KISSsoft 03/2018 – Instruction 010

Simplified calculation for plastic gears

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In general, if it is POM, PA12, PA66 or laminated fabric, the VDI method should be used. If a material with significantly different values is needed, the simplified method can be used for rough calculations.

To activate this calculation method, activate the check box "Allow simplified calculations according to DIN 3990 / ISO6336" via Calculations -> Settings in the tab "Plastics".

![Figure 1. Activating the simplified calculation](image)

In the tab "Rating" the desired calculation method is selected, for checking the static tooth strength, e.g. "Static calculation". Also valid for the simplified calculation are the ISO and DIN Methods.

![Figure 2. Calculation method](image)

Then in the "Basic data" tab in the 'Material and lubrication' section, the material data window for entering the material of the gear can be opened using the 'Plus' button.
Figure 3. Open the gear material definition window

In the material data window, it is best to first select a plastic material that is as similar to the desired material as possible. Subsequently, the checkbox for the box is set to "Own input". Now you can enter the data for the desired material. For the static calculation, this is primarily the bending strength and the yield strength, for fatigue strength calculation according to ISO or DIN the endurance limit, root or flank.

Figure 4. Adjust the values for $R_m$ and $R_p$
In contrast to the calculation according to the VDI method, a temperature-dependent specification of the material data is not possible with the simplified calculation. This means that the temperature specification in the “Basic data” tab is not considered in the simplified calculation. To perform a calculation at a certain temperature, the strength values associated with this temperature must be set directly in the material.