





Novatherm Plastic Pipes and Fittings are produced in Novaplast facilities located in Turkey. The company headquarters is in Istanbul and one of the leading supplier of plastic systems since 1992.

Novatherm products have been offering solutions mainly to the water transport needs of the construction sector in residential buildings and in infrastructure. Engineers, consultants, architects, plumbers and contractors from all around the world prefer the quality of Novatherm products in areas such as hot and cold water supply, under-floor heating systems.



All Novatherm products comply with the international quality requirements and are certified by the most prestigious testing authorities in the world. Novatherm products have SKZ, Hygiene-Institut and Kreis Recklinghausen certification from Germany, AENOR quality certificate from Spain, SGR quality certificate from Russia, Bulgar Kontrola from Bulgaria, Certif from Portugal and WRAS quality certificate from UK.

Novaplast is honored to be one of the few companies in Europe producing its PP-R pipes and fittings under the inspection of South Germany Plastics Center and to be authorized to use their SKZ logo on its products. Novatherm's good reputation on quality is a well-deserved result of the meticulous work of its production and quality departments that keep the production under strict control round-the-clock by an experienced group of engineers and technicians.

Novaplast is one of the major manufacturers of the pipe industry in Turkey.

Novatherm Limited Sirketi is foreign trade company of Novatherm products for export markets.



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# 1. CHARACTERISTICS

## 1.1 General

### Raw Material

NOVATHERM PP-R pipes and fittings are manufactured from high quality, Polypropylene Random Copolymer resins (PP-R Type 3). Its physical and chemical properties make NOVATHERM a versatile piping system in a wide range of applications in different industries.

Its advantages over PP types 1 or 2 and other thermoplastic pipes in the potable water industries are its high impact strength and resistance to high temperatures.

## 1.2 Mechanical & Thermal Properties

Property	Test Method	Unit	Value
<b>Melt Flow Rate</b>			
MFI 190/5	ISO 1133	g/10 min.	0.5
MFI 230/2.16	ISO 1133	g/10 min.	0.3
MFI 230/5	-	g/10 min.	1.5
Density at 23°C	ISO 1183	g/cm <sup>3</sup>	0.900
Tensile Stress at Yield	ISO 527	MPa	25
Elongation at Break	ISO 527	%	> 50
Modulus of Elasticity, Tensile Test	ISO 527	N/mm <sup>2</sup>	900
<b>Impact Strength (Charpy)</b>			
23°C	ISO 179/1eU	kJ/m <sup>2</sup>	no failure
0°C	ISO 179/1eU	kJ/m <sup>2</sup>	no failure
-10°C	ISO 179/1eU	kJ/m <sup>2</sup>	no failure
<b>Notched Impact Strength (Charpy)</b>			
23°C	ISO 179/1eA	kJ/m <sup>2</sup>	20
0°C	ISO 179/1eA	kJ/m <sup>2</sup>	4
-10°C	ISO 179/1eA	kJ/m <sup>2</sup>	3
Coefficient of Linear Thermal Expansion	DIN 53 752	K <sup>-1</sup>	1.5 x 10 <sup>-4</sup>
Thermal Conductivity at 20°C	DIN 52 612	W/mK	0.24
Specific Heat at 20°C	Adiabatic Calorimeter	kJ/kg K	2.0

## 1.3 Application Areas



## 1.4 Behaviour of NOVATHERM According to DIN 8078 Under Long Term Hoop Stress

The service life of NOVATHERM depends on the internal hoop stress over time subject to the temperature.

Hoop stress is given as follows:

$$\delta = \frac{P \times (d - s)}{20 \times s}$$

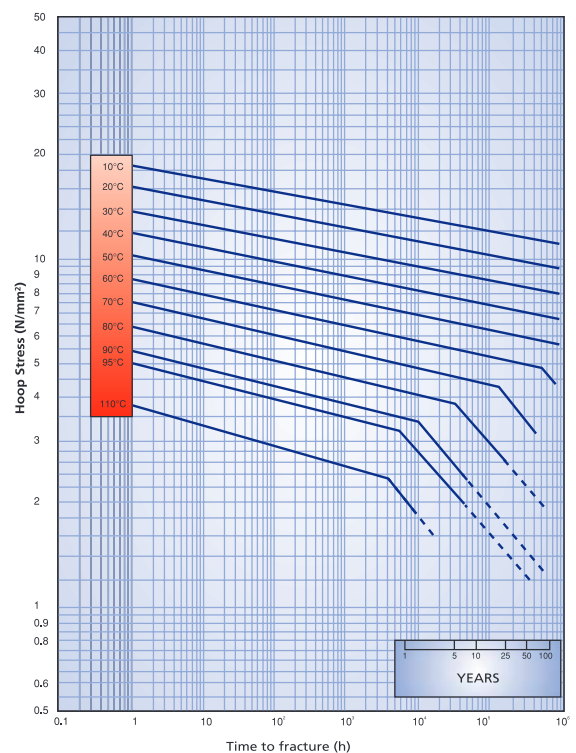
where

$\delta$  = Hoop stress (N/mm<sup>2</sup> or MPa)

