
# About Us

***SOLIN S.A.*** *is a company that produces composite and plastic pipes as well as fittings for a wide range of applications. Since its establishment, SOLIN's primary and integral purpose is to produce high quality products.*

*We strongly believe that the success of a business comes from its people. Our employees are our most important asset and the driving force of SOLIN. With their dedication and hard work, they contribute to the achievement of our mission, which is the continuous development and evolution of our company. We invest in them through continuous education and training. Our team consisting of 80 employees has as a daily task to comply with the company's philosophy, which is our customers' satisfaction.*

*SOLIN is based in Greece, with the head offices, including administration offices and several warehouse spaces being located in Athens, while our factory, with our main warehouse, is located in the A' Industrial Area of Volos with buildings of 17.500m², in a total plot extent of about 33.000m².*

*In the course of almost 40 years in the manufacturing field, having gained the experience and knowledge as expertise, we are proud that our products are among the top of their range in terms of quality within the international market. SOLIN provides practical, reliable and enduring solutions to multiple applications, always aiming to support its customers in the best way.*

More than 35
Active years

60%
Of our production
is exported

ISO
ISO certificate
since 2000

*Exports to*
*40 countries*
*worldwide*


*Certifications from*
*international institutes*

ISO 9001 2015 CERTIFIED · ETL LISTED · WRAS APPROVED PRODUCT · SKZ · MPA NRW. Materialprüfungsamt Nordrhein-Westfalen PRÜFEN • ÜBERWACHEN • ZERTIFIZIEREN · TÜV

**SOLIN S.A.**
PRODUCTION OF PLASTIC PIPES

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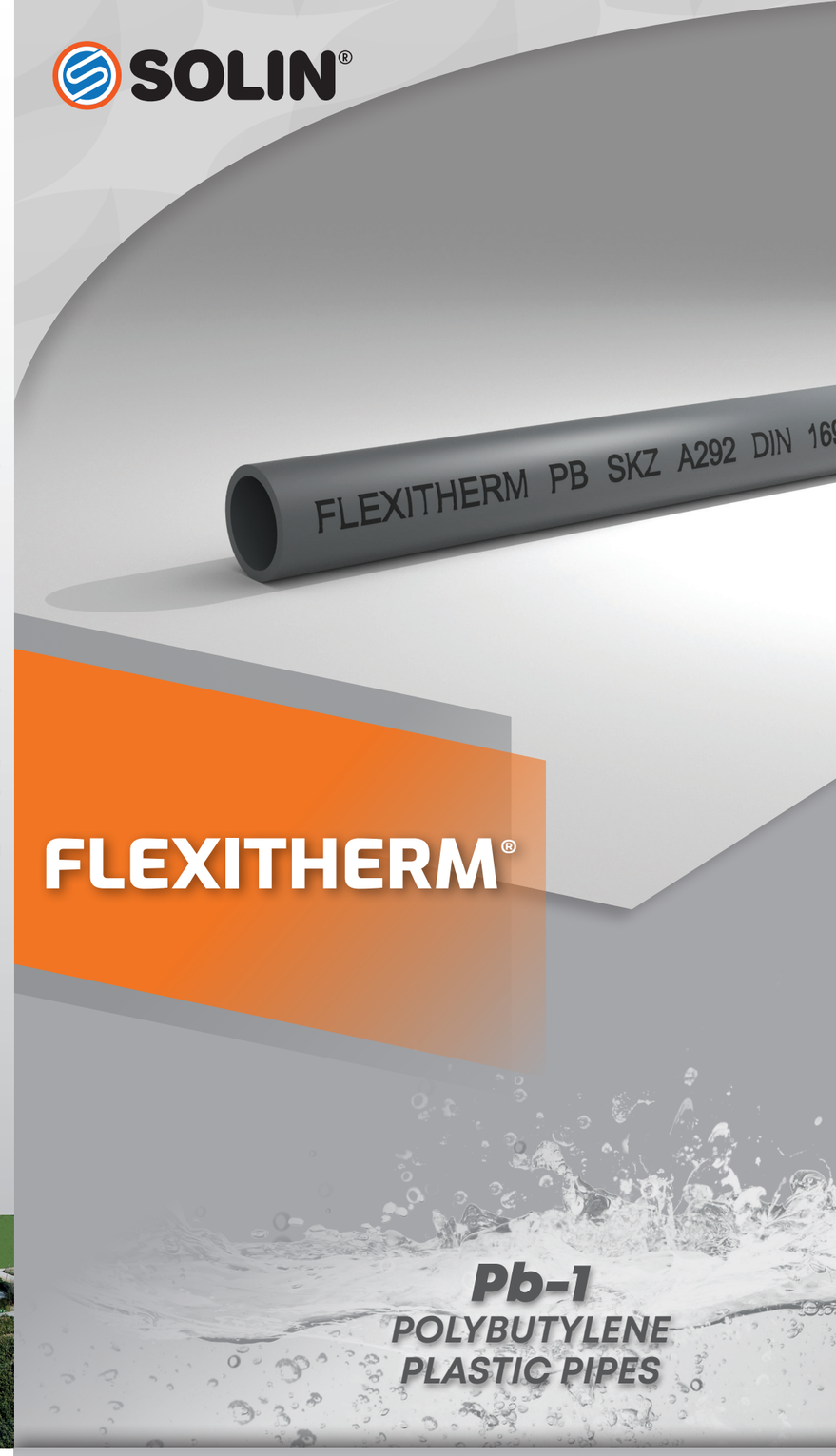
SOLIN®




