DVS - DEUTSCHER VERBAND FÜR SCHWEISSEN UND VERWANDTE VERFAHREN E.V.

Calculation of tanks and apparatus made of thermoplastics values of the polypropylene material group



Replaces DVS 2205-1, Supplement 1 (August 1996), Supplement 2 (August 1996), Supplement 3 (August 1996) and Supplement 10 (July 2005).

This supplement includes characteristic values for the PP-H, PP-B and PP-R materials.

Contents:

- PP-H, polypropylene homopolymer
- 1.1 Creep curves for pipes
- 12 Isochronous stress/strain diagram for 20°C
- Creep modulus 1.3
- 1.3.1 Creep modulus curves for one year
- 1.3.2 Creep modulus curves for ten years
- 1.3.3 Creep modulus curves for 25 years
- PP-B, polypropylene block copolymer
- 2.1 Creep curves for pipes
- Isochronous stress/strain diagram for 23°C 2.2
- Creep modulus
- 2.3.1 Creep modulus curves for one year
- 2.3.2 Creep modulus curves for ten years
- 2.3.3 Creep modulus curves for 25 years
- PP-R, polypropylene random copolymer
- Creep curves for pipes
- Isochronous stress/strain diagram for 20°C 3.2
- Creep modulus 3.3
- Creep modulus curves for one year 3.3.1
- Creep modulus curves for ten years
- Creep modulus curves for 25 years Reduction coefficients A₁ for moulding materials made of PP
- 5 Heat ageing limit in the case of PP
- Coefficients for 2NCT/FNCT in the case of PP 6
- Literature



Page 2 to DVS 2205-1 Supplement 2 1 PP-H, polypropylene homopolymer 1.1 Creep curves for pipes 30 25 20 15 10°C 714 20°C 10 9 30°C 8 Equivalent stress [N/mm²] 40°C 7 50°C 6 5 -60°C 4 3 2.5 2 110°C 1,5 120°C $E_C = 140 \text{ N/mm}^2$ at 120°C, 1 N/mm² and 1,000 h 20 1 ears 0.8 1 10 100 1,000 J,00 100,000 1,000,000 Service In '51 Straight line equations: $\log(t) = A + B/T \times \log(\sigma) + C/T + D \times \log(\sigma) \quad \log(t) = a + b \times \log(\sigma)$

Coefficients of the straight lines at 10 - 95°C Coefficients of the straight lines:

Flat branches Steep branches $A_1 = -46.3645$ $A_2 = -18.387$

 $B_2 = 0$ $B_1 = -9,601.1$

 $C_2 = 8,918.5$ $D_2 = -4.1$ $C_1 = 20,381.55$

 $D_1 = 15.24$

Flat branche Steep branches 110°C

 $a_1 = 8.0662$

5.15457 $b_2 = -4.13903$

a₂ = 4.6841

 $b_2 = -4.0779$