

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:

- New PLASPEC Global
- Cooperation with Plastics Technology
- New Biopolymer Database
- CAE Material Databases

New PLASPEC Global, Cooperation with Plastics Technology

At this year's Antec a new plastics database was introduced, which is a result of a cooperation between Plastics Technology and M-Base.

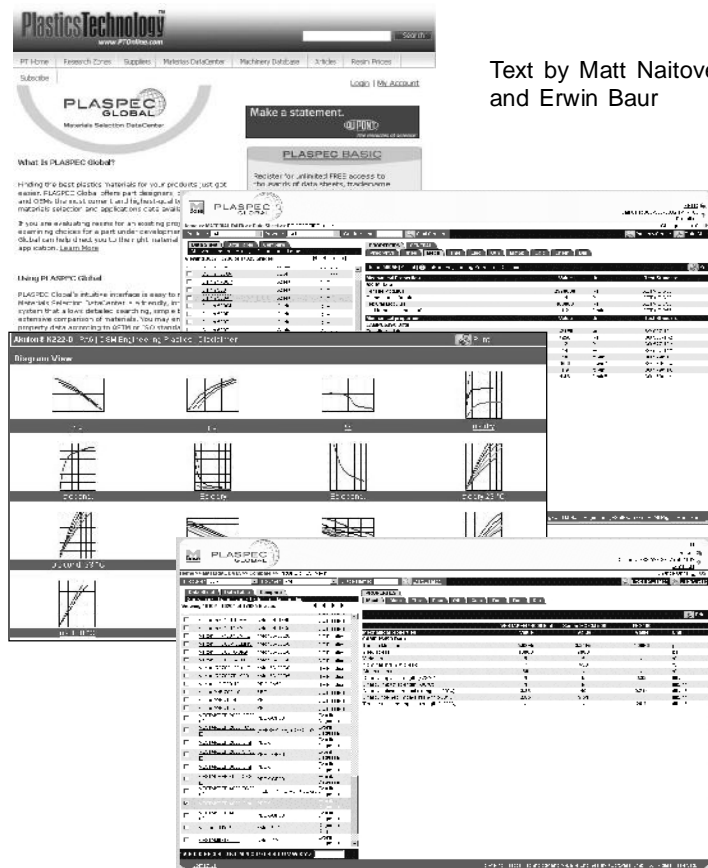
The Plastics Technology online materials database (which is offered since 1984) has a new name, a new look, and lots of new capabilities to help find the right material for a particular job. Renamed "PLASPEC Global", the enhanced database is accessible from Plastics Technology's website:

www.ptonline.com

As the name implies, the database has expanded its scope beyond just grades available in North America to include materials offered around the globe. This is possible, because PLASPEC includes the extensive collection of data for US grades, collected by Plastics Technology which are reported according to ASTM standards, as well as the complete set of international CAMPUS® data, provided by M-Base.

Hard-to-get information

The CAMPUS section of PLASPEC Global includes information not typically available on materials datasheets such as multi-point curves of properties that change with temperature and/or time, such as creep and creep modulus, viscosity vs. shear rate, shear stress/shear rate, dynamic shear modulus, stress/strain, isochronous stress/strain, and secant modulus/strain. PLASPEC Global even lets you overlay such curves for different materials, providing dramatic inter-material comparisons of processability or thermal-mechanical properties.



Text by Matt Naitove and Erwin Baur

Other unusual data provided in the CAMPUS database are the conditions under which the "dog-bone" test samples were produced (melt and mold temperature and injection velocity) and special rheological properties needed for inputs to flow-simulation software such as melt density, thermal diffusivity, specific heat capacity, etc.

More new Features

Another new addition to PLASPEC Global is the Applications Database which contains hundreds of case studies of materials used in

automotive, medical, electrical, packaging, and other industries. These are searchable by polymer type, trade name, industry, and/or part type (e.g. "bumper"). Many of these include photos of the applications and a link to the technical properties of the specific resin used.

Also new is the Tradename Register of resins and additives, searchable by tradename, producer, resin type, or delivery form. This system identifies the composition of the product, the supplier, and the supplier's contact information, including web and e-mail links.



New PLASPEC Global

One more new feature is the Literature Database, which enables you to perform text searches within Plastics Technology's article archives and Hanser's International Plastics Handbook. In addition, you can perform a text search across the entire PLASPEC Global database. Type text into the search field on the main page and get a list of "hits" or links to relevant content in the materials, applications, literature, or tradename databases.

Free and paid Access

PLASPEC Global has two levels of access: Basic and Complete. Basic is free, but requires registration. The Complete version has an introductory subscription price of \$99 a year. Even registration for the Basic version provides one-week free access to the complete functions, so you can determine, if you would like to upgrade after seven days.

