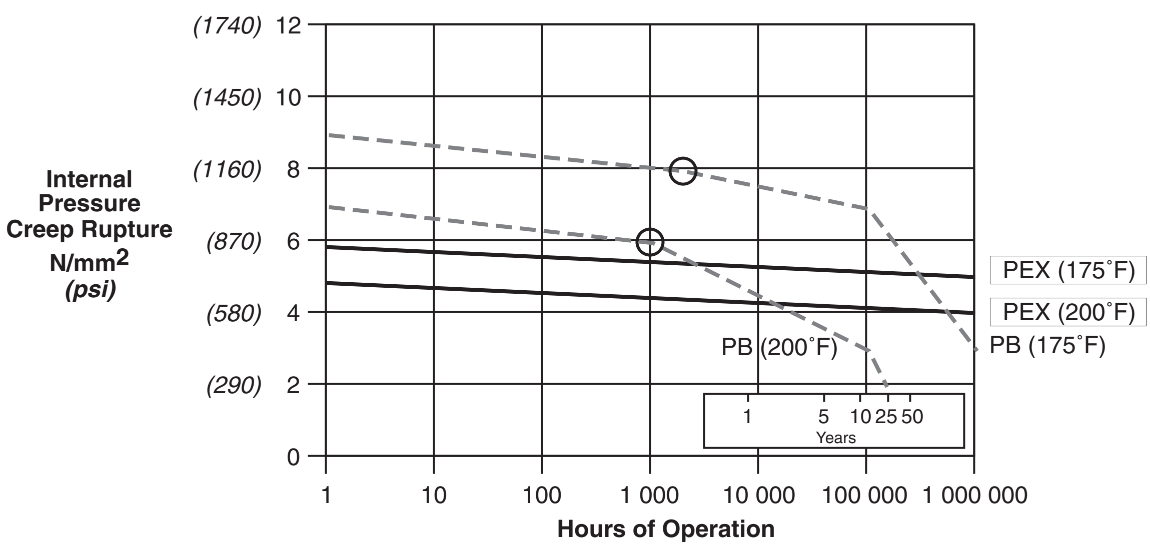
PureLink® Plus PEX-a Tubing

Standards

- ANSI/NSF-61
- ANSI/NSF-14
- ANSI/NSF-372
- ANSI/UL 263
- ASTM F876
- ASTM F877
- ASTM F1807
- ASTM F1960
- ASTM F2023
- ASTM F2080
- ASTM F2098
- ASTM F2159
- ASTM F2657
- ASTM E84
- CAN/ULC S101
- CAN/ULC S102.2-2007/2010
- CSA B137.5

Listings

- cNSF®us-pw-G – PEX 5106
- NSF U.P.Code
- ICC-ES
- ICC-PMG
- IAPMO UPC (½")
- PPI TR-4
- CSA B137.5 Potable
- NSF-fs (½" & ¾")
- Intertek - Certified to: ASTM E84 & CAN/ULC S102.2. Refer to Intertek's Directory of Building Products for detailed information.



PEX Tubing Standards & Testing continued

Standards ASTM F876/877, CSA B137.5, and NSF-14 cover the manufacture and testing of all PEX tubing. Multiple parameters are covered within these standards such as workmanship, dimensions and tolerances, density, pressure testing, and the degree of cross-linking. HeatLink® tubing meet and exceed the specified requirements in all cases.

The following quality control tests are completed during the production process.

Tubing Property	Frequency
Workmanship	Continuously
Dimensions/Tolerances	Every 30 min
Density	Daily
Sustained Pressure	Every 3 months
Burst Pressure	Every 5 hours
Environmental Stress Cracking	Yearly
Degree of Crosslinking	Every 3 days
Stabilizer Functionality	Yearly

Workmanship:
The surface of the tubing has to be even and smooth. Sharp grooves, sinkholes or other surface disorders must not appear.

Dimensions/Tolerances:
Diameter and wall thickness is measured according to ASTM dimensions and tolerances for SDR9 PEX tubing. If any deviations beyond the permissible tolerance appear, the tubing is destroyed.

Sustained Pressure:
Tubing samples are tested under pressure for 1000 hours at 200°F (93°C) @ 165psi and 180°F (82.2°C) @ 195psi. HeatLink® tubing meet or exceed the requirements.

Burst Pressure:
Tubing samples are burst within 60 to 70s at 73°F (23°C) to determine the burst pressure. ASTM F876 also specifies burst pressures at additional temperatures. HeatLink® tubing exceeds the requirements at 73°F.

Size	73F	180F	200F
⅜"	620psi	275psi	235psi
½"	480psi	215psi	185psi
⅝" and Larger	475psi	210psi	180psi

Environmental Stress Cracking
One of the most important factors governing the useful life of polyethylene tubing is the formation of stress cracks. Stress cracks can be defined as brittle fractures of the material that normally leads to a creep rupture. Creep rupture is a deformation of the tubing under stress and temperature. Even though the stress level might be below that which would normally cause cracking, stress cracks can appear. The danger increases when the tubing is under additional stress, such as bending during installation.

Stress cracks are greatly reduced in HeatLink's tubing, because of the cross-linked molecular structure, and the unique three-dimensional network. Similarly, accidental scratches that happen on a job site do not affect HeatLink's tubing. Intensive burst pressure tests are performed on tubing after being subjected to scratches as deep as 20% of the tubing wall, show that no damage is caused due to the scratch.

PEX Tubing Standards & Testing continued

Degree of Crosslinking:

The outstanding properties of HeatLink® tubing is a result of crosslinking the polyethylene. The quality of the tubing depends on the degree of crosslinking. "Degree of crosslinking" represents the percentage of crosslinked material compared to the total mass. This value should not be below 70% for peroxide crosslinked tubing (PEX-a), 65% for vinyl-silane crosslinked tubing (PEX-b), and 65% for electron beam crosslinked tubing (PEX-c). At a lower percentage the characteristics of crosslinked material are not dominant. To test this percentage, a section cut from that sample that represents the entire wall thickness and it is boiled in a solvent, extracting the non-crosslinked portion of the material. Tubing that does not meet the set requirements is destroyed.

Stabilizer Functionality:

Ensures that the antioxidant package used to protect the tubing is functioning properly. Samples are tested for 3000h at 120°C (248°F) and 101psi (0.70MPa).

PEX Pressure/Temperature Ratings

All PEX products are evaluated with ASTM D2837 as an indication of the long-term performance of the product. Through evaluation of the test data at The Plastics Pipe Institute (PPI), PEX products are assigned ratings that govern the maximum operating pressure and temperatures.

Temperature	Pressure	HDB	HDS
73F (23C) [1]	160psi (1100kPa) [1]	1250psi	630psi
180F (82C) [1]	100psi (690kPa) [1]	800psi	400psi
200F (93C) [2]	80psi (550kPa) [2]	630psi	315psi

[1] PureLink Plus, and HeatLink PEX Tubing have been listed to these pressure/temperature ratings as per PPI TR4.
[2] PureLink Plus PEX Tubing has been listed to these pressure/temperature ratings as per PPI TR4.
HDB - Hydrostatic Design Basis
HDS - Hydrostatic Design Stress

Interpolated & Extrapolated Pressure/Temperature Ratings

Additional pressure/temperature ratings are determined using a linear interpolation and polynomial trendline extrapolation.

