

Material data

Material PP-H

SIMONA offers polypropylene pipes as

- PP-H pressure pipes
- PP liner pipes
- PPs ventilation pipes.

PP-H pressure pipes are particularly used in the field of drinking water pressure pipes and industrial pipework. The material, polypropylene, has excellent resistance to many acids, alkalis and solvents.

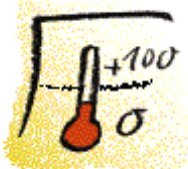
The SIMONA® PP range of pipes is supplemented by an extensive range of fittings with elongated spigots for IR/butt welding and fittings with short spigots for butt welding and socket welding. To connect up to pipe systems made of other materials such as PE 80 or PE 100 we offer you fittings for flange assemblies. Valves are another important component in the PP range.

For ventilation systems we offer a special range of pipes and fittings made of flame-retardant PPs.



Material data

Material PP-H



Operating temp. range from 0°C to +100°C



Low specific weight



Physiologically acceptable



No water absorption and swelling



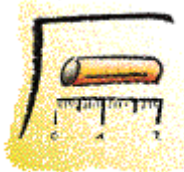
Very good chemical resistance



Outstanding electrical insulation properties



Easy connection through welding



Low shrinkage

Material data

Material PP-H

PP-H material properties

| Property | Test standard | Test method / test sample | Units | PP-H | PP-B | PP-R | PPs |
|---|---------------------------|---------------------------|---------------------|--------------------------|------------------------|------------------------|------------------------|
| <i>Mechanical properties</i> | | | | | | | |
| Density | ISO 1183 | method C | g/cm ³ | 0.91 | 0.91 | 0.90 | 0.95 |
| Melt index group | ISO 1133 | MFR 190/5 | group no. | 006 | 006 | 006 | 012 |
| <i>Tensile test</i> | | | | | | | |
| | DIN EN ISO 527 | Type 1B | | | | | |
| Yield stress | | | MPa | 33 | 26 | 24 | 32 |
| Elongation at yield | | | % | 8 | 17 | 10 | 8 |
| Elongation at break | | | % | 70 | 120 | > 50 | 70 |
| Tensile-E-Modulus | | | MPa | 1700 | 900 | 800 | 1300 |
| <i>Impact resistance test</i> | | | | | | | |
| | DIN EN ISO 179 | | | | | | |
| Impact strength | | 80 x 10 x 4 mm | kJ / m ² | without break | without break | without break | without break |
| Notched impact strength | | V notched | kJ / m ² | > 7 | 25 | 20 | > 4 |
| <i>Surface hardness</i> | | | | | | | |
| Ball indentation hardness | DIN EN ISO 2039-1 | | MPa | 70 | 64 | 45 | 70 |
| Shore hardness | ISO 868 | method D | – | 72 | 67 | 65 | 72 |
| <i>Thermal properties</i> | | | | | | | |
| Crystalline melting range | DIN 53736 | DSC | K (°C) | 433 – 438 (160 – 165) | 433 – 437 (160–164) | (145–150) | 433 – 438 (160–165) |
| Average thermal coefficient of elongation | DIN 53752 | method A | K-1 | 1,6 · 10 ⁻⁴ | 1,6 · 10 ⁻⁴ | 1,6 · 10 ⁻⁴ | 1,6 · 10 ⁻⁴ |
| Thermal conductivity | DIN 52612 | PIC. 500 x 500 x 20 mm | W/m · K | 0,22 | 0,22 | 0,22 | 0,22 |
| <i>Electrical properties</i> | | | | | | | |
| Dielectric strength | VDE 0303-21 | | kV/mm | 52 | 52 | 52 | 22 |
| Volume resistivity | DIN IEC 93 | | Ohm · cm | > 10 ¹⁶ | > 10 ¹⁶ | > 10 ¹⁶ | > 10 ¹⁷ |
| Surface resistance | DIN IEC 167 | | Ohm | 10 ¹⁴ | 10 ¹⁴ | 10 ¹⁴ | 10 ¹⁴ |
| Track resistance | DIN IEC 112 | method KC | Stufe | > 600 | > 600 | > 600 | > 600 |
| <i>Other properties</i> | | | | | | | |
| Fire behaviour | DIN 4102 | | class | B2 | B2 | B2 | B1 |
| Water absorption | DIN 53495 | Method C | %/24hrs. | <0,01 | <0,01 | <0,01 | <0,01 |
| Physiological acceptability | acc. to BgVV/ KTW/FDA® | | | yes | yes | yes | no |
| Chemical resistance | DIN 8078 suppl. | | | conform① | conform① | conform① | conform① |