The Basic version offers access to the full CAMPUS/ISO and ASTM materials database, but with a limited choice of search parameters and ability to print or store single-point and multipoint data on only one material at a time. It also includes access to the plastics Tradename Register and limited access to the Literature Database.

A complete subscription adds a much wider range of materials search parameters and ability to display, store, and print tables of data on multiple materials. In addition, you can sort the search results by a property of interest and overlay multipoint data curves for up to three resins at a time. The Complete version also provides full access to the Tradename, Literature, and Application databases.

Many ways to search

In the Basic version, you can search for materials by supplier, resin type, tradename, melt flow index, flexural modulus, UL 94 flame rating, and processing type. The last two are selectable from dropdown menus and MFI and flex modulus can be specified by minimum and/or maximum levels. Search results will appear as a list of material grades. Select one at a time

to display a complete datasheet with single- and multipoint data (ASTM, CAMPUS/ISO, or both, if available), basic processing information, regional availability, additives, features (such as FDA or USP approval, UV stabilized, etc.), and a simple text description of the material and its applications. There are also direct links to the supplier's website and to the Plastics Technology supplier showroom, which contains information about the company and links to related editorial content on the magazine's site. Finally, hit the "Print" button to print or download the complete datasheet as an Adobe PDF document.

In the Complete version, several types of searches are possible. The simplest is "Datasheet" mode: Select an individual datasheet-either by scrolling a list of all materials in the database or by specifying polymer, producer, and/or tradename. Each time you select one of these "filters", you narrow down the list of qualifying materials (the number is displayed on the page). You can view the datasheet on any of the resulting materials by clicking on the grade listing.

You can perform more advanced searches by clicking "Property Search." This lets you select by geographic region and mechanical, thermal, electrical, and optical properties. For each property, you can specify minimum and/or maximum values. If you click the "Range" button on the right, it will display the range of values for the materials selected so far.

Once you have finished refining your search, you can pick up to three materials on your final list, and the "Compare" function will produce a table of the three materials side by side, with ASTM data (if any) reported separately from CAMPUS/ISO data (if any). You view specific types of data by selecting tabs at the top of the table for processing/physical properties, mechanical, thermal, electrical, optical, and other properties. Each subset of properties can be printed

separately, or a PDF datasheet of all the property sets can be printed or downloaded.

In Compare mode, you can also overlay multipoint data curves for selected materials. When you click the "Diagram" tab, you will be asked to select the type of curve from a dropdown list. For example, if you select shear rate/viscosity curves, you then may need to select the test temperature(s) you would like to graph for each resin. In the case of stress/strain curves for nylons, you may need to select both temperature(s) and conditioned and/or unconditioned. After your selection, hit "Display" and the composite graph will appear.

If you want to construct a table with more than three grades, click the tab for "Data Table" mode. Use any of the methods discussed above to select all the materials you would like to display. Then use the "Edit Columns" function to choose the specific properties you are interested in displaying. Note that to create a Data Table, you must select materials either from the North American ASTM properties database or the CAMPUS/ISO database, but not both. The table can display only one type of data at a time (unlike the Compare mode). It is against the policies of the CAMPUS consortium to have their data, prepared under strict comparability rules, intermingled with data not conforming to those rules.

The latter point illustrates the attention to "data quality" emphasized by the developers of PLASPEC Global. Both Plastics Technology and M-Base point out, that quality is more important than mere quantity of data. We are working closely with individual materials suppliers to make sure PLASPEC Global has the most complete and up-to-date materials listings without duplications or obsolete grades. This principle will also guide future database enhancements planned for release in coming months.

CAE Material Databases

Material related parameters have a tremendous influence on the precision of CAE calculations. However, the quality of the material data input to CAE has been neglected in the past and responsible managers become aware that material data has become the most critical quality factor in design and simulation. It becomes obvious that many companies have no concept for the internal handling of material data at their disposal.

In many cases no centralized management of material data has been established; every designer is

installed on a central server and becomes available through either the internet or an internal company intranet. Clients do not need any additional installation on their hardware.