Temperature	Pressure
200.0F (93.3C)	**80psi (552kPa)**
190.0F (87.8C)	90psi (621kPa)
180.0F (82.2C)	**100psi (689kPa)**
170.0F (76.7C)	106psi (731kPa)
160.0F (71.1C)	111psi (765kPa)
150.0F (65.6C)	117psi (807kPa)
140.0F (60.0C)	123psi (848kPa)
130.0F (54.4C)	128psi (883kPa)
120.0F (48.9C)	134psi (924kPa)
110.0F (43.3C)	139psi (958kPa)
100.0F (37.8C)	145psi (1000kPa)
90.0F (32.2C)	151psi (1041kPa)
80.0F (26.7C)	156psi (1076kPa)
73.4F (23.0C)	**160psi (1103kPa)**
60.0F (15.6C)	162psi (1117kPa)
50.0F (10.0C)	162psi (1117kPa)
40.0F (4.4C)	162psi (1117kPa)

The use of PEX tubing in a potable hot-water plumbing system with an operating temperature above 140°F (60°C) or system pressure above 80 psig (550 kPaG) or highly aggressive water quality or any combination thereof can significantly reduce the service life of the tubing. This statement does not apply to closed loop hydronic systems.

HeatLink requires following the guidelines described in Plastics Pipe Institute TN-53, Guide to Chlorine Resistance Ratings of PEX Pipes and Tubing for Potable Water Applications and HeatLink INFO 37, Domestic Hot Water Recirculation Systems.

PEX Tubing Standards & Testing continued

Dimensions & Tolerances:

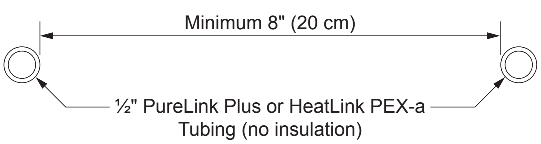
SDR9 Tubing Dimension Chart (ASTM F876)						
Nominal Size	Outer Diameter		Wall Thickness		Average Inner Diameter	
	mm±tolerance	in±tolerance	mm+tolerance	in+tolerance	mm	in
⅜"	12.70±0.08	0.500±0.003	1.78+0.25	0.070+0.010	8.89	0.350
½"	15.88±0.10	0.625±0.004	1.78+0.25	0.070+0.010	12.07	0.475
⅝"	19.05±0.10	0.750±0.004	2.12+0.25	0.083+0.010	14.56	0.574
¾"	22.22±0.10	0.875±0.004	2.47+0.25	0.097+0.010	17.03	0.671
1"	28.58±0.12	1.125±0.005	3.18+0.33	0.125+0.013	21.89	0.862
1-¼"	34.92±0.12	1.375±0.005	3.88+0.38	0.153+0.015	26.78	1.054
1-½"	41.28±0.16	1.625±0.006	4.59+0.48	0.181+0.019	31.62	1.244
2"	53.98±0.16	2.125±0.006	6.00+0.61	0.236+0.024	41.37	1.629

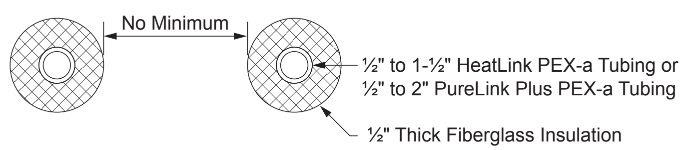
Flame Spread (FS) & Smoke Development (SD) Rating

CAN/ULC S102.2 - 2007 (Canada)

In compliance with the National Building Code of Canada, HeatLink PEX tubing was tested at ULC and Intertek Testing Services (ITS) in accordance with CAN/ULC S102.2-2007/2010: Standard for Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies.

Product	Size	Flame Spread (FS)	Smoke Development (SD)	Insulation Required	Spacing Requirements
HeatLink®	½"	< 25	< 50	No	Minimum 8"
HeatLink®	½" – 1-½"	< 25	< 50	Yes*	None
PureLink® Plus	½"	< 25	< 50	No	Minimum 8"
PureLink® Plus	½" – 2"	< 25	< 50	Yes*	None

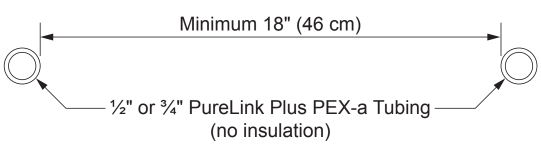


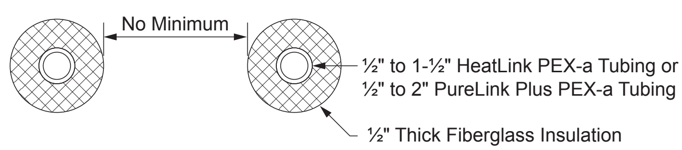


ASTM E84 (United States)

HeatLink PEX tubing was tested by NSF International in accordance with ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials.

Product	Size	Flame Spread (FS)	Smoke Development (SD)	Insulation Required	Spacing Requirements
HeatLink®	½" – 1-½"	< 25	< 50	Yes*	None
PureLink® Plus	½" and ¾"	< 25	< 50	No	Minimum 18"
PureLink® Plus	½" – 2"	< 25	< 50	Yes*	None





The difference between the test results can be attributed to the different mounting method in each test.

* Requires ½" thick fiberglass insulation.

Technical Specifications						
Mechanical Properties		**PEX-a (Engel/Peroxide)**	**PEX-b (Silane)**	**PEX-c (Irradiation)**	**Unit**	**Standard Tested**
Density		930-938	947-950	942-945	kg/m^3	ASTM F876
Flexibility for Installation		Highest	Lowest	Middle		
Tensile strength	@ 20°C	20-26	~20	23-26	N/mm^2	DIN 53455
	@ 100°C	9-13	~12	9-13	N/mm^2	
Modulus of elasticity E	@ 20°C	1150	~750	600-900	N/mm^2	DIN 53457
	@ 80°C	560	N/A***	400	N/mm^2	
Elongation on failure	@ 20°C	300-450	>300	500-700	%	DIN 53455
	@ 100°C	500-700	N/A***	750-900	%	
Impact strength	@ 20°C	No failure	No failure	No failure	kJ/m^2	DIN 53453
	@ -140°C	No failure	No failure	No failure*	kJ/m^2	
Moisture absorption	@ 22°C	0.01	0.01	0.01	mg/4d	DIN 53472
Coefficient of friction on steel		0.08-0.1	0.08-0.1	0.08-0.1	-	
Surface energy		34×10^{-3}	34×10^{-3}	34×10^{-3}	N/m	
Oxygen permeability	@ 20°C	0.7×10^{-3}	0.7×10^{-3}	0.7×10^{-3}	g/m^3 day	DIN 4726
	@ 55°C	2.6×10^{-3}	2.6×10^{-3}	2.6×10^{-3}	g/m^3 day	
ESCR (environmental cracking)		No failure	No failure	No failure		ASTM F876
Degree of Crosslinking		70 to 89	65 to 89	65 to 89	%	ASTM F876
Molecular Crosslink Bond Strength		Carbon-Carbon - 144	Carbon-Silane - 104	Carbon-Carbon - 144	kcal/mol	
Thermal Properties		**PEX-a (Engel/Peroxide)**	**PEX-b (Silane)**	**PEX-c (Irradiation)**	**Unit**	
Service temperature range		-100, +120	-100, +120	-100, +120	°C	
Coefficient of linear expansion**	@ 20°C	1.4×10^{-4}	1.4×10^{-4}	1.4×10^{-4}	m/m°C	
	@ 100°C	2.05×10^{-4}	2.05×10^{-4}	2.05×10^{-4}	m/m°C	
Softening temperature		+133	+133	+133	°C	
Specific heat		2.3	2.3	2.3	kJ/kg°C	
Coefficient of thermal conductivity		0.38	0.38	0.38	W/m°C	
Electrical Properties		**PEX-a (Engel/Peroxide)**	**PEX-b (Silane)**	**PEX-c (Irradiation)**	**Unit**	
Specific internal resistance	@ 20°C	10^{15}	10^{15}	10^{15}	-m	
Dielectric constant	@ 20°C	2.3	2.3	2.3	-	
Dielectric loss factor	@ 20°C / 50 Hz	1×10^{-3}	1×10^{-3}	1×10^{-3}	-	
Rupture voltage	@ 20°C	60-90	60-90	60-90	kV/mm	

