



## CES Selector 2008 Release Notes

These Release Notes apply to the following CES Selector editions and to customized CES Selector packages created by adding additional data modules to one of these editions:

- CES Selector (Basic Edition)
- CES Eco Selector
- CES Polymer Selector
- CES Medical Selector
- CES Aero Selector

The Release Notes detail the enhancements in CES Selector 2008 compared with the previous release, CES Selector 2007.

## What is new in CES Selector 2008?

### **CES Selector Software**

1. **Performance index finder** – new selection feature, which makes it simple to identify and plot performance indices for the user's design requirements. When creating a graph stage during a selection project, the user can now apply an easy-to-use graphical interface that enables function, objectives, and constraints to be quickly specified via a straightforward pictorial menu and drop-down menu options.

#### **Benefits:**

- Simple and rapid calculation, and plotting, of performance indices
- Enables the trade-off between competing objectives to be studied with ease
- Simplifies and speeds up application of the *rational material selection* methodology

2. **Report generator** – new feature that collates all information (database, subset, stage details, results list, and ranking) about your selection project. Accessed by clicking the 'Generate...' button at the end of a selection project. The report is split into two parts: a one-page overview that summarizes all the design constraints and selection results and a detailed breakdown providing in-depth information on each stage. This can be printed and saved to PDF.

#### **Benefits:**

- Allows all information on a selection project to be readily collated into one document
- Facilitates the sharing of selection studies
- Provides a clear and consistent report format

- 3. Custom subsets** – new feature that enables users to specify their own subset of materials / processes for a selection project. Accessed from a new 'Custom: Define your own subset...' option within the 'Selection Data' part of a selection project. Custom subset settings are saved as part of the project file.

**Benefits:**

- Customize the selection dataset to suit the requirements of your analysis
- Focus selection on materials that are of interest (e.g. company's preferred materials)
- Generate non-standard subsets (e.g. polymers and aluminum alloys)
- Quick and straightforward to add or exclude single records / families from a selection project – increases the interactivity of the selection process
- Can be used to speed up selection studies that use large databases (e.g. IDES Plastics), by eliminating materials that are not of interest

- 4. New Eco Audit Tool** (available with the CES Eco Selector), accessed from the Tools menu, calculates the energy and CO<sub>2</sub> footprint of a product and enables its dominant life phase (material, manufacture, transport, or use) to be identified. The results of the Eco Audit can be printed and saved to PDF or Excel.

**Benefits:**

- Allows simple and rapid evaluation of the environmental impact of a product
- When combined with the CES Selector material selection capability, enables optimized design for minimal energy use and CO<sub>2</sub> footprint

A white paper detailing the use of the Eco Audit Tool (including 6 case studies) is also available in CES Help.

- 5. Customized record colors** – the default colors for records can now be changed by right-clicking on the record (or folder) in the browse tree, graph stage, and results list, and selecting 'Change Color'. Custom colors are saved as part of the project file.

**Benefits:**

- Allows rapid identification of material families and classes
- Enhance reports and presentations by highlighting candidate and reference materials

- 6. New default datasheet layout** – the default layout for datasheets is now 'All attributes'. This displays all available data for a particular material, irrespective of the chosen subset. [Note: This layout only applies to the datasheet. Attributes available in graph and limit stages are determined by the subset layout (e.g. All bulk materials, Polymers, etc)].

**Benefits:**

- All data has high visibility

- 7. New 'Getting Started Guide'** accessed from the Start menu – contains short exercises covering the main functionality and tools of CES Selector.

**Benefits:**

- Introduces users to all the main features of CES Selector
- Reduces start-up time and increases productivity

**8. Other software enhancements** – the following minor improvements have been made:

- Ability to customize fonts on datasheets
- More intuitive order of Browse, Search, & Select menu buttons
- Active database displayed at the top of a selection project
- New tabbing of Selector windows – simplifies use and reduces mouse movement
- Refresh of selection window and datasheet formats
- Results intersection switched on by default in graph stages
- Y-axis is now set as the default axis for graphs
- 'CES InDepth' enhanced and renamed 'CES Help' – new home page with links to the most frequently used help pages (e.g., material selection methodology, case studies...)
- New 'Feature Request' button, on the main menu bar – enables users to submit ideas, for new features and enhancements, direct to the CES Selector development team (requires internet connection)

**Benefits:**

- Enhanced usability

## **Data Modules**

### **CES Selector (Basic Edition)**

**9. Material prices in the MaterialUniverse data modules** have been updated – new estimated prices for over 3,000 materials have been generated using an improved and updated price model.

