

**Material:**

PP-R (Polypropylene Random-Copolymerisate) of high molecular weight and stabilized to high temperature. The material corresponds to KTW-recommendation of the German Board of Health.

**Joining:**

Welding joints

Socket-welding by heating-elements according to DVS (German Welding Inst.) specifications: leaflet 2207, part 11, section 3.2.

Tools and devices for socket-welding by heating-elements according to DVS leaflet 2208, part 1, section 5, schedule 2, type A.

Threaded joints:

The threaded joint of adaptor pipe-fittings correspond to the requirements of DIN 2999 resp. ISO 7, i. e. cylindrical female thread, conical male thread. Male threads for connecting backnuts correspond to the requirements of DIN-ISO 228, part 1.

**Dimensions:**

Pipes: According to DIN 8077 (Pipes of polypropylene PP).

Fittings: According to DIN 16962, part 6 to 9 (Pipe connections and fittings for polypropylene PP) injection moulded fittings, z-dimensions tolerance  $\pm 3$  mm, we reserve the right to modify dimensions without previous notice.

**Quality:**

Pipes: according to DIN 8078 for PP-R (polypropylene PP pipes).

General quality standards, test.

Fittings: according to DIN 16962 part 5 A (E type 3)

(Pipe connections and fittings for polypropylene PP pressure pipeline.)  
General quality standards, test.

**Operating pressure:**

For cold water at 20° C: up to 20 bar<sup>1)</sup>

for hot water at 70° C: up to 10 bar<sup>1)</sup>

for heating at 70° C: up to 3 bar.

The regulations and guide-lines-dealing with the different fields of application are to be observed.

**Chemical Resistance:**

Detailed information on the chemical resistance of polypropylene pipes and pipelines is available in annex 1 to DIN 8078. Please note the explanations on page 1 of annex.

**Orders:**

When ordering, kindly always state the dimensions and the order number in addition to the designation of the piece required.

Example: Elbow 90°, d 32, No. 8090

**Marking:**

The fittings are marked as follows:

Example: **B•R**, d, PP-R, P

**Signs and Symbols:**

d = nominal size = pipe diameter

R = male thread-conical

Rp = female thread-cylindric

Rc = female thread-conical

G = male thread-cylindric

Stp = standard packing

® = registered trade mark

AL = number of screw holes

**Utilization**

The system of tubing of PP-R, as described in this catalogue, has primarily been developed for application in the sanitary field for cold and hot water.

This system can be applied as well in the industrial section.

Tubes and fittings are dimensioned in a way to assure, according to actual results of long-term tests a utilisation of at least 50 years, based on max. 10 bar and a constant temperature of 70 degrees Celsius.

For hot water piping, made according to DIN 1988, the tube row 6 (PN 20) according to DIN 8077 is valid, for dimensions according to table 1.

Tubes are available in lengths of 4 m.

Plastic pipes and fittings of PP-R generally have all advantages which have been registered in all sections of industry and of installation technics. Most of all the excellent resistance of corrosion gives proof of an extensively long utilization of installation tubing in the building technic, without risk of damages known from metallic materials. Therefore PP-R as installation-material represents an excellent choice for piping of cold and hot water.

## Material properties of PP-R

Properties	Measuring technique	Unit	Value
coefficient of viscosity J.	ISO 1191	cm <sup>3</sup> /g	400
Average molar weight	solvent viscosity c = 0,001 g/cm <sup>3</sup>	--	500.000
Melting index	ISO / R 1133		
MFR 190/5		g/10 min.	0,5
MFR 230/2,16		g/10 min.	0,24 - 0,36
Density	ISO / R 1183	g/cm <sup>3</sup>	0,895
Melting range	polarizing microscope	°C	140 - 150
Yield stress	ISO / R 527	N/mm <sup>2</sup>	21
Tensile strength	feed speed	N/mm <sup>2</sup>	40
Tensile expansion	Test bar	%	600
Bending stress at 3,5%	ISO 178	N/mm <sup>2</sup>	20
Marginal fibre expansion	test specimen 5.1		
Modulus of elasticity	ISO 178	N/mm <sup>2</sup>	800
Mechanical properties following impact bending test at 0° C	DIN 8078		no fracture
Expansion coefficient	VDE 0304 Part 1 § 4	K <sup>-1</sup>	1,5 x 10 <sup>-4</sup>
Thermal conductivity at 20° C	DIN 52612	W/m K	0,24
Specific heat at 20° C	adiabatic calorimeter	kJ/kg K	2,0
Pipe friction factor	--		0,007