* tested at - 80°C
** Rule of thumb: PEX tubing will expand or contract approximately 1" every 100' of tubing for every 10°F of temperature change.
*** Data not available at time of print

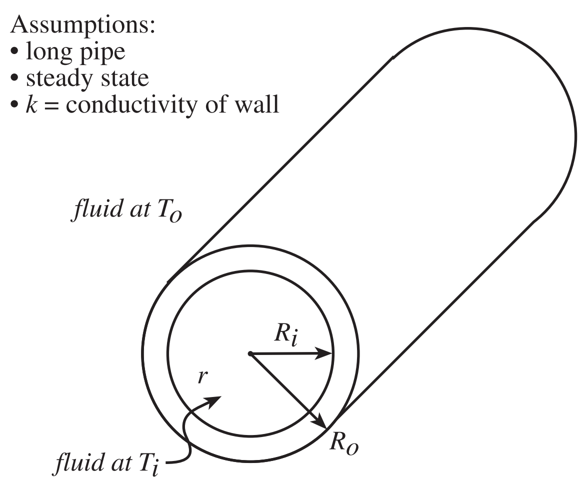
L2305 - August 26, 2021

PEX Tubing Physical Properties

PEX Tubing Size	Water Volume Content		Rate of Thermal Conduction through the Tubing Wall*	
	US gal/ft	Litres/m	BTU/h/Ft/°F	W/(m °C)
½"	0.0092	0.114	5.04	8.70
⅝"	0.0134	0.166	5.17	8.88
¾"	0.0184	0.228	5.21	8.98
1"	0.0303	0.376	5.19	8.95
1-¼"	0.0453	0.563	5.20	9.00
1-½"	0.0631	0.785	5.17	8.96
2"	0.1083	1.344	5.20	8.97

* Coefficient of Thermal Conductivity: 2.635 BTU/h/ft²/(°F/in)
0.38 W/(m °K)

The coefficient of thermal conductivity of PEX has been published virtually in every literature related to PEX tubing. However, the heat conduction rate through the tubing wall can be established for the various tubing sizes as in the following:



The heat conduction rate, Q

$$Q = \frac{Ti - To}{R}$$

assuming that fluid in the tubing is at a higher temperature.

$$R = \frac{\ln\left(\frac{Ro}{Ri}\right)}{2\pi kL}$$

R is termed as the thermal resistance of the tubing. L is the tubing length under consideration.

Hence, for unit length of tubing and a ΔT (Ti – To) of 1 degree (C or F), the heat conduction rate can be simplified to

$$Q = \frac{2\pi k}{\ln\left(\frac{Ro}{Ri}\right)}$$

where the fluid films on both sides of the tubing wall are considered negligible.

For a CSA ½" tubing, Ro = 0.625/2 in, Ri = 0.475/2 in, Q (BTU/Hr/ft/°F)

$$Q = \frac{2 \times \pi \times 0.220}{\ln\left(\frac{0.3125}{0.2375}\right)} = 5.04$$

where k = 2.635 BTU in/(Hr ft² °F) or 0.220 BTU/(Hr ft °F)

Note: The rate of thermal conduction figures in the table above are for comparison purposes and ***not*** intended for use in designing floor heating systems. To calculate the heat output of a room other factors must be taken into account (i.e. material encasing the PEX tubing and floor coverings). HeatLink recommends the use of LoopCAD software with the HeatLink Add-on for these calculations.

PEX Tubing Pressure Drop Graph

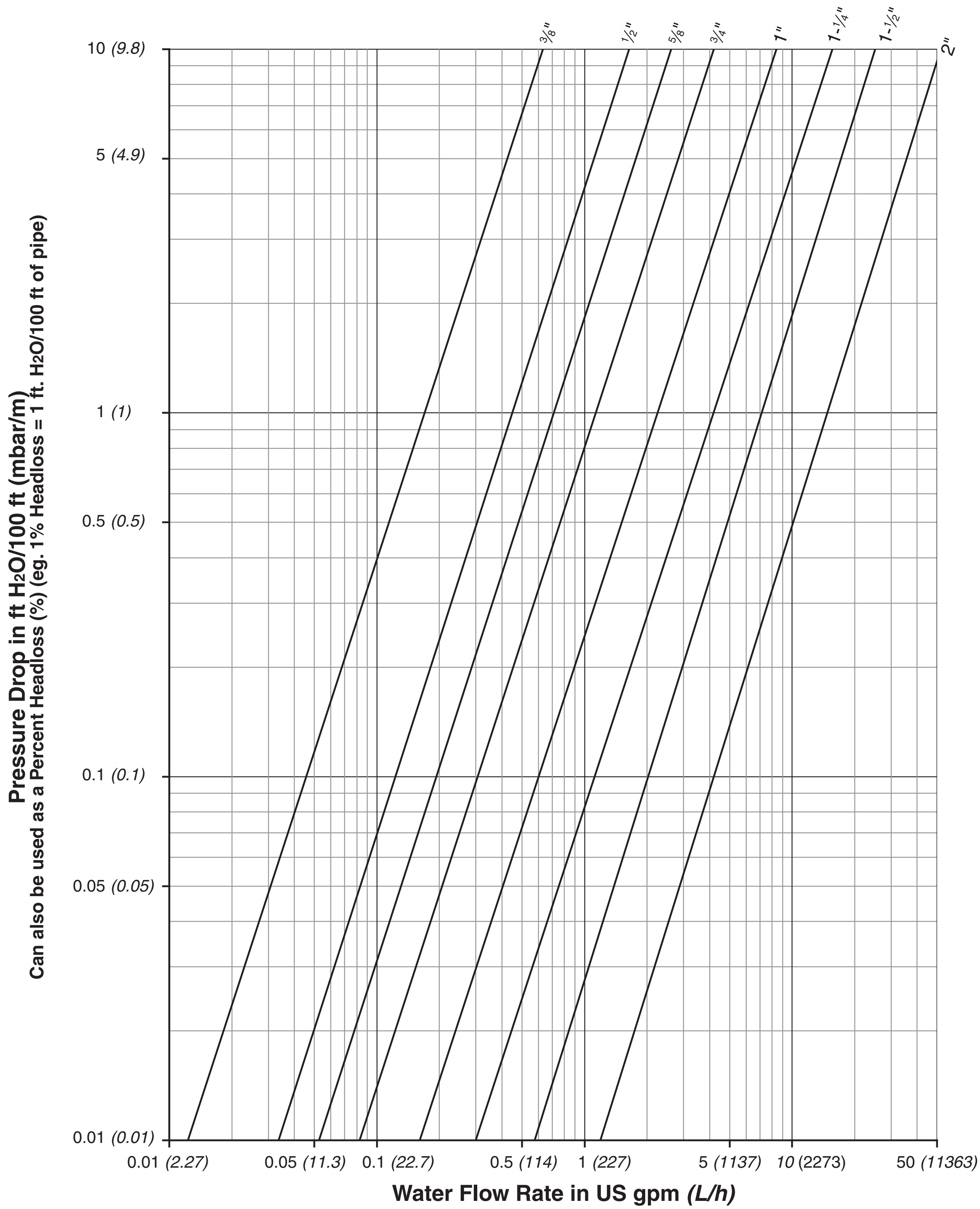


Chart settings at 120°F (49°C)

NOTE:
1 kPa = 10 mbar
100 Pa = 1 mbar
0.0145 psi = 1 mbar

14.5 psi = 1000 mbar
1 ft H_2O/ft = 97.97 mbar/m
1 mbar/m = 0.010207 ft H_2O/ft
1 ft H_2O/ft = 0.4331 psi/ft

1 mbar/m = 0.004421 psi/ft
1 mbar = 0.033456 ft H2O
1 ft H_2O = 29.89 mbar

Oxygen Diffusion

What is Oxygen Diffusion?

