Joining Temperature - Thermal Assembly of Interference Fits

Sample document - numeric values are only included in the purchased Pro export.

Project: _____ Part/Position: _____ Prepared by: _____

Overall assessment: pass - the calculated outer part joining temperature is in the safe range (<= ? ? ? °C).

Inputs

Joining diameter d	? ? ? mm
Maximum interference U_max	? ? ? µm
Required joining clearance S_f	? ? ? µm
Ambient temperature T_0	? ? ? °C
Joining method	? ? ?
Outer part material	? ? ?

Results

Temperature increase outer part Delta-T_A	? ? ? K
Joining temperature outer part T_A	? ? ? °C

Joining temperature assessment

Criterion	Value	Limit	Status
T_A <= 350 °C (tempering risk from 350 °C)	? ? ? °C	? ? ? °C	● PASS

Calculation basis

Simplified thermal expansion calculation (Roloff/Matek approximation) for thermally assembling interference fits: Delta-L = alpha·L·Delta-T, applied to the joining diameter d. The outer part must expand by the maximum interference U_max plus the joining clearance S_f, or the inner part must shrink by the same amount. In the combination method the inner part is cooled to a given target temperature (dry ice, nitrogen, or custom); if the resulting shrinkage is not sufficient, the remainder is provided by heating the outer part. Applies to purely elastic joining and does not account for the temperature loss during the assembly process itself.

Note: The results are design and orientation aids. They do not replace independent verification, calculation and approval by a qualified person. The terms of use at maschinenbaurechner.de apply.

SAMPLE