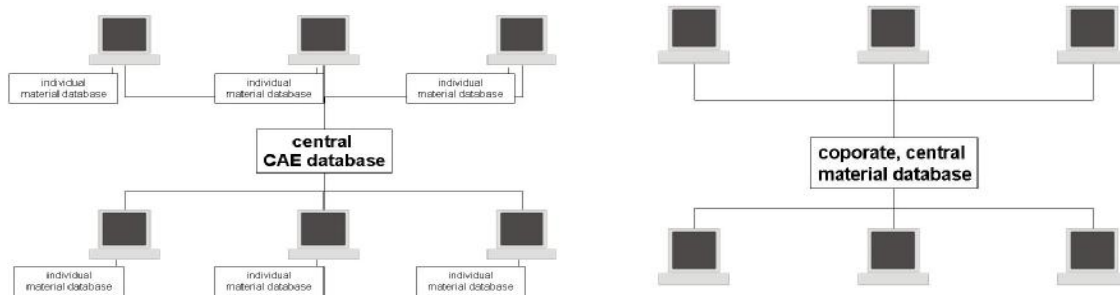
The complete functionality is available using any commercial browser. Using adequate interfaces, CAE systems can read out the data directly and without any transmission error.

The user has access to all necessary operations for the handling of material data (print

many companies, especially material producers and in the automotive industry (OEMs, as well as Tier1).

Every customer has specific needs. Therefore, we recommend an extensive analysis of the specific situation at each customer. It has to be checked, if the specific content and data structures are compatible. Also the specific data flow and procedures in the data inquiry, as well as the access rules need to be considered.

This task is more than a mere



Situation Today

Ideal Situation

allowed to work with an individual data pool and documentation of applied material parameters is not up to normal quality standards.

The preparation of material related input for CAE is very complicated and a serious source of errors. CAE systems require input formats which are absolutely un-structured and insufficiently documented. The transfer of material parameters from existing sources into CAE systems is time consuming and error-prone. This situation can be improved. Based on many years of experience in the design and realization of high-end material information systems, M-Base can offer the necessary know-how and reliable software tools for these purposes.

Our material databases are well equipped for the management and supply of CAE parameters. The software uses the latest internet technology, this means the complete system with all features will be

datasheets, search for properties, generate tables, sort data, convert units, presentation of multipoint data (curves), etc. Specific data interfaces generate correctly formatted input files for any target system.

In case that target systems need mathematical parameters for specific material models, adequate regression analysis tools are available to generate these parameters from the physical properties stored in the system.

Comprehensive administration tools allow the entry and editing of individual data and also an individual user management including the control of access rights.

Our software enables customers to install one unique, central data basis for the whole company, to assure that all users rely on the same set of data, which was collected and released by the person in charge.

Our software is already used by

collection of requirements and preparation of a correct specification. The installation of a well designed material database will always lead to optimizations in the business organization of the customer. Almost without exception, we will during the data structuring process generate suggestions for improvement for the work flow in relation with material data and for the integration of material information into the internal knowledge management.

As a qualified and highly specialized provider of high end material information systems, M-Base contributes the appropriate know-how into the software specification phase in order to stand out from the crowd of general purpose software vendors.

Basically our software can handle any class of material. Successful references in the areas of plastics, elastomers, steel and aluminum are on hand.



Biopolymer Database

Biopolymers are becoming more and more competitive, especially in the packaging industry. The remaining economic disadvantages due to limited production capacity can be compensated by rising oil prices and supporting political measures.

The main problem for biopolymers is the missing and at least non-standardized availability of actual material data. In order to improve the situation, M-Base Engineering + Software GmbH with the University of Applied Sciences Hanover started a project to create a Biopolymer Database which will contain a full overview of the market.

The guideline is the well known CAMPUS® database, which has become the international standard information system for conventional Engineering Polymers. The new Database will allow quick and easy access to information about biopolymer producers, contact persons and

material properties, like mechanical properties, permeability, degradation or processing behaviour.

Due to an enormous high interest on the part of the resin suppliers and the manufacturing industry, a pre-release of the project results has already been published on the internet, including exclusively data provided by biopolymer manufactures which are present at the market. This data is incomplete and not comparable. The free pre-release is available under

www.materialdatacenter.com.

The main goals of the following activities will be to collect complete information about available biopolymers, using uniform test standards and to generate comparable and complete material data. The result will be a biopolymer database, which is compatible with the international accepted CAMPUS® system and will be accessible

through the internet.

The project is supported by the Agency of Renewable Resources/ Fachagentur Nachwachsende Rohstoffe e. V. (FNR) by order of the German Federal Ministry of Food, Agriculture and Consumer Protection (BMELV).

Access to the system is free, however registration is necessary. Online registration is available. The first version of the system is available with German user interface. An English version will be launched during July.

A detailed description of the project content and the specific material tests is available from M-Base. Producers of biopolymers are welcome to register for participation. Inclusion of qualified material data is free, additional support in structuring of data, as well as comprehensive consulting services in all related aspects is also available.

ANSWER SHEET:

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Please send us more information about:

- PLASPEC Global
- Material Data Center
- CAMPUS
- MCBASE
- CAE Material Databases
- Biopolymer Database

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