Oxygen diffusion is the movement of oxygen across the wall of the polyethylene tubing over time. Oxygen can enter a closed loop hydronic heating system in many different ways such as through expansion tanks, air vents, fittings, in the makeup water and through the tubing. Plastic and rubber products are far more porous than metals. While air does not travel through the pores of these materials, an oxygen molecule can. There-fore the oxygen is not visible in the form of bubbles and cannot be eliminated by automatic air vents or air scoops. The operating pressure of the system does not affect the rate of diffusion because the oxygen starved water acts as a negative pressure as far as oxygen is concerned.

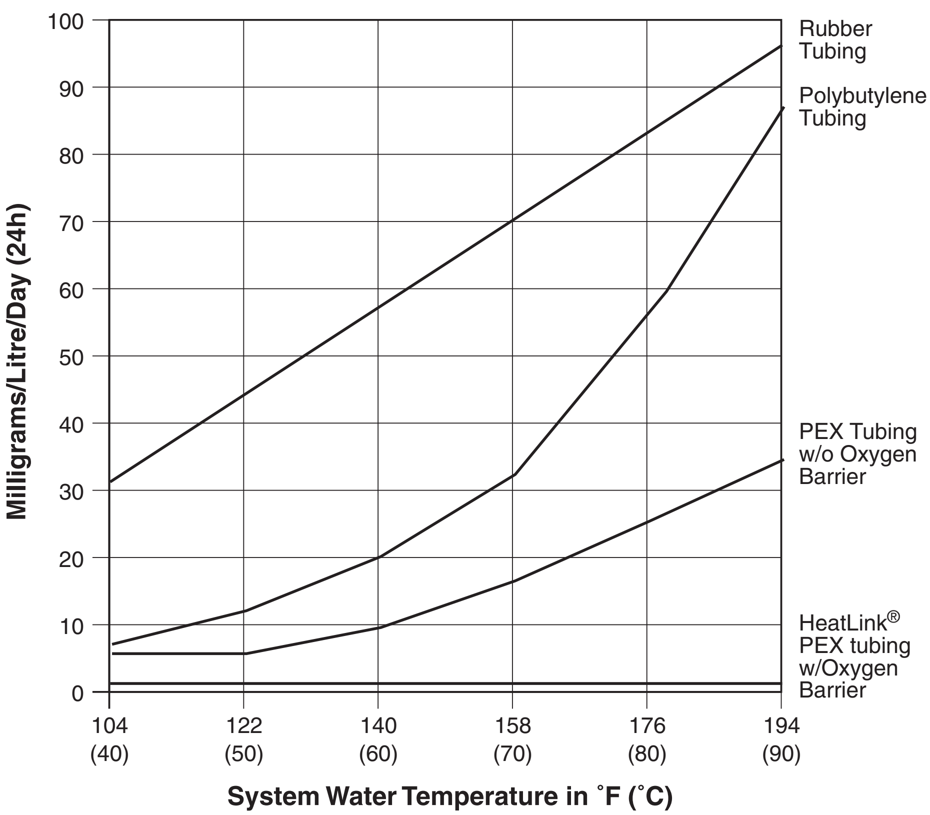
When corrosion of ferrous metals occurs in a closed loop heating system the water becomes "oxygen poor." This occurs because the water gives up one of its oxygen molecules to the corrosion reaction. This oxygen poor water then needs to rebuild itself by drawing in oxygen from wherever it can. Oxygen is then pulled in through the porous walls of the polyethylene tubing and once replenished, the corrosion process continues.

The effects of oxygen diffusion in radiant heating systems can be limited to established standards by utilizing tubing with an oxygen barrier. HeatLink PEX tubing is available with an oxygen barrier that allows low gas permeability.

What are the answers?

The German industry standards (DIN 4726) have determined that an oxygen diffusion rate of 0.1 milligrams per litre per day @ 40°C in plastic tubing is considered a safe level to prevent corrosion in heating system components. Oxygen diffusion is directly related to the system water temperature (see graph below), the higher the water temperature, the higher the rate of diffusion, which is measured in milligrams per liter per day (24 hours).

For example, the diffusion of 10 milligrams of oxygen per liter (0.001 ounces per gallon) per day through the tubing wall is equivalent to completely draining the heating system and refilling it with fresh water every day during the heating season. This then becomes an open loop system. The HeatLink PEX tubing with oxygen barrier have diffusion rates far below the strict requirements of the German standards and are recognized as an oxygen tight tubing carrying the DIN label.



In installations where the system will be installed in a "WET" pour, systems operate practically "noiseless." However in "DRY" installations or systems using deflector plates the oxygen barrier can create sound from tubing movements if there are large temperature changes in the supply water temperature. These can be reduced by installation of indoor/outdoor controls. The preferred recommendation for a "Dry" system is to use HeatLink standard PEX tubing. Even so the "DRY" system can not be as quiet as in a "WET" pour. Careful consideration should always be made in suitability of "WET" and "DRY" systems.

Oxygen Diffusion

Are there other solutions?

Heat exchangers may be used to isolate the tubing of the radiant system from the ferrous metals in the total system. The heat exchange method eliminates the need for a tube with an oxygen barrier. This alternative adds cost to the installation and therefore may not be economical. Also there are performance restrictions to heat exchangers that may not be acceptable in some installations.

Corrosion inhibitors such as molybdate or nitrite inhibitors must be added to the system to provide total corrosion control. Oxygen is not the only cause of corrosion. Corrosion can also occur in many other forms such as galvanic, caustic or acidic corrosion to name a few. The molybdate and nitrite operate by forming a thin film layer on all metallic parts in the water. This thin film is what provides the protection. See INFO 29 for dosages and details on the corrosion inhibitors. Even with the corrosion inhibitors in the system, oxygen continues to build in concentration but this should not be a concern as long as the inhibitor concentration is maintained. Homeowners and commercial operators must annually test these levels to ensure that accelerated corrosion does not occur if inhibitors become diluted. Glycol freeze protection fluids can be purchased with inhibitors. These products are important in extreme climate applications and also in HeatLink® SnowMelt installations. A side benefit to these fluids is the lubrication/coating they provide to mixing valves and pumps.

In the above cases HeatLink® PEX may be used. This standard tubing has the same temperature and pressure performance capabilities as all of the HeatLink® PEX tubing that come with oxygen barrier.

For final tubing selections please see your HeatLink® representative who can give expert advice for your application.

Kinked Tubing Repair

One of the most important features of PureLink® crosslinked tubing is its ability to "memorize" its structure and shape. As such, a kinked area can be heated with an electric hot air gun to approximately 260°F (125°C). Please note that open flame can not be used. Heat should be applied evenly until tubing appears clear around its entire circumference. Let the tubing cool undisturbed at room temperature. The repair is now complete.

Note: Colored tubing will not turn clear. O2 barrier will curl back from heated area.

Spray foam insulation

Spray foam insulation can be used in place of batt insulation in DryBelow™ applications. Direct contact of the PEX tubing and spray foam is not allowed. Use a foil barrier to separate them and to keep the foam from getting between the tubing, heat transfer plates, and the subfloor.

PEX Tubing Chemical Resistance
INFO 5, page 11

Disclaimer: The information presented here is non-comprehensive and has been compiled from sources believed to be reliable. Chemical compositions may change therefore no guarantee is implied or expressly stated here and the data given is intended as a guide only. Under no circumstances will HeatLink be liable for any damages based on any use of this information.