P = Internal pressure (bar)

d = Outer diameter of pipe (mm)

S = Wall thickness of pipe (mm)



# 1. CHARACTERISTICS

## 1.5 Permissible Operating Pressure

### Projected Service Life

The table on the right provides more detailed information with regards to the permissible pressure of various pipe pressure rating at various temperatures. These values are derived from the hoop stress chart and formula.

Under normal working pressures and conditions, the average service life of NOVATHERM pipes is projected to be 50 years or more.

### Examples:

A PN 10 cold water pipe, transporting water at a temperature of 30°C can last for more than 50 years under normal conditions with an operating pressure of 10.9 bars or 158 psi.

A PN 20 hot water pipe, transporting water at a temperature of 70°C can last for more than 50 years under normal conditions with an operating pressure of 8.5 bars or 123 psi.

Temperature	Service life (years)	For water installations according to DIN 8077 safety factor of 1.5			
		NOVATHERM Pipe SDR 1.1	NOVATHERM Pipe SDR 7.4	NOVATHERM Pipe SDR 6	NOVATHERM Stable Pipe
		Nominal pressure in bars			
		PN 10 Cold water	PN 16 Hot & Cold Water	PN 20 Hot & Cold Water	PN 25 Hot & Cold Water
Permissible working pressure at various temperatures [bars]					
20°C	1	15,0	22,3	30,0	37,8
	5	14,1	21,7	28,1	35,4
	10	13,7	21,1	27,3	34,4
	25	13,3	20,4	26,5	33,4
	50	12,9	20,2	25,7	32,4
30°C	1	12,8	19,0	25,5	32,1
	5	12,0	18,3	23,9	30,1
	10	11,6	17,7	23,1	29,1
	25	11,2	17,3	22,3	28,1
	50	10,9	17,1	21,8	27,4
40°C	1	10,8	16,0	21,5	27,1
	5	10,1	15,6	20,2	25,5
	10	9,8	15,0	19,6	24,7
	25	9,4	14,5	18,8	23,7
	50	9,2	14,5	18,3	23,1
50°C	1	9,2	13,5	18,3	23,1
	5	8,5	13,1	17,0	21,4
	10	8,2	12,6	16,5	20,7
	25	8,0	12,2	15,9	20,0
	50	7,7	12,2	15,4	19,4
60°C	1	7,7	11,4	15,4	19,4
	5	7,2	11,0	14,3	18,0
	10	6,9	10,5	13,8	17,4
	25	6,7	10,1	13,3	16,7
	50	6,4	10,3	12,7	16,0
70°C	1	6,5	9,5	13,0	16,4
	5	6,0	9,3	11,9	15,0
	10	5,9	8,0	11,7	14,7
	25	5,1	6,7	10,1	12,7
	50	4,3	8,6	8,5	10,7
80°C	1	5,5	7,6	10,9	13,7
	5	4,8	6,3	9,6	12,0
	10	4,0	5,1	8,0	10,0
	25	3,2	6,1	6,4	8,0
90°C	1	3,9	4,0	7,7	9,7
	5	2,5		5,0	6,3

## 1.6 Hygiene & Health Concerns

Health is taken as a major concern during production of NOVATHERM pipes and fittings.

Connection of pipes does not require additives such as cement solvent, fluxes or solder. To ensure the safety of NOVATHERM pipes and fittings for usage relating to human contact and consumption with potable water the following are strictly adhered to:

- DIN 1988 Part 2  
- Drinking Water Supply Systems, Materials, Components, Appliances, Design and Installation
- DVGW - TZW  
- Test Certificate based on KTW recommendations for Materials in Contact with Drinking Water
- WRC  
- Test Certificate  
- Water Bylaws Scheme/WRC, Tests of Effect on Water Quality based on BS 6920

## 1.7 UV Resistance

NOVATHERM Products are produced with UV stabilisers. However, like all other piping systems including metal pipe works should not be left exposed under direct sunlight without insulating or protection from direct sunlight or UV radiation.

## 1.8 Fire Classification

NOVATHERM pipes and fittings comply and are classified under the requirements of the fire classification, B2 (normally inflammable) according to DIN 4102. In case of a fire outbreak of temperature >800°C, under ideal conditions, with sufficient oxygen, only carbon dioxide and water vapour are produced as the raw material of Polypropylene Random Copolymer is a hydrocarbon chain. Toxic fumes or dioxin will not be emitted.