**Benefits:**

- For commonly used materials, pricing is both up-to-date and more accurate in absolute terms. For the less common materials, where 'real' pricing is hard to obtain, prices are predicted more reliably than before and give a much better indication of relative trends within a class of materials – for example, within cast irons or aluminum alloys or filled thermoplastics.
- An important resource for cost reduction initiatives
- An important resource for trade-off studies, e.g. cost vs mass of components; plastic vs metal

**10. New and revised metals naming scheme in the MaterialUniverse data modules** – the naming of metal records has been reviewed and revised using a consistent naming system.

**Benefits:**

- Metal families are grouped by alloy type in search and selection results – providing easier identification and comparison
- Metal names are more descriptive, including information such as processing method, heat treatments, and major alloying elements

**11. New data on stainless alloys** in the MaterialUniverse.

- Updated stainless steels and nickel alloys:
  - New high performance stainless steels grades: super duplex grades, superferritic grades, austenitic "LN" (low carbon + nitrogen) grades
  - More lean (low nickel) austenitic stainless 200 series alloys

- Data on corrosion resistance:
  - A pitting equivalent number (which depends on chemical composition) has been added in order to rank stainless materials
  - Discrete attributes allow users to select materials by type of corrosion (pitting and crevice, stress corrosion cracking, intergranular) and by environment (inorganic and organic acids, alkalis, humidity, sea water, and sour oil and gas)
- Data on processability – indicators for the following processes have been included: hot and cold forming, machinability (based on speed), weldability (MIG, TIG, Plasma, SAW), and brazeability
- Data on pricing – the price model of stainless alloys has been refined to better represent the prices of this market (notably the volatility of base elements such as nickel or ferrochrome)
- Data on designations – EN Name and EN Number (Werkstoff Number) have been added

**Benefits:**

- Perform selections based on corrosion and processing properties to find the appropriate alloy for a new project or to substitute an existing material with a cheaper and/or better performing material
- Easier searching of materials by European designations

**12. New and revised eco property data**

- Updated values for: embodied energy, CO2 footprint, recycle fractions, processing and recycling energies
- Eco-indicator, embodied energy (recycling), recycle fraction in current supply, and toxicity rating data added to all databases (previously only Eco Selector database)
- New eco properties added to all databases, includes: water usage, primary / secondary processing energies (5) and CO2 (14), and recycling CO2

**Benefits:**

- More extensive coverage of eco properties for reference and materials selection exercises
- Provides data for the Eco Audit Tool (available with the Eco Selector)

**13. Enhancement of Attribute Notes in the MaterialUniverse and ProcessUniverse – the content of the attribute notes has been updated and extended to all attributes.**

**Benefits:**

- Provides users with a direct link to the meaning of material and processing attributes and gives guidance on how they should be used
- Supportive information and guidance notes available for all attributes

***CES Medical Selector***

**14. Updates to medical materials & data in the MaterialUniverse – new and revised medical materials data including:**

- 20 new medical metals added
- 160 metal and ceramic materials identified as having medical grades
- Medical tradenames and sterilizability data added to medical metals and ceramics with medical grades
- Over 450 metals identified with grades suitable for food contact

- The following medical properties have been added to metals and ceramics that have medical grades:
  - Predicted radiopacity
  - MRI safeness
  - Medical applications
- New data on medical polymers – item 15, below

**Benefits:**

- More extensive coverage of materials used in medical applications for selecting materials for medical device applications
- New attributes enhance the investigation of material properties that are important in medical applications
- Wider coverage of food contact grades offers a greater range of materials with the possibility of passing medical biocompatibility testing

## ***CES Polymer Selector***

### **15. New polymers data in the MaterialUniverse.**

- Completely revised rubber (thermoset elastomer) section:
  - Each rubber chemistry represented by unreinforced ‘gum vulcanizate’ and cured carbon-black or other compounds, showing the range of typical properties achievable, based on reported data
  - All properties have been reviewed and revised
  - New typical property ranges for each rubber added:
    - i. ASTM 2000 heat resistance type and oil resistance classes
    - ii. Compression set at various temperatures
    - iii. Shore A & D
    - iv. Tensile stress at 100% and 300%
  - Same properties for rubber and TPE make easy comparison between them
- A number of new rubber chemistries added:
  - Ethylene acrylic rubber (AEM - Vamac)
  - Alkylated chlorosulphonated polyethylene (CSM - Acsium, extos)
  - Ethylene vinyl acetate rubber (EVM - Levapren)
  - Fluorocarbon and perfluorocarbon elastomers (FKM, FEPM, FFKM – Viton, Dyneon, Dai-EI, Aflas, Technoflon, Kalrez, Simrex, Perlast, ...)
  - Nitrile rubbers: hydrogenated, carboxylated, PVC blends (HNBR, XNBR, NBR+PVC – Therban, Zetpol, Nipol, ...)
  - Hard rubber / Ebonite
  - Fluorosilicone, phenyl silicone (FVMQ, PVMQ – Silastic, Elastosil, ...)
  - Polysulfide rubber (TM – Thiokol)
- Updated thermoplastic elastomers (TPE) section
- New grades of medical plastics covered
- Updated transparent plastics data, covering more properties and more materials – new records for:
  - Styrene butadiene plastic (SB)
  - Transparent ABS and methacrylate ABS (MABS)
  - Styrene methyl methacrylates (SMMA) with toughening
  - PA - semi-aromatic, amorphous
  - PA - cycloaliphatic, amorphous
  - PA - newer ‘microcrystalline’ (cycloaliphatic)
  - Thermoplastic ether-ester copolymer elastomer (TPC-ET, Ecdel)
  - Polycarbonate-polyester amorphous blends (PC+polyester)
  - Polyphthalate carbonate (PPC)
  - Ethylene acrylates (EMA, EBA)