# FLEXITHERM®

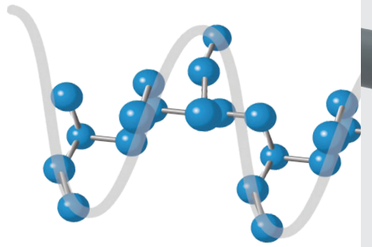
## Pb-1
## POLYBUTYLENE PLASTIC PIPES

SUITABLE FOR APPLICATIONS

HEATING · SANITATION · UNDERFLOOR HEATING · COOLING

# TECHNICAL INFORMATION

**FLEXITHERM** pipes are made from polybutylene (PB-1), the latest generation choice for piping systems. They are produced according to the following international standards and specifications:



**- DIN 16968/16969** **- EN ISO 15876**

**- B.S. 7291**

They show **excellent resistance to mechanical stress** (pressure-temperature) compared to other types of pipes (a fact that leads to reduced pipe wall thickness for identical usage). That means that Pb pipes, in comparison to other types of pipes for the same external diameter, provide: lower weight and higher liquid volume transfer. They are also known as **"plumber's flexible friend"**, because of their **exceptional flexibility** and the low memory effect, characteristics that offer improved and easy handlings.

**LIFE DURATION**

| | OPERATION TIME (with SF 1,25) | 50y | 50y | 50y | 50y | 18y | 4y |
|---|---|---|---|---|---|---|---|
| | **TEMPERATURE** | **10°C** | **20°C** | **40°C** | **70°C** | **80°C** | **95°C** |
| DIMENSION | **8x1** | 33.4 | 31.2 | 26.4 | 17.4 | 14.5 | 11.3 |
| | **10x1,4** | 38.0 | 35.6 | 30.0 | 19.8 | 16.6 | 12.7 |
| | **10x1,5** | 41.2 | 38.6 | 32.6 | 21.5 | 18.0 | 13.6 |
| | **12x2** | 46.7 | 43.7 | 36.9 | 24.4 | 20.3 | 15.6 |
| | **15x1,7** | 29.8 | 27.9 | 23.6 | 15.6 | 13.0 | 10.2 |
| | **16x2** | 33.4 | 31.2 | 26.4 | 17.4 | 14.1 | 11.3 |
| | **18x2** | 29.2 | 27.3 | 23.1 | 15.2 | 12.7 | 10.2 |
| | **20x2** | 25.9 | 24.3 | 20.5 | 13.5 | 11.0 | 8.8 |
| | **22x2** | 23.3 | 21.8 | 18.4 | 12.1 | 10.3 | 7.3 |
| | **22x2,3** | 27.3 | 25.5 | 21.6 | 14.2 | 11.6 | 9.2 |
| | **25x2,3** | 23.7 | 22.1 | 18.7 | 12.3 | 10.2 | 8.1 |
| | **28x2,5** | 22.9 | 21.4 | 18.1 | 11.9 | 9.8 | 7.8 |

PRESSURE IN BAR

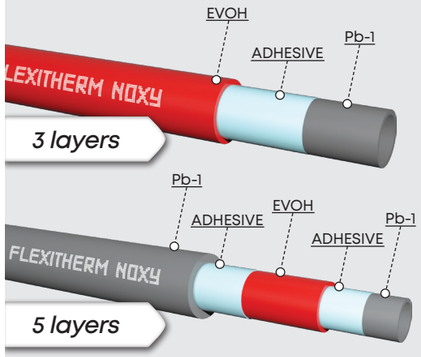
| MECHANICAL PROPERTIES | Units | Value |
|---|---|---|
| Tensile strength | MPa | 20 |
| Elongation at break | % | 300 |
| Glass transition temperature | °C | -18 |
| Tensile modulus of elasticity (20°C) | MPa | 450 |

FLEXITHERM pipes are certified by SKZ institute for their mechanical resistance and by MPA for their oxygen permeability and by WRAS for their suitability for use in drinkable water networks.

