

## Material Data Center Extended

The plastics information system Material Data Center, which is visited by many thousand plastics professionals every month, has recently been extended by a couple of interesting features.

Material Data Center includes the complete set of data from the international CAMPUS® database, including extensive multipoint data, like stress-strain or creep data. It also includes several thousand resins, that are reported according to ASTM standards, mainly for the US market. These are collected in cooperation with Plastics Technology magazine.

### PLASPEC Global

Plastics Technology offers a special version of Material Data Center, specifically adapted to the US market, called PLASPEC Global.

[www.plaspec.com](http://www.plaspec.com)

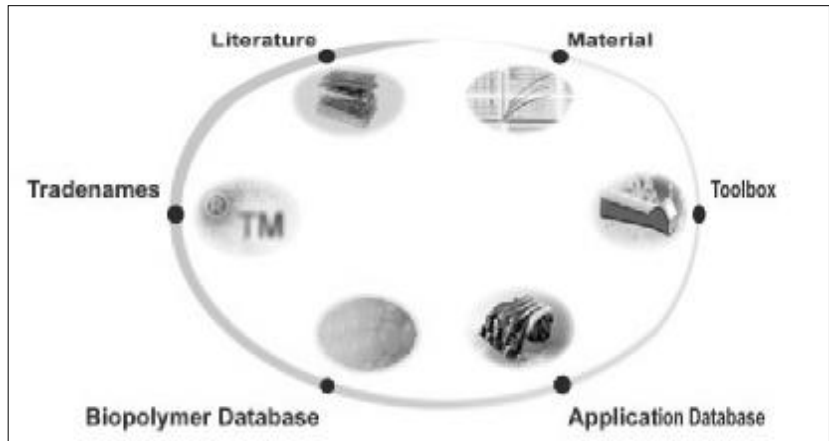
Furthermore Material Data Center includes a literature database with articles from the magazines Kunststoffe International and Plastics Technology, as well as a full text version of the International Plastics Handbook and an extensive application database.

Another valuable feature of Material Data Center is a toolbox with design features, like flow length calculation, cooling time calculation and snap fit design.

### Tradenames for Additives

The successful tradename directory of Material Data Center has now been extended by several hundred additives for plastics.

The tradename directory has be-



Material Data Center

come an important and well accepted module of our internet plastics information system. So far only tradenames of plastic grades have been listed. Based on many requests from visitors, tradenames for additives have now been included. The following categories have been taken into account:

- antimicrobials, biocides
- antifogging agents
- antioxidants
- antifoaming agents
- antistatic agents
- wetting agents
- release agents
- colorants
- flame retardants
- flexibilizers, impact modifiers
- antislip agents, antiblock agents, lubricants
- bonding agents
- catalysts
- laser sintering
- nucleating agents
- fluorescent whitening agents
- photoselective additives
- process and heat stabilizers
- oxygen absorber

- stabilizers
- blowing agents
- UV-light stabilizers
- thickeners
- crosslinking agents, peroxides
- plasticizers
- fillers

The tradename directory links to the relevant material producer, including address and website. It is possible to search for all important criteria. The tradename directory is available for all registered users of Material Data Center at no charge.

### Flow Length Calculation

This interesting tool uses the relevant physical material characteristics (like viscosity-shear rate diagrams), which are stored in Material Data Center. In a few seconds the system is able to simulate the achievable flow length for a given constellation (for two specific geometries, spiral and circular disc) and even generates flow length-wall thickness diagrams. The relevant formulas are solved using the finite difference method, considering parameters like material

CAMPUS® registered trademark, CWFG, Frankfurt 1991

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## Continuance: Material Data Center Extended

properties, maximum pressure and injection volume as well as mold and melt temperature. The flow length calculation can either be activated directly from the datasheet of any given material or from the Toolbox module. Here the requested material can be selected comfortably from a pick list which contains only grades for which all necessary material properties are known.

The calculation program will automatically take over the relevant material properties and make suggestions for the free parameters, like machine settings and flow geometry, which can be modified by the user.

