

# Forming Strains in ASME

Equations for Calculating Forming Strains in ASME VIII Div-1 and Div-2.

Online version: <https://nextgen.sant-ambrogio.it/KB258767>

Latest update: 05 ott 2021

The equations for calculating forming strains are available in the following tables:


- Division 1: Table UG-79-1
- Division 2: Table 6.1

NextGen uses for both standards the equations of Division 2, because it has more cases, including one-piece dished heads.

Type of Part Being Formed	Forming Strain, %
For all <b>one-piece</b> , double-curved circumferential products, formed by any process that includes dishing or cold spinning (for example, dished heads or cold spun heads)	$\epsilon_f = 100 \ln \left( \frac{D_h}{D_f - 2t} \right)$
Cylinders formed from plate	$\epsilon_f = \frac{50t}{R_f} \left( 1 - \frac{R_f}{R_o} \right)$
For heads that are assembled from formed segments (for example, spherical dished shell plates or dished segments of elliptical or torispherical heads)	$\epsilon_f = \frac{75t}{R_f} \left( 1 - \frac{R_f}{R_o} \right)$
Tube and pipe bends	$\epsilon_f = \max \left[ \left( \frac{r}{R_f} \right), \left( \frac{t_a - t_b}{t_a} \right) \right] \cdot 100$

The result printed in the report is informative only, high forming strains may require a heat treatment on the part.

If you are designing a vessel in Division 1 and you do not need the calculation of the strains of a one-piece dished head, you can suppress the calculation by inserting a zero in the field "Blank diameter multiplier".

External diameter multiplier to calculate the head blank diameter before forming	1,21	
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