

Content of this Issue

This magazine informs customers of M-Base Engineering + Software GmbH about the latest developments in material information and design software. Furthermore, it introduces new M-Base products and projects. This issue deals with the following specific subjects:

- Material Data Center Extended
- Tradenames for Additives
- Flow Length Calculation
- CAE Data Interfaces
- CAMPUS 20th Anniversary
- Events 2009

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

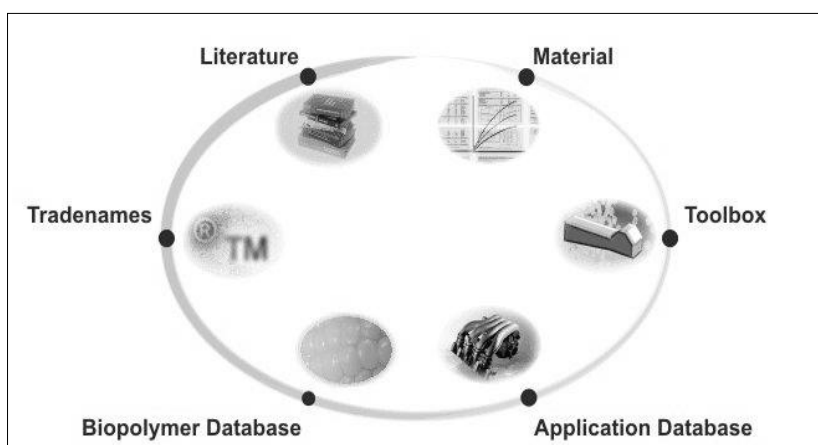
Furthermore Material Data Center includes a literature database with articles from the magazines Kunststoffe International and Plastics Technology, as well as a full text version of the International Plastics Handbook and an extensive application database.

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
- photosensitive 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

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.

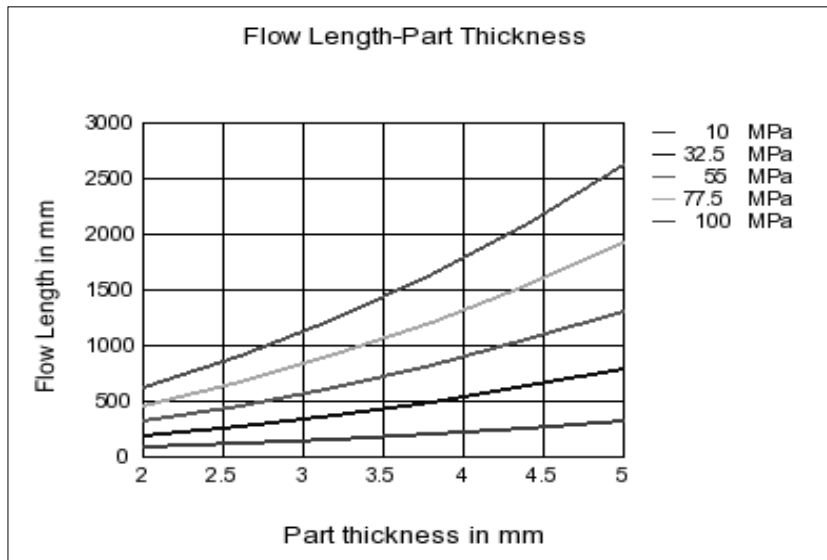
The thermal material properties of the melt are taken from Material Data Center. They are constant and not temperature dependent.

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

CAMPUS 20th Anniversary

Last December, during the regular annual CAMPUS licensees meeting in Aachen, the 20th anniversary of the worlds most successful plastics information initiative was celebrated. Two decades ago, at the urging of the automotive industry, four big German plastics producers formed a consortium to reform the chaotic state of plastics materials characterization. They launched the project in 1988 under the name CAMPUS (Computer Aided Material Preselection by Uniform Standards). The goal was to standardize, to a degree never before accomplished, the way plastics materials data are gathered and reported, in order to achieve a quantum leap in the quality, usefulness, and credibility of those data. They agreed on strict protocols for test sample preparation, sample geometry, and testing conditions, as well as a uniform datasheet format and a standardized software with uniform user interface.