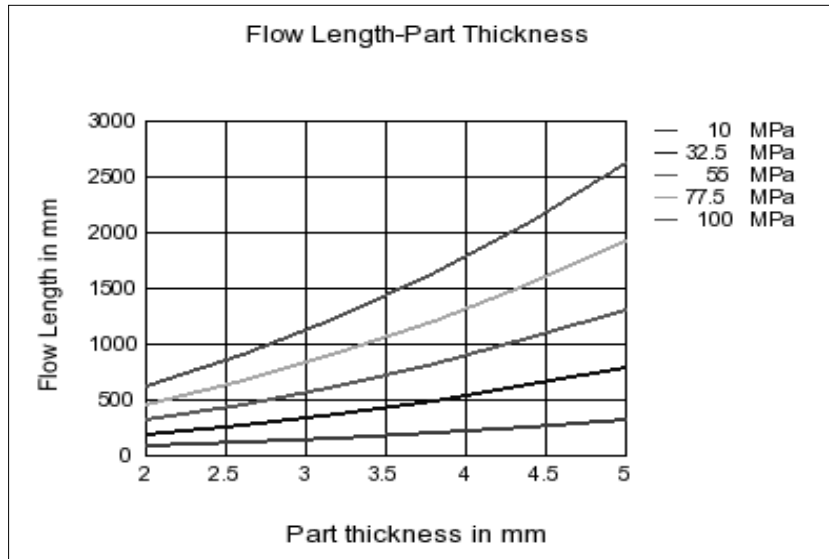
The calculation results can be printed or converted into a comfortable pdf format.

**Assumptions and simplifications:**  
The problem is calculated one-dimensional over the wall thickness. All effects in transverse direction (like heat flow, freezing) are neglected. The thermal material properties of the melt are taken from Material Data Center. They are constant and not temperature dependent. The viscosity properties are also taken from the database and approximated using the Carreau WLF model, considering the effect of temperature and shear rate.

### CAE Data Interfaces

The material data in Material Data Center is not only useful for material selection, but also for design purposes. Very often it is necessary to convert the material data into specific formats, which can be entered into CAE software. To support designers in this task, a special version of Material Data Center was developed, which allows to download data into neutral formats (e.g. xls). Furthermore direct data interfaces to several common CAE systems are available. The following formats can be offered:

ANSYS Viscoelastic  
ANSYS Elastic-Plastic  
ANSYS Creep  
ABAQUS Elastic-Plastic  
ABAQUS Creep



Flow Length-Part Thickness Diagram

### ANSYS Viscoelastic Interface

The interface generates ready to use material cards for a viscoelastic Prony material model for the use in ANSYS. First the elastic fraction is extracted from the creep data stored in Material Data Center. With the use of a genetic approximation algorithm model parameters are calculated for the viscous curves. Data is exported as an ANSYS ASCII material card.

### ANSYS Elastic-Plastic Interface

The interface generates ready to use material cards for an elastic-plastic material model for the use in ANSYS. Based on the data stored in Material Data Center, temperature dependent true elastic modules and true stress-strain curves are calculated. The curves are processed according to the ANSYS requirements and an ASCII material card is generated.

### ANSYS Creep Interface

The interface generates ready to use material cards for the "Generalized Time Hardening" creep material model for the use in ANSYS. Model parameters are calculated from the time dependent fraction of the isochronous stress-strain curves using a non linear approximation algorithm. Data is exported as an ANSYS ASCII material card.

### ABAQUS Elastic-Plastic Interface

The interface generates ready to use material cards for an elastic-plastic material model for the use in ABAQUS. Based on the data stored in Material Data Center, temperature dependent elastic modules and stress-strain curves are calculated (true and technical data available). The curves are processed according to the ABAQUS requirements and an ASCII material card is generated.

### ABAQUS Creep Interface

The interface generates ready to use material cards for the strain hardening creep material model for the use in ABAQUS. Model parameters are calculated from the time dependent fraction of the isochronous stress-strain curves using a non linear approximation algorithm. Data is exported as an ABAQUS ASCII material card.

Price for one year access to Material Data Center:  
350,00 €

Price for one year access to Material Data Center with 5 CAE interfaces:  
1.200,00 €  
(Prices excluding VAT)

Information at: [www.m-base.de](http://www.m-base.de)