Note: 1 MPa ~ 1 N/mm²

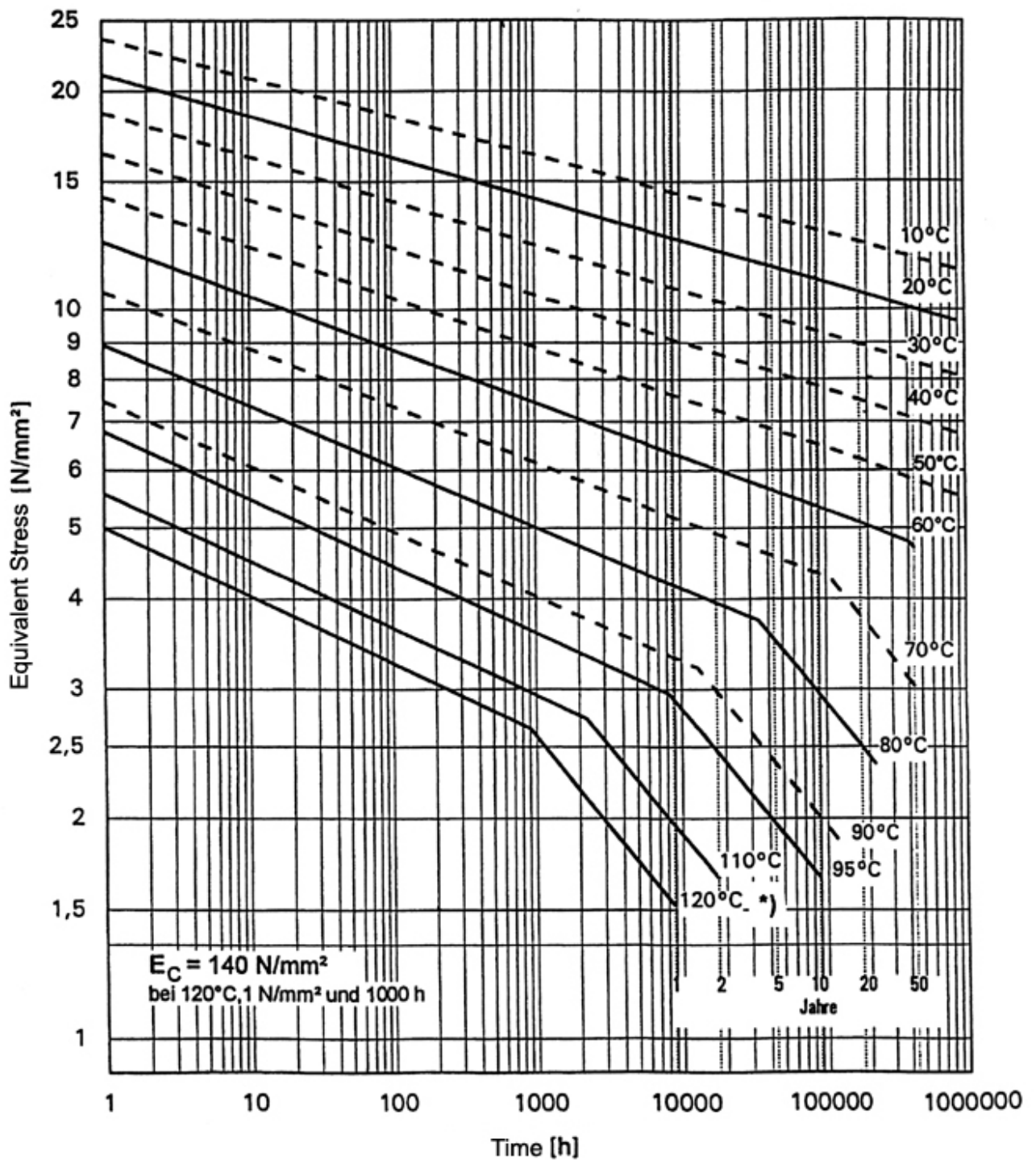
① Please refer to SIMONA® SIMCHEM

Material data

Material PP-H

Internal pressure creep curves for PP-H

Internal pressure creep curves for PP-H 100 pipes

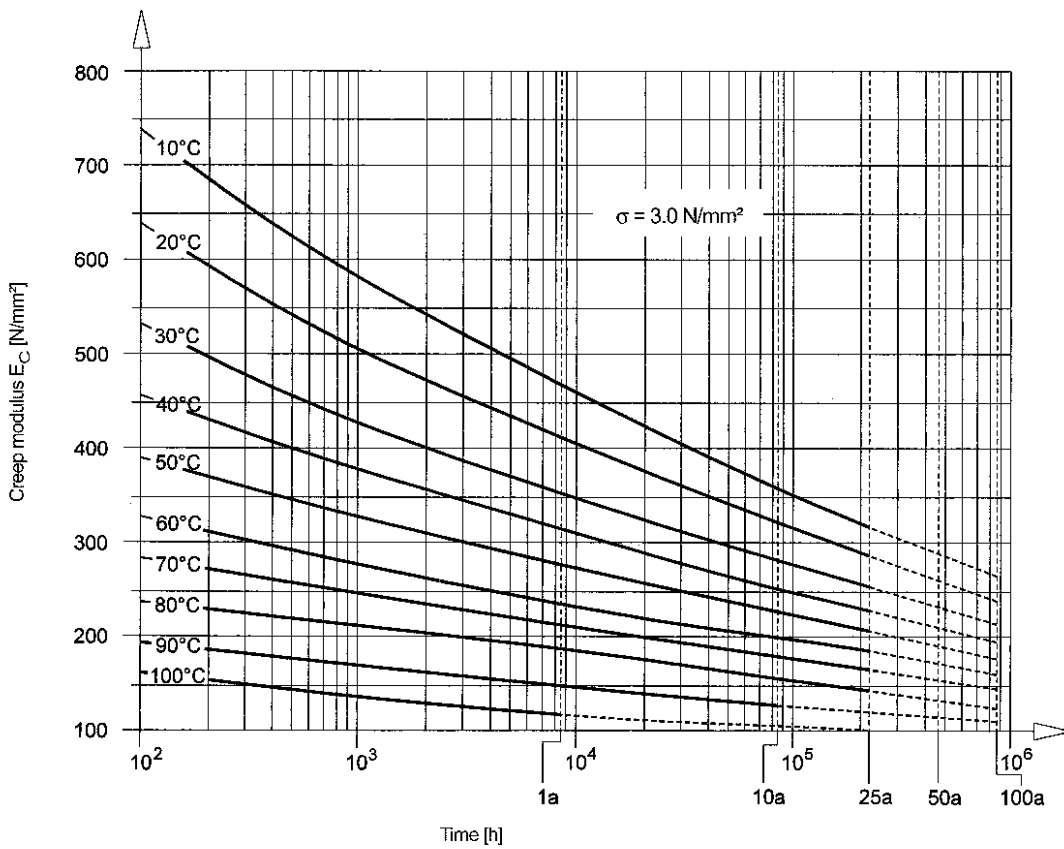


Material data

Material PP-H

Time-dependent modulus of elasticity (creep modulus) PP-H

Creep modulus for PP-H 100



acc. to DVS 2205-1 curves up to 90°C

| Calculation factors for the stress range | |
|--|----------|
| $\sigma = 0.5 N/mm^2$ | 1.16 |
| $\sigma = 1.0 N/mm^2$ | 1.10 |
| $\sigma = 2.0 N/mm^2$ | 1.05 |
| $\sigma = 3.0 N/mm^2$ | ▶ 1.00 ◀ |
| $\sigma = 4.0 N/mm^2$ | 0.96 |
| $\sigma = 5.0 N/mm^2$ | 0.92 |

| Modulus of elasticity [N/mm^2] | | |
|------------------------------------|-------------------|--------------|
| | 1 | 2 |
| Temperature | $E_{kz} 10^{-1}h$ | $E_c 100min$ |
| $\leq 10^\circ C$ | 1400 | 1130 |
| 20°C | 1200 | 980 |
| 30°C | 960 | 780 |
| 40°C | 770 | 650 |
| 50°C | 620 | 525 |
| 60°C | 500 | 430 |
| 70°C | 400 | 350 |
| 80°C | 320 | 280 |
| 90°C | 270 | 235 |
| 100°C | 225 | 200 |

Note:
 Values up to 80°C in Column 1 are from DVS 2205-2 Tab. 6. Numbers in Column 2 are interpolated between $E_{ST} (10^{-1} h)$ and $E_{LT} (1 \text{ year})$.
 Special attention has to be paid to time-dependent thermal ageing regarding calculations of $T \geq 80^\circ C$.