Over the years the consortium grew to more than 50 licensed members worldwide, through mergers and acquisitions that number was reduced over time. However, the market share of materials covered by CAMPUS grew steadily. Today CAMPUS covers more than 90% of the Engineering Polymers that are sold in Europe and in the US. Meanwhile, CAMPUS has become the leading international plastics database and the new standards that were developed in the project have received international acceptance.

The whole industry benefits from this system. The resin producers and end users save considerable sums with CAMPUS, by using consistent test specimens and test methods, and not having to retest according to a myriad of national standards and even individual company standards.



Julien Lebranchu of DuPont, elected chairman of the CAMPUS steering committee and the CAMPUS birthday cake, Aachen 4.12.2008

Designers and decision makers in the plastics industry can rely on comparable high quality material data. CAMPUS includes a set of 100 singlepoint properties and 20 graphs (so called multipoint data).

Over the years CAMPUS was continuously extended to more data content, like parameters for mold layout, chemical resistance data, pVT data, information about Long Term Heat Ageing and many more.

CAMPUS is available in 8 languages:

English
French
German
Italian
Spanish
Chinese
Japanese
Korean

CAMPUS is distributed everywhere in the world, the countries with the most CAMPUS downloads are: China,



Facts about CAMPUS

- founded in 1988
- founding members: BASF, Bayer, Hoechst, Hüls
- 23 leading international resin producers are active licensees
- covers more than 90% of market for Engineering Plastics
- free download via internet
- includes valuable engineering data

France, Germany, Italy and USA.

CAMPUS is available as a desk top system, that can be downloaded from the CAMPUS homepage for free. The data content is also available interactively via internet.

Different systems are available that offer CAMPUS data plus extra functionality, like calculation programs or comfortable tools for search and comparison, against a fee. The offline system is called MCBASE and the online version is called Material Data Center.

For information about

CAMPUS:
www.CAMPUSplastics.com

Material Data Center:
www.materialdatacenter.com

MCBASE:
www.m-base.de



Events



The 23rd International Exhibition on Plastics and Rubber Industries
May 18-21, 2009
Guangzhou, P.R. China

At Chinaplas 2009, our presentation

will focus on the introduction of CAMPUS to the Chinese market.

We will demonstrate the Chinese version of CAMPUS 5.1 and also distribute free CDs with CAMPUS data.

Our team will be present for demonstrations and professional

discussions. This is already the 6th time that CAMPUS is represented at Chinaplas.

The interest in China for CAMPUS is very high. By now China is amongst the 5 countries with the most CAMPUS downloads. The desktop version of CAMPUS offers a complete Chinese user interface.

The following licensees provide product texts in Chinese:

- A. Schulman
- Arkema
- BASF
- DSM
- DuPont
- EMS
- Hexion
- Radici
- Evonik Röhm
- Ticona

Also, CAMPUS WebView, the online access to CAMPUS datasheets is available in Chinese.



June 22 - 24, 2009
ANTEC@NPE 2009

The ANTEC will run from June 22-24, 2009 parallel to NPE at the same place.

During ANTEC, Ms. Andrea Siebert-Raths from University of Applied Sciences and Arts, Hannover will give a presentation about our new Biopolymer Database project.

June 22-26, 2009
NPE The International Plastics Showcase

NPE will be the most important event for the plastics industry in 2009. Together with our partners from Plastics Technology we will present PLASPEC Global to the complete international production chain, from resin producers to converters. Booth details will be published soon.

ANSWER SHEET:

M-Base Engineering + Software GmbH, Dennewartstr. 27, D-52068 Aachen, Fax: +49-241-963-1469

Please send us more information about:

- Material Data Center
- CAE Data Interfaces
- CAMPUS

other: _____

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