Classification:
A. Resistant. Can be used within the working pressures.
B. Conditionally resistant. Restrictions must be made with regards to pressures.
C. Conditionally resistant. Can be used up to 60% of the working pressures.
D. Conditionally resistant. Can be used up to 20% of the working pressures.
U. Not recommended.

	Chemical Resistance			
Compound	40°C	60°C	80°C	100°C
Accumulator Acid	A	A	A	
Acetaldehyde 40%	A	A		B
Acetaldehyde 100%	U			
Acetamide	A	A	A	
Acetic Anhydride	A			
Acetone	A	A	A	
Acetophenone			B	
Acetyl Bromide	U			
Acetyl Chloride			B	
Acetylene	A	A	A	
Acetylene Dichloride	see Dichloroethylene			
Acid Mixture H_2SO_4-HNO_3-H_2O	U	U		
Acid Mixture H_2SO_4-H_3PO_4-H_2		B		
Acroline Dispersion	A			
Acroline Solution	B			
Acryl Nitrite	A	A	A	
Adipic Acid	A	A	A	
Alcohol	see Ethylalcohol			
Aliphatic Esters	A	A	A	
Allyl Alcohol 7%	A	A	A	U
Allyl Alcohol 95%	A			
Allyl Aldehyde	see Acroline			
Alum	A	A	A	B
Aluminum Acetate	A	A	A	
Aluminum Chloride	A	A	A	
Aluminum Fluoride	A	A	A	
Aluminum Hydroxide	A	A	A	
Aluminum Nitrate Solution	A	A	A	
Aluminum Phosphate	A	A	A	
Aluminum Potassium Phosphate	A	A	A	
Aluminum Potassium Sulphate	A	A	A	A
Aluminum Sodium Sulphate Solution	A	A	A	
Aluminum Sulphate	A	A	A	
Ammonia Aqueous	A	A	A	
Ammonia Gas	A	A	A	
Ammonium Acetate	A	A	A	
Ammonium Aluminum Sulphate	A			
Ammonium Carbonate	A	A	A	
Ammonium Chloride	A	A	A	
Ammonium Fluoride 20%	A	A	A	
Ammonium Hydrogen Carbonate	A	A	A	
Ammonium Hydrogen Sulphide	A	A	A	
Ammonium Hydroxide	A	A	A	
Ammonium Metaphosphate	A	A	A	
Ammonium Molybdate	A			
Ammonium Nitrate	A	A	A	
Ammonium Persulphate	A	A	A	
Ammonium Phosphate	A	A	A	
Ammonium Sulfide	A	A	A	
Ammonium Sulphate	A	A	A	
Ammonium Sulphocyanide	A			
Ammonium Thiocyanate	A	A	A	
Amyl Acetate	A			
Amyl Alcohol	A	A	A	
Amyl Chloride	U			
Amyl Methyl Carbinol	B			
Amyl Naphthaline	B			
Aniline Hydrochloride	U			
Aniline Suphate	U			
Aniline (colored)	see Aniline			
Aniline (pure)	A	A		
Aniline (water soluble)	B			
Animal Fats	A	A	A	
Animal Oils	B	B	B	
Anis Oil	B			

	Chemical Resistance			
Compound	40°C	60°C	80°C	100°C
Anisole	see Cyclohexanone			
Anthroquinone Sulphonic Acid	A			
Antifreeze Solution	A	A	A	
Antimony Pentachloride	A	A	A	
Antimony Trichloride	A	A	A	
Aqua Regia	U			
Aromatic Acids	A	A	A	
Arsenic Acid 80%	A	A	A	
Arsenic Salts	A			
Arsenic Trichloride	U			
Ascorbic Acid	A			
ASTM Oil no. 1	A	A	A	
ASTM Oil no. 2	A	A	A	
ASTM Oil no. 3	A	A	A	
Atropine Sulphate	A			
Barium Carbonate	A	A	A	
Barium Chloride	A	A	A	
Barium Hydrosulphide (Bone oil)			B	
Barium Hydroxide	A	A	A	
Barium Sulphate	A	A	A	
Barium Suphide	A	A	A	
Beer Colors	A	A	A	
Beer (trading quality)	A			
Benzaldehyde 0.1%			C	
Benzaldehyde 100%	A			
Benzaldehyde Oxime 2%	A			
Benzaldoxime	see Benzaldehyde Oxime			
Benzene (Benzole)	C			
Benzene Carbonic Acid	see Benzoic Acid			
Benzene Dicarbonic Acid	see Phtalic Acid			
Benzene Sulphonic Acid			B	
Benzoic Acid			B	
Benzole Carbon Acid	see Benzoic Acid			
Benzole Dicarbon Acid	see Phtalic Acid			
Benzole Sulphonic Acid	U			
Benzyl Acetate	B			
Benzyl Alcohol			B	
Benzyl Benzoate		B		
Benzyl Chloride	A			
Bismuth Carbonate	A	A	A	
Bisulfite	see Sodium Bisulfite			
Bloodstream Salt (red)	see Potassium Ferricyanide			
Bloodstream Salt (yellow)	see Potassium Ferricyanide			
Bonewax	A		U	
Borax	see Sodium Tetraborate			
Boric Acid	A	A	A	
Boric Copper Sulphate	A			
Boric Trifluoride	A			
Brom Oil	A		B	
Bromethane	U			
Bromine Vapours (low concentration)	U			
Bromine Water	U			
Bromine (liquid)	U			
Butadiene 50%	A	A	A	
Butadiene 100%		B		
Butane (gas)	U			
Butanediol (up to 10%)	A	A	A	
Butanediol (up to 100%)	B			
Butanetriol	A	A		
Butanol 100%	A	A	A	
Butanone	A			
Butene	U			
Butter	A		B	
Butter Acid	C			
Butter Acid in Water (concentrated)	C			

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	Chemical Resistance			
Compound	**40°C**	**60°C**	**80°C**	**100°C**
Butter Acid in Water (solution 20%)	C			
Butyl Acetate			B	
Butyl Acrylate			B	
Butyl Alcohol	see Butanol			
Butyl Aldehyde	A		B	
Butyl Carbinol			B	
Butyl Cellulose Solution	U			
Butyl Phenol	U			
Butyl Stearate	A	A	A	
Butylene	see Butene			
Butylene Glycol	see Butanediol			
Calcium Acetate	A	A	A	
Calcium Bisulphide	A			
Calcium Bisulphite	A	A	A	
Calcium Carbonate (soda)	A	A	A	
Calcium Chlorate	A	A	A	
Calcium Chloride	A	A	A	B
Calcium Hydrosulphite (containing SO4)	A	A		
Calcium Hydroxide	A	A	A	
Calcium Hypochlorite	A	A	A	
Calcium Nitrate	A	A	A	
Calcium Oxide	A			
Calcium Phosphate	A			
Calcium Sulphate	A	A	A	
Calcium Sulphide			B	
Calcium Water	A			
Camphor			C	
Cane Sugar Juice	A	A	A	
Carbamide 33%	A	A	A	
Carbolic Acid (phenol)	A	A		
Carbon Dioxide	A	A	A	
Carbon Dioxide (damp)	A	A	A	U
Carbon Dioxide (dry)	A	A	A	A
Carbon Disulphide	C			
Carbon Disulphide	D			
Carbon Monoxide (lamp gas)	A	A	A	
Carbon Tetrachloride	C		U	
Carnbevox	A			
Caustic Soda	see Sodium Hydroxide			
Cellulose Dissolver	see Ethylene Glycol			
Cetyl Alcohol	A		B	
Chalk	A	A	A	
Cheese Enzyme	A	A	A	
Chloral Hydrate	A	A	A	
Chloramine	A	A	A	
Chloramine T	see Paratoluene Sulpho Chlor			
Chloride Acid	see Hydrochloric Acid			
Chlorine Water 2%	A	A	A	
Chlorine Water Saturated	A		B	
Chlorine (damp gas)	B		U	
Chlorine (dry gas)	B		U	
Chlorine (liquid)	U			
Chloracetic Acid 85%	B			
Chloracetic Acid 98%				U
Chloracetic Acid 100%		B		
Chlorocalcium (in H2O)	A	A	A	
Chloroethane	see Ethyl Chloride			
Chloroethanol	A	A	A	
Chloroethyl Alcohol	see Chloroethanol			
Chloroform	C			
Chloromethane	see Methyl Chloride			
Chloropropane	see Glycerine Chlorhydrin			
Chlorosulfonic Acid	U			
Chrome Alum	A	A	A	
Chrome Mercury	B			

