Technical information

Dimensional tolerances for round hoses in accordance with DIN 16940

The following overview shows the permissible dimensional deviations for round hoses according to DIN 16940 – both for the inner diameter and the outer diameter, in millimeters. These tolerances serve as technical reference values for planning, production, and quality testing. All specifications are approximate values and refer to the usual manufacturing tolerances in the plastics sector.

Ø-innen mm	Toleranz mm	Ø-außen mm	Toleranz mm
> 2-3	± 0,3	> 1-2	± 0,2
> 3-6	± 0,4	> 2-3	± 0,3
> 6-10	± 0,5	> 3-6	± 0,4
> 10-18	± 0,8	> 6-10	± 0,5
> 18-24	± 1,0		
> 24-30	± 1,5		
> 30-50	± 2,0		
> 50-70	± 3,0		

Operating pressure as a function of temperature

The pressure resistance of a hose depends largely on the operating temperature. As the temperature rises, the mechanical strength of the hose material decreases, which has a direct effect on the maximum permissible operating pressure. The table opposite shows how the permissible pressure changes in percentage terms, based on the reference value at **+20°C (= 100%).**

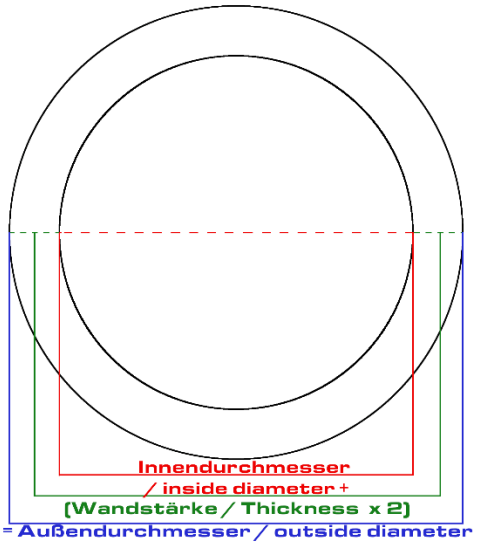
For example:

- **At +50°C, the operating pressure is reduced to only 60% of the initial value.**
- **At –20°C, on the other hand, the pressure resistance increases to 145%.**

Please take these values into account when selecting and designing your hose systems, especially for applications with widely varying temperatures. The information serves as a guide for dimensioning based on thermal load.

-20 °C = 145 %
-10 °C = 135 %
0 °C = 120 %
+10 °C = 110 %
+20 °C = 100 %
+30 °C = 85 %
+40 °C = 73 %
+50 °C = 60 %
+60 °C = 46 %

Calculation of the outer diameter of hoses



Knowing the outer diameter is essential for the precise planning, selection, and assembly of a hose—especially when choosing couplings, brackets, or bushings. The adjacent graphic illustrates the simple formula for determining this:

Inner diameter + (wall thickness × 2) = outer diameter

- Inner diameter (red): the clear diameter of the hose, i.e., the usable cross-section for the medium
- Wall thickness (green): measured from the inside to the outside of the hose wall
- Outer diameter (blue): the complete outer dimension of the hose – including both wall thicknesses

Example:

A hose with an inner diameter of 20 mm and a wall thickness of 3 mm has an outer diameter of

20 mm + (2 × 3 mm) = 26 mm

This calculation is standardized and particularly important in tight installation situations or when combining with pressure pieces, fittings, or clamp connections. Therefore, pay attention to both the inner and outer diameters for each application.