

Multiaxial stress hypothesis

Allowable stress σ_d is determined from the uniaxial stress test.

There is a need the reduction for possibility to compare **uniaxial** and **multi-axis** stress in 3D space.

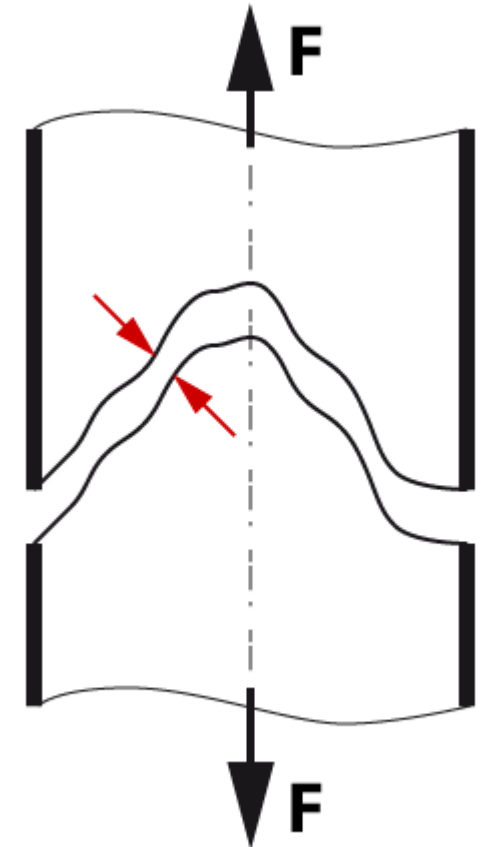
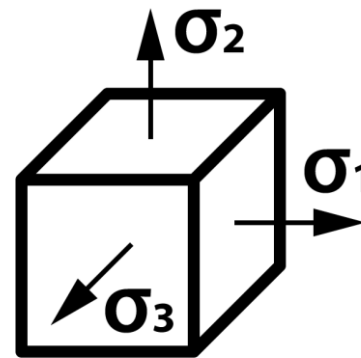
For this **reduction** are used **hypothesis** strength **in multi-axis stresses**.

Known hypothesis:

Guest, HMH, Mohr ...

Each hypothesis is better for:

- kind of material
- another combination of multi-axis stresses (bending, shear, torsion, ...)



Hypothesis HMM (Huber, von Mises, Hencky)

Basic computer simulations use the hypothesis HMM.

It is about the stress here:

specific energy of strain (density of deformation energy) to shape change $\lambda \mathbf{v}$.

$$\sigma_{red} = \sqrt{\sigma_1^2 + \sigma_2^2 + \sigma_3^2 - (\sigma_1\sigma_2 + \sigma_2\sigma_3 + \sigma_3\sigma_1)}$$

Resulting stress type HMM
in computer simulation
is possible comparing with
allowable stress of material.

$\sigma_d \sim$ allowable stress is from the uniaxial stress test