	Chemical Resistance			
Compound	**40°C**	**60°C**	**80°C**	**100°C**
Chromic Acid 50%	A	A	A	
Chromic Acid 80%	A		B	
Chromic Acid Anhydride	see Chromium Trioxide			
Chromium Oxide	see Chromium Trioxide			
Chromium Salts	A			
Chromium Trioxide 20%	A	A	A	
Chromium Trioxide 50%			B	
Chromium Trioxed 80%	A			
Cider	A			
Cis-Oxime	see Bezaldehyde Oxime			
Coal Tar	U			
Cobalt Chloride	A	A	A	
Cocoa Fat	A	A	A	
Cocoa Fat Alcohol	A	A	A	
Coconut Oil	A	A	A	
Coffee	A			
Colanut (concentrated)	A	A	A	
Cooking Salt	see Sodium Chloride			
Copper Acetate			B	
Copper Chloride (cupric)	A	A	A	
Copper Chloride (cuprous)	A	A	A	
Copper Cyanide	A	A	A	
Copper Fluoride	A	A	A	
Copper Nitrate	A	A	A	
Copper Sulphate	A	A	A	
Corn Oil	A	A	A	
Cotton Seed Oil	A	A	A	
Creosote	U			
Cresol	U			
Cyanides	A	A	A	
Cyclohexane	C			
Cyclohexanol	A			
Cyclohexanone	C		B	
DDT	A			
Decahydro Naphthalene	C		B	
Denatured Spirit	see Methyl Alcohol			
Dextrine	A	A	A	
Dextrose	A	A	A	A
Diacetone	A	A	A	
Diacetone Alcohol	A			
Diammonium Salts	A	A	A	
Dibenzyl Ether			B	
Dibutyl Ether	A	A	A	A
Dibutyl Phthate	A		B	
Dibutyl Sebacate	A		B	
Dichloracetic Acid	A	A	A	
Dichloracetic Acid Methylester	A	A	A	
Dichlorobenzene	B			
Dichloroethane	see Ethyl Chloride			
Dichloroethylene	U			
Dichloromethane	see Methyl Chloride			
Dichlorohexamine			B	
Diesel Oil			C	
Diethylene Glycol Monobutylene	A			
Diethyl Benzene			B	
Diethyl Ether	see Ethyl Ether			
Diethyl Phthalate	A			
Diethylamine			B	
Diethylene Dioxide	see Dioxane			
Diethylene Glycol	A	A		
Diglycol Acid	A	A	A	
Dihexyl Phthalate	A	A	A	
Diisobutylene			B	
Diisopropyl Ketone	A	A	A	
Dimethyl Amine	A			

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	Chemical Resistance			
Compound	40°C	60°C	80°C	100°C
Dimethyl Aniline			B	
Dimethyl Benzole	see Xylol			
Dimethyl Formamide	A	A	A	
Dimethyl Ketone	see Acetone			
Dimethyl Phthalate	A	A	A	
Dioctyl Phthalate			B	
Dioctyl Sebacate			B	
Dioxalane			B	
Dioxane			C	
Dioxyethyl Ether	see Diethylene Glycol			
Diphenyl			B	
Diphenyl Amine	A			
Diphenyl Oxide	U			
Disodium Phosphate	A			
Edible Oil	A			
Electrolyte 10%	A	A	A	
Elementine (normal concentration)	A	A	A	A
Emulsions (photographic)	A	A	A	
Epichlorohydrin			B	
Epoxy Ethane	see Ethylene Oxide			
Esteric Oils	B	B	B	
Ethanal	see Acetaldehyde			
Ethandiol	see Ethylene Glycol			
Ethane Diamine	see Ethylene Diamine			
Ethanol	see Ethyl Alcohol			
Ethanolamine			B	
Ether	see Ethyl Ether			
Ethoxyethane	see Ethyl Ether			
Ethyl Acetate			C	
Ethyl Alcohol	A		A	B
Debatured with 2% Toluol	A			
plus Acetic Acid (quality use)	A			
Ethyl Benzene	B			
Ethyl Benzoate	B			
Ethyl Carbitol			B	
Ethyl Cellulose			B	
Ethyl Chloride	A			
Ethyl Ether	C		U	
Ethyl Formate			B	
Ethyl Glycol			B	
Ethyl Methyl Ketone	see Butanone			
Ethyl Oxalate	A	A	A	
Ethyl Pentachloro Benzene	U			
Ethyl Salicylate	B			
Ethyl Silicsate	A	A	A	
Ethyl Valeriate	A			
Ethylamine	A	A	A	
Ethylene Chlorohydrin	U (see Chloroethanol)			
Ethylene Chloride	B			
Ethylene Diamine	A			
Ethylene Dichloride	B			
Ethylene Glycol 100%	A	A	A	B
trading quality		A	A	U
Ethylene Glycol Monoethyl Ether	A			
Ethylene Oxide (liquid)	U			
Ethylene Trichloride	D			
"Eugenol"	B			
Fatty Acid	A		B	
Ferric Chloride	see Iron Chloride			
Fertilizer Salts	A	A	A	B
Fish Oil	A	A	A	
Fluorbenzene	U			
Fluorboric Acid	A	A	A	
Fluorides	A	A	A	
Fluorine (solution)	U			

	Chemical Resistance			
Compound	40°C	60°C	80°C	100°C
Formaldehyde 40%	A	A		
Formaldehyde (diluted)	A	A	A	
Formamide	A	A	A	
Formic Acid	A	A	A	
Freon 12			B	
Freon 13	A	A	A	
Freon 21	U			
Freon 22	A	A	A	
Freon 114	A	A	A	
Fruit Juice	A	A	A	U
Fruit Mass	A	A	A	
Fruit Sugar	A			
Fuming Sulphuric Acid	see Oleum			
Furan	D			
Furfural	B		U	
Furfural Alcohol	A			
Gas (natural)	A			
Gases Containing				
Carbon Dioxide, Carbonic				
Acid (all concentrations)	A	A	A	A
Chlorine (all concentrations)	A	A	A	B
Fluorine Traces	A	A	A	U
Nitrous Oxide Traces	A	A	A	U
Oleum (low concentrations)	U			
Sulphur Dioxide 50%	A	A		
Sulphur Dioxide (low conc.)	A	A	A	B
Sulphuric Acid (all conc.)	A	A	A	
Gasoline (pure; 100 octane)	C	B		
Gasoline/Benzene mixture (80/20)	C		B	
Gelatine	A	A	A	
Gin	B			
Glucose	see Dextrose			
Glycerine Chlorhydrin	A	A	A	
Glycerine, Glycerol	A	A	A	
Glycine	see Glycol			
Glycol 10%	A	A		
Glycol Dichloride	see Ethylene Chloride			
Glycol Ester	A	A	A	
Glycolic Acid 37%	A	A	A	
Heating Oil, Barrel Oil	A			
Heavy Emulsion	see Barium Carbonate			
Heavy Oil			B	
Hydrochloric Acid <30%	A	A	A	U
Hydrochloric Acid >30%	A		B	U
Hydrochloric Acid 10%	A	A	A	U
Hydrochloric Acid 20%	A	A	B	U
Hydrocyanic Acid	see Hydrogen Cyanide			
Hydrogen	A	A	A	
Hydrogen Bromide	A	A	A	
Hydrogen Chloride Gas	A	A	A	
Hydrogen Cyanide	A	A	A	
Hydrogen Fluoride 40%	A	A		
Hydrogen Fluoride 70 %	A			
Hydrogen Peroxide 30%	A	A	A	
Hydrogen Peroxide 90%	A	A	A	
Hydrogen Sulphide (dry)	A	A	A	
Ink	A	A	A	
Iodine Ink	A			
Iodine (alcoholic solution)	B			
Iodine-Potassium Iodide 3%				
Iodine	A		U	
Iron (II) Chloride	A	A	A	
Iron (II) Sulphate	A	A	A	
Iron (III) Chloride	A	A	A	A
Iron (III) Nitrate	A	A	A	

