

Data boost for Optimal Polymer Selector

GRANTA Design is hailing the new release of its CES Optimal Polymer Selector as the most powerful plastics selection tool ever built. It's a bold claim; can it be true?

The Optimal Polymer Selector was distinctive from the start. When we first reviewed the software (August/September 2002), we noted that it was the first and only plastics selection tool to combine generic data with grade-specific information. And it was the only plastics selector to use the Ashby bubble charts that had proved so effective in other branches of materials engineering. More of that in a moment but first, just what is new in this latest version 4.5 of the Optimal Polymer Selector?

When you are making data-based selections of plastics, more data means better selections so Granta has founded the new release on an enormous expansion of the plastics databank. Grade-specific data was sourced initially from the CAMPUS database. That link remains but it has now been augmented by best-in-class plastics databases from IDES and Moldflow.

CAMPUS first: the Optimal Polymer Selector now takes advantage of developments in CAMPUS to include data on film grades and thermoplastic elastomers. And for complex selection criteria, the system can now draw on the multipoint data in CAMPUS. The CAMPUS database is confined, of course, to those materials producers who are signed up to the CAMPUS consortium. This is the body that has been so successful in making data sheets directly comparable by basing them on common ISO standards. Currently the CAMPUS database contains some 4,600 plastics grades from 27 producers worldwide.

The Moldflow database is much larger. It contains about 8,000 plastics that have been categorised, modelled and measured for computer-aided moulding simulations. Even that is dwarfed by the IDES database which is undoubtedly the most comprehensive in the plastics world. At the last count, this contained property data sheets for a staggering 47,000 plastics grades. Crucially this includes superseded grades, making it easy to identify modern equivalents or substitutes.

The American origin of the database is evident in a preponderance of ASTM data. The data for about 8,000 grades is expressed to ISO standards while the rest conforms to ASTM. Plastics materials are being globalised now and we can expect to see that trend reflected in the continually updated IDES database. It is far beyond critical mass now, and IDES looks set for the foreseeable future as the pre-eminent grade-specific plastics databank.

So for breadth of data, the Optimal Polymer Selector upholds its claim. Let's recall what that data is allied to. The philosophy of the selection system is to work from the general towards the specific. That means you start with generic data; information representing a typical sub-type of a distinct plastics family. The Optimal Polymer Selector includes Granta's own generic plastics database and there are two things that are different

about it. The use of ranges instead of point values gives a more realistic picture of a material. And, vitally, there are no gaps in the data, no missing values. No longer can a material be ruled out of contention simply because the figures are absent.

In this first stage, you can make quick cuts based on manufacturing process and cost, then follow up with complex selection criteria using combinations of mechanical, thermal, electrical, optical and chemical properties. This is a key point. The practical performance of a material rarely depends on a single property. It is combinations of properties that matter and one way of dealing with that is the Ashby bubble chart. The chart makes it very easy to see how materials perform when you compare two properties. Each material is represented by an ellipse that spans its value range for the two properties. At a glance you can see the best, the worst, those that nearly pass and those that almost fail. You get the complete picture.

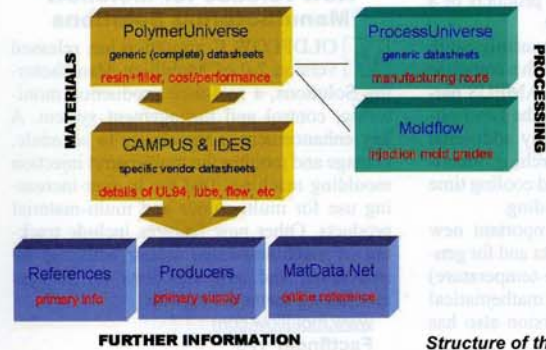
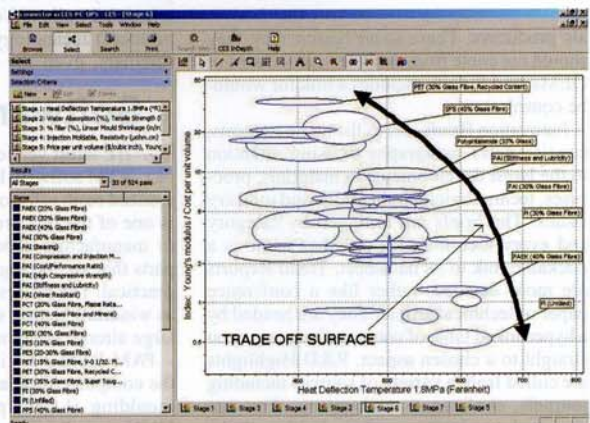
When you have identified the generics that are suitable for your project, you move on to the grade-specific databases. From those grades that match

your generics you can go into finer detail, for example on UV resistance or UL94 rating, to make your final commercial selections. Selections in the plural because you will probably want more than one source. Performance equivalents can be hard to find without tools like this.

So Granta's Optimal Polymer Selector 4.5 has complete generics, the widest available range of grade-specifics, extensive facilities for sorting, comparing and selecting, and Ashby bubble charts. Claim upheld? The answer must be yes.

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Interpreting an Ashby bubble chart.



Structure of the Optimal Polymer Selector.