# AVAILABLE TYPES

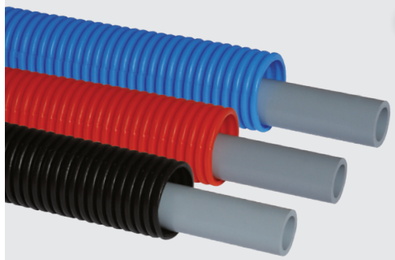

## SINGLE FLEXITHERM

Polybutylene PB-1 pipes in sticks or coils.




## FLEXITHERM-NOXY

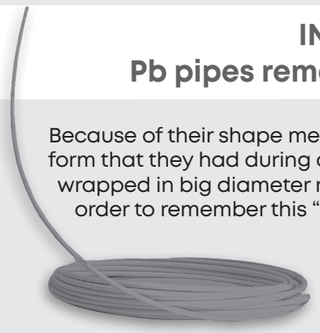
Polybutylene PB-1 pipes with oxygen barrier of three or five layers, suitable for heating. The oxygen barrier prevents the entrance of oxygen in the water circulation, so the corrosion of the metal parts of the system is avoided. The oxygen barrier is achieved by using a special material (EVOH), that either is: externally bonded (3 layers) or situated in the middle of the wall thickness (5 layers).



## WITH PROTECTIVE SLEEVE

FLEXITHERM pipes are also available inside corrugated HDPE pipe that offers mechanical protection, easy replacement of the inner pipe in case of damage, reduction of the thermal losses and absorption of expansion capacity.

## IN GENERAL:
## Pb pipes remain straight off the coil



Because of their shape memory, they have tension to revert to their form that they had during crystallisation. After production, they are wrapped in big diameter reels, temporarily until they crystallise in order to remember this "large" curve when installer uses them.

## *GUARANTEE*

Guaranteed for 10 years constant operation in cold and hot water systems under pressure. The guarantee covers product liability and possible damages to third installations up to 2.000.000€ per event and cumulatively on an annual basis.

# INSTALLATION TIPS

## STORAGE & HANDLING

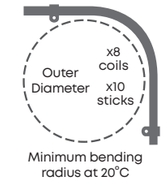
Before using FLEXITHERM pipes, they should be stored in their original packing under cover in order to prevent dust accumulation, long-term exposure to sunlight and avoid their damage. Do not use pipe which has cuts, deep scratches or gouges, kinks or crushed sections, evidence of grease, oil or noticeable color fading of pipe. All damaged sections should be cut and replaced.

## CUTTING

The cut of a FLEXITHERM pipe must be done perpendicular to the axis of the pipe by a special pipe cutter.

## BENDING

Due to the pipe's inherent flexibility, it can be bent easily around the projections of the isolation plate in underfloor heating intallation. Care not to kink or damage the pipe.




Minimum bending radius at 20°C

## CONNECTION

FLEXITHERM pipes can be connected with press, screw, push fittings as well as with PB-1 fittings which can be connected with electro fusion.

## THERMAL EXPANSION

The linear expansion rate of FLEXITHERM pipes is approximately 1,3mm/10°C temperature change for each meter of pipe. When installing long runs of pipes, allow 10-15mm in longitudinal clearance per meter of run to accommodate thermal expansion. Pipes must not be anchored rigidly or pulled tight between fixed points (i.e. manifolds-valves etc).

## HEATING RADIATOR SYSTEM

In heating radiator system installations, FLEXITHERM pipes should always be installed within protective corrugated sleeve. Thus, we protect the inner pipe from possible damage, improve its performance and easily replace it when needed.

## FROST

Due to their low thermal diffusivity it takes longer for water to freeze inside the pipes during cold weather. If freezing does occur, the pipe expands adapting to the increased volume of water (dilates without breaking). PB pipes resist frost damage and are unaffected by hard, soft or aggresive $H_2O$ condition.

**** In underfloor heating installations, oxygen barrier pipes are recommended.***