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	Chemical Resistance			
Compound	**40°C**	**60°C**	**80°C**	**100°C**
Iron (III) Sulphate	A	A	A	
Ketones	B			
Lacquer	U			
Lactic Acid 90%	A	A	A	
Lanolin	A	A	A	
Latex	A			
Lauryl Alcohol	B			
Lavender Oil			B	
Lead Acetate	A	A	A	B
Lead Arsenate	A			
Lead Nitrate	A	A	A	
Lead Sulphamate	A	A	A	
Lemon Oil	B		U	
Linseed Oil	A		B	
Liquor (trading quality)	A			
Machine Oil	A	B		
Magnesium Carbonate	A	A	A	
Magnesium Chloride	A	A	A	
Magnesium Hydroxide	A	A	A	
Magnesium Iodine	A			
Magnesium Nitrate	A	A	A	
Magnesium Sulphate	A	A	A	A
Maleic Acid	A	A	A	A
Manganese Sulphate	A	A	A	
Marmelade	A	A	A	
Melase spices (industrial concentration)	A	A	A	
Melase (industrial concentration)	A	A	A	A
Menthanol	see Menthol			
Menthol	A	A	A	
Mercury	A	A	A	
Mercury Salts	A	A	A	
Mesityl Oxide				B
Methane			B	
Methane Amide	see Formaldehyde			
Methanol	see Methyl Alcohol			
Methoxy Butanol	A	A	A	
Methyl Acetate			B	
Methyl Alcohol	A	A	A	
Methyl Amine 32%	A			
Methyl Bromide	see Bromethane			
Methyl Butyl Ketone	A	A	A	
Methyl Cellulose Solvent	A			
Methyl Chloride	D			
Methyl Ethyl Ketone	D			
Methyl Formate			B	
Methyl Glycol	A	A	A	
Methyl Isobutyl Ketone			C	
Methyl Methacrylate			B	
Methyl n-Propyl Ketone	B			
Methyl Oleate	A	A	A	
Methyl Phenol	see Cresol			
Methyl Salicate	B			
Methyl Sulphuric Acid (up to 50%)	A	B		U
Methyl Sulphate (acid)	see Methyl Sulphuric Acid			
Methylene Chloride	D			
Milk	A	A	A	
Mineral Oil	A		B	
Mineral Water	A	A	A	
Monochloride Acetic Acid	A	A	A	
Monochloride Acetic Acid Ethylester	A	A	A	
Monochloride Acetic Acid Methylester	A	A	A	
Monochloro Benzene	D			
Monoethanolamine	A			
Monoethyl Ether	A	A	A	
Monomethyl Aniline	A	A	A	

	Chemical Resistance			
Compound	**40°C**	**60°C**	**80°C**	**100°C**
Motor Oil			C	
Naphthalene, Naphthaline	A		B	
Natural Gas	U			
Nicotine	A			
Nicotinic Acid	A			
Nitric Acid <30%	A	A		
Nitric Acid 30-50%		C		
Nitric Acid 40%			U	
Nitric Acid 70%	C			
Nitric Acid 98%			U	
Nitroethane	A		U	
Nitrogen	A	A	A	
Nitromethane	A		U	
Nitrotoluol	A		B	
Nitrous Gases (concentrated)	A		U	
Nonyl Alcohol	A			
Octyl Alcohol	A		B	
Octyl Cresol	B		U	
Oil	C	C		
Oil Acid			C	
Oleum Vapour (SO3)	B			
Olive Oil	A	A	A	
Ortho-Boric Acid	see Boric Acid			
Oxalic Acid	A	A	A	
Oxyacetic Acid	see Glycolic Acid			
Oxybenzole	see Phenol			
Oxydiethanole	see Diethylene Glycol			
Oxypropionic Acid	see Lactic Acid			
Oxyrane	see Ethylene Oxide			
l-Oxytoluol	see Benzyl Alcohol			
m-Oxytoluol	see Cresol			
Ozone	B		U	
Painting Turpentine	see Thinner			
Palmatic Acid			B	
Palmolive Oil	A			
Paraffin			B	
Paraffin emulsion (trading quality)		B		
Paraffin Oil	A	A	A	
Paratoluene Sulpho Chloro Amide Sodium 1%	A			
Pentanol	see Amyl Alcohol			
Pentanol Acetate	see Amyl Acetate			
Perchloric Acid 20%	A	A	A	
Perchloric Acid 50%	A		B	
Perchloro Ethylene	U			
Petrol Ether			C	
Petroleum			C	
Phenol (up to 90%)	A	A		U
Phenyl Alcohol	see Benzyl Alcohol			
Phenyl Benzene				
Phenyl Ethane	see Ethyl Benzene			
Phenyl Hydrazine	A	A	A	
Phenyl Hydrazine Hydrochloride				U
Phenyl Methane	see Toluol			
Phenyl Methyl Ether	see Cyclohexanone			
Phosgene (gas)	A			
Phosphates	A	A	A	
Phosphoric Acid 80%	A	A	A	U
Phosphorus Oxychloride	A	B	B	
Phosphorus Pentaoxide	A	A	A	
Phosphorus Trichloride	A		B	
Photographic Solution (fixer)	A	A	A	
Phthalic Acid 50%	A	A	A	
Picric Acid 1%	A		B	
Pinene			B	

