Introduction to material technology
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The physical properties of materials

The mechanical properties of materials

Materials
- Wood
- Glass
- Ceramics
- Concrete
- Metals
- Composites
- Membranes
- Textiles
- Cardboard
Scroll through topics

CURRICULUM

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There are different preferences when it comes to learning. How do you want to learn today? It’s up to you. Don’t worry you can change it any time you want.

Text
The good old way of receiving the subject material.

Illustration
Illustration is a visually based way of receiving the subject material.

Video
Learn through video. Watch a pre-recorded lecture or an experiment.

Audio
The subject material is read aloud for you.

Interactive
Interactive learning means using games or interactive courses. There are some physical games as well that can be lent out at the library.

Demo / Example
This mode focuses on ‘reality’ and presents use cases and examples for practical use. The subject matter put in a context that is relevant for you.

Physical
This mode takes learning out of the digital domain. There are different kits that can be lent from the library.

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You want it short and straight to the point? This mode gives it to you.
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The symbol for mass density is $\rho$ (the Greek letter rho). When the mass is $m$ and the volume is $V$, the mass density can be expressed as

$$\rho = \frac{m}{V}$$

Density is also referred to as specific weight, but this term is misleading and should be avoided.

The SI unit for density is kg / m$^3$. Derived units that are widely used are kg / dm$^3$ and g / cm$^3$. In the United States, the unit also uses pound / cubic foot (lb / ft$^3$):

$$1 \text{ lb/ft}^3 = 16.019 \text{ kg/m}^3$$

The definition of density assumes that the substance is homogeneous. This is not always the case; for example, the atmosphere has a higher density along the ground than higher up. Calculated mass density then becomes an expression of average mass density in the area being measured.

Relative bulk density

Relative mass density is often defined as the ratio of mass density to two substances, and this unit is thus dimensionless.

In the case of liquids, specific densities are often stated in relation to water, while air is often used as a reference in relation to gases.

Variation in mass density

The density of a substance varies with temperature and pressure. For solids and
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