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Calculation of Plastics in ANSYS®

The simulation of plastics under slowly decreasing or varying load is complicated due to the **visco-elastic** material behavior. Assuming small deformations, it is possible to neglect the non-linear parts of the deformation and to use a linear-visco-elastic material model. The determination of the **material parameters** for these models, however, is not easy. On the one hand it is rather expensive to determine the necessary, time-dependent data. On the other hand the numerical approximation causes a high effort.

Material Data Center offers about 1500 creep curves for approximately 500 materials at the moment. Concerning range and quality it is a unique source for time-dependent material properties for the user.

The new version of Material Data Center contains an interface, which produces **ANSYS** material cards for the **Prony** model. For this, the isochronous stress-strain diagrams are approximated according to the Prony approach. This approximation is presented in the figure above, which also illustrates the limitation of validity of this model. If the strains

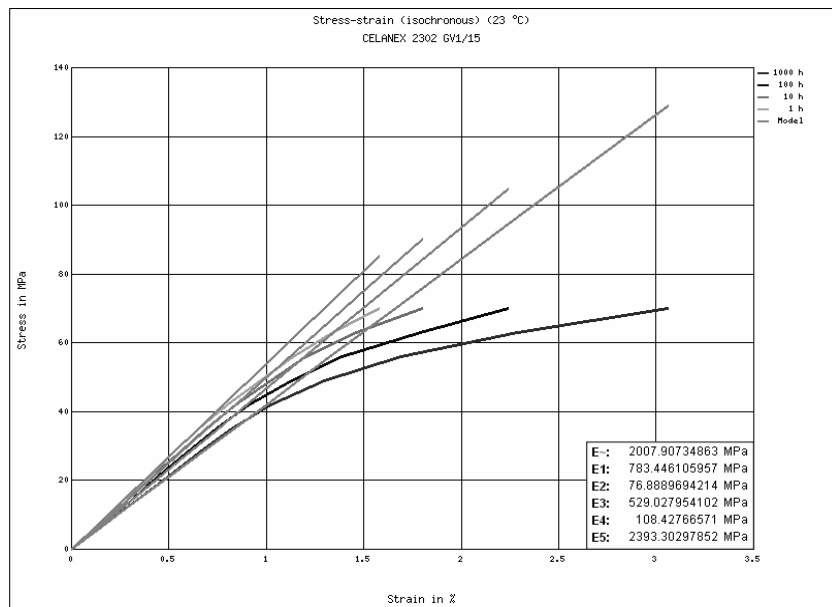


Illustration of Processed Data for the Prony Interface

raise above 1% or if the stresses raise above 40 MPa, it is no longer possible to neglect the non-linear effects in this special example. However, up to this boundary the Prony approach describes the material behavior extremely good. This special version of **Material Data Center**, which allows

the export of relevant data in the specific ANSYS format, is available starting from May.

Potential users who are interested in this extension of Material Data Center may contact us for a free 2 weeks demonstration access.

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