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Compound	Chemical Resistance 40°C	60°C	80°C	100°C
Potassium Acetate			B	
Potassium Bichromate 40%	see Potassium Dichromate			
Potassium Borate 1%	A	A	A	
Potassium Bromate	A	A	A	
Potassium Bromide	A	A	A	
Potassium Carbonate	A	A	A	
Potassium Chlorate	A	A	A	
Potassium Chloride	A	A	A	
Potassium Chromate	A	A	A	
Potassium Chromium Sulphate	A	A	A	B
Potassium Cupro Cyanide	A	A	A	
Potassium Cyanide	A	A	A	
Potassium Dichromate 40%	A	A	A	
Potassium Ferricyanide	A	A	A	B
Potassium Fluoride	A	A	A	
Potassium Hydrogen Carbonate	A	A	A	
Potassium Hydrogen Sulphate	A	A	A	
Potassium Hydrogen Sulphite Solution	A	A	A	
Potassium Hydroxide 50%				U
Potassium Hydroxide 60%	A	A	A	
Potassium Hypochlorite Solution	A		B	
Potassium Iodide (cold saturated)	A	A	A	
Potassium Nitrate	A	A	A	
Potassium Orthophosphate	A	A	A	
Potassium Perborate	A	A	A	
Potassium Perchlorate 1%	A	A	A	A
Potassium Perchlorate 10%	A			
Potassium Permanganate 18%	A	A	A	
Potassium Phosphate	A	A	A	
Potassium Sulphate	A	A	A	
Potassium Sulphate (cold saturated)	A	A	A	
Potassium Sulphide	A	A	A	
Potassium Sulphite	A			
Potassium Supersulphate	A	A	A	U
Pseudo Cumol	A	A	A	
Propane Acid	see Propionic Acid			
Propane Diol	see Propylene Glycol			
Propane Triol	see Glycerine			
Propane (gas)	A			
Propane (liquid)	B			
Propanol	A	A	A	
Propanone	see Acetone			
Propene	A	A	A	
Propionic Acid	A	A	A	
Propyl Acetate			B	
Propyl Alcohol	see Propanol			
Propylene Dichloriole	U			
Propylene Glycol	A	A	A	
Propylene Oxide	A			
Pyridine			C	
Pyrol			B	
Resorcinol	A			
Ricine Oil	A		B	
Rinser Loosener	A	A	A	
Road Tar	U			
Salicylic Acid	A	A	A	
Selenic Acid	A			
Silicone Fats	A	A	A	
Silicone Oils	A	A	A	
Silver Nitrate <80%	A	A	A	B
Silver Salts (cold saturated)	A	A	A	
Soap	A	A	A	
Soap Loosener	A	A	A	
Soap Solution	A	A	A	
Soda	see Sodium Carbonate			

Compound	Chemical Resistance 40°C	60°C	80°C	100°C
Sodium Acetate	A	A	A	
Sodium Aluminate	A	A	A	
Sodium Benzoate	A	A	A	
Sodium Benzoate (up to 36%)	A	A	A	
Sodium Bicarbonate	A	A	A	
Sodium Bisulphate	A	A	A	
Sodium Bisulphite	A	A	A	A
Sodium Borate	A	A	A	
Sodium Bromide	A	A	A	
Sodium Carbonate	A	A	A	
Sodium Chlorate	A	A	A	
Sodium Chloride	A	A	A	A
Sodium Chlorite and Bleach	A		B	
Sodium Chlorite and Water	A			
Sodium Cyanide	A	A	A	
Sodium Ferricyanide	A	A	A	
Sodium Ferrocyanide	A	A	A	
Sodium Fluoride	A	A	A	
Sodium Hydrogen Carbonate	A	A	A	
Sodium Hydrogen Phosphate	A	A	A	
Sodium Hydrogen Sulphite Solution	A	A	A	
Sodium Hydrosulphite 10%	A	A	A	
Sodium Hydroxide	A	A	A	
Sodium Hypochlorite	A	A	A	
Sodium Hyposulphate				
Sodium Metaphosphate	A	A	A	
Sodium Nitrate	A	A	A	
Sodium Nitrite	A	A	A	
Sodium Perborate	A	A	A	
Sodium Peroxide	A	A	A	
Sodium Phosphate	A	A	A	
Sodium Polycrylate (GR 894)	A	A	A	
Sodium Silicate	A	A	A	
Sodium Sulphate	A	A	A	
Sodium Sulphide	A	A	A	
Sodium Sulphite	A	A	A	
Sodium Tetraborate	A	A	A	
Sodium Thiosulphate	A	A	A	
Soya Oil	A			
Spinning Oil	A		B	
Spinning Bath Oil Containing				
Carbon Disulphide 0.01%	A	A		
Spinning Bath Oil Containing				
Carbon Disulphide 0.07%	A	A		
Spot Solvents	A	A	A	
Starch	A	A	A	
Starch Syrup	A	A	A	A
Stearic Acid			B	
Sucrose Solution	A	A	A	
Sulphur	A	A	A	
Sulphur Dioxide (dry)	A	A	A	B
Sulphur Dioxide (in water solution)	A	A	A	
Sulphur Solution	A			
Sulphur Trioxide	C			
Sulphuric Acid <50%	A	A	A	
Sulphuric Acid 70%	A		C	
Sulphuric Acid 80-90%		C		
Sulphuric Acid 96%			C	
Sulphuryl Chloride	B			
Superchloric Acid	see Perchloric Acid			
Synthetic Washing Powder				
(home quality)	A	A	A	
Tannin	see Ascorbic Acid			
Tar	U			
Tertiary Butyl Alcohol	A	A	A	

Disclaimer: The information presented here is non-comprehensive and has been compiled from sources believed to be reliable. Chemical compositions may change therefore no guarantee is implied or expressly stated here and the data given is intended as a guide only. Under no circumstances will HeatLink be liable for any damages based on any use of this information.

Classification:
A. Resistant. Can be used within the working pressures.
B. Conditionally resistant. Restrictions must be made with regards to pressures.
C. Conditionally resistant. Can be used up to 60% of the working pressures.
D. Conditionally resistant. Can be used up to 20% of the working pressures.
U. Not recommended.

	Chemical Resistance			
Compound	40°C	60°C	80°C	100°C
Tetrachloro Ethane	C		U	
Tetraethyl Lead	A			
Tetrahydro Furane	C		C	
Tetrahydro Furfuyl Alcohol	A			
Tetrahydro Naphthalene	D		D	
Tetraline	see Tetrahydro Naphthalene			
Tetramethylene Oxide	see Tetrahydro Furane			
Thinner	D			
Thionyl Chloride	U			
Thiophen	B		B	
Tin Salts	A	A	A	
Titanium Tetrachloride	U			
Touene	C		C	
Transformer Oil	C		D	
Tri	see Trichloro Ethylene			
Tributro Ethyl Phosphate			B	
Tributyl Phosphate	A	A	A	
Trichloro Acetic Acid	A		B	
Trichloro Acetic Acid 50%	A	A	A	
Trichloro Benzene	U			
Trichloro Ethane	C		U	
Trichloro Ethylene	C			
Trichloro Methane	see Chloroform			
Trivresyl Phosphate			B	
Triethanolamine	A			
Triethylene Glycol	A			
Trilom (trade quality)	A	A	A	
Trimethyl benzene	see Pseudocumol			
Trinitro Phenol	see Picric Acid			
Trinitro Toluene	U			
Trioctyl Phosphate	A		B	
Trisodium Phosphate	A	A	A	
Turbine Oil			B	
Turpentine	C		C	
Uric Acid	A			
Uric Compounds	see Carbamide			
Urine (normal concentration)	A	A	A	
Vaseline			B	
Vaseline Oil	A		B	
Vegetable Oils	B	B	B	
Vinegar	A	A	A	
Vinegar Acid Anhydride	A	A	B	U
Vinegar Acid Butyl Ester	see Butyl Acetate			
Vinegar Acid Ethyl Ester	see Ethyl Acetate			
Vinegar Ester	see Ethyl Acetate			
Vinegar (trading quality)	A	A	A	
Vinyl Chloride	A	A	A	
Vinyl Cyanide	see Acryl Nitrite			
Water	A	A	A	A
Waterglass	A			
Whisky	A (see Ethol Alcohol)			
Whitener	see Sodium Hypochlorite			
Wine Vinegar	see Vinegar			
Wine (red and white)	A	A	A	
Wohlstone Acid	A	A	A	
Wood Glue (type polyvinyl acetate)	B			
Wool Fat	see Lanolin			
Xylol	C		U	
Yeast	A	A	A	
Zinc (II) Chloride	A	A	A	B
Zinc Carbonate	A	A	A	
Zinc Hydrate	A	A	A	
Zinc Oxide	A	A	A	
Zinc Stearate	A			
Zinc Sulphate	A	A	A	