- Ionomer (sodium & zinc types)
- Self-reinforced polyphenylene (SRP)

Updates to:

- Styrenic block copolymer elastomers (SBS, SEBS, SIS)
- Polyolefin elastomer/plastomer (POE/POP)
- Polyether block amide (PEBA)
- High-heat polycarbonate (PC-HT)
- Ethylene ethyl acrylate (EEA)
- Acrylonitrile copolymer (Barex)
- Polyethylene naphthalate (PEN)
- New links between polymer records in the MaterialUniverse and records in CAMPUS Plastics allowing users to easily find specific commercial grades

**Benefits:**

- Strengthens the MaterialUniverse data module as a unique source of generic product information covering the complete range of engineering plastics – particularly suited to initial screening exercises during materials selection
- More comprehensive coverage of commercially important classes of plastics – rubbers, TPEs, and transparent plastics
- Enhanced selection capability for applications requiring transparency. The rational material selection methodology automatically considers the trade-off made between performance and transparency for all the main classes of transparent plastic.
- Further support for materials selection and analysis in medical applications, where it is particularly important that selection decisions are ‘auditable’ and take account of medically relevant properties such as regulatory approval status and sterilizability

**16. Updated CAMPUS data module.**

The CAMPUS<sup>®</sup> Plastics data module has been updated with the latest CAMPUS ISO comparable standards information.

- Information on approx. 5,700 resins from 21 leading vendors
- A number of new multi-point attributes: Stress-strain (isothermal), Aged Charpy Impact, Aged Electric Strength, Aged Strain at Break, Aged Stress at Break

**Benefits:**

- Provides access to the latest CAMPUS data

**17. Updated IDES Plastics data module** – the Granta IDES Plastics database has been updated with the latest information:

- Approx. 69,500 datasheets for specific resin grades
- Approx. 600 suppliers worldwide
- Approx. 56,600 ASTM and 25,800 ISO datasheets

**Benefits:**

- The latest IDES data

## **CES Aero Selector**

**18. MMPDS updated to version MMPDS-03** – the MMPDS data module has been updated to version MMPDS-03 and includes the latest data and the following additional features:

- Includes 'live' numerical and graph data for analysis and export
- 11 new alloys
- Graphical data on strain-controlled fatigue
- Graphical data on stress-corrosion cracking of steels
- Graphical data on bending modulus and torsional modulus

### **Benefits:**

- Access to the latest MMPDS-03 data
- Access to data for a wider range of material properties

## **Known Issues**

**19.** CES Selector uses the Visual Studio 2008 runtime libraries. After installation, you may find that the following files appear on the root of your hard drive. It is safe for you to delete these files:

install.res.1028.dll	07/11/2007 08:03
install.res.1031.dll	07/11/2007 08:03
install.res.1033.dll	07/11/2007 08:03
install.res.1036.dll	07/11/2007 08:03
install.res.1040.dll	07/11/2007 08:03
install.res.1041.dll	07/11/2007 08:03
install.res.1042.dll	07/11/2007 08:03
install.res.2052.dll	07/11/2007 08:03
install.res.3082.dll	07/11/2007 08:03
eula.1028.txt	07/11/2007 08:00
eula.1031.txt	07/11/2007 08:00
eula.1033.txt	07/11/2007 08:00
eula.1036.txt	07/11/2007 08:00
eula.1040.txt	07/11/2007 08:00
eula.1041.txt	07/11/2007 08:00
eula.1042.txt	07/11/2007 08:00
eula.2052.txt	07/11/2007 08:00
eula.3082.txt	07/11/2007 08:00
globdata.ini	07/11/2007/08:00
install.exe	07/11/2007 08:03
install.ini	07/11/2007 08:00
VC_RED.cab	07/11/2007 08:09
VC_RED.MSI	07/11/2007 08:12
vcredist.bmp	07/11/2007 08:00

## **Feedback**

The expert staff at Granta Design can provide advice on database design issues, and can provide a consulting service to help with major database development projects. Granta Design would welcome your feedback on any improvements you would like to see in the CES system, its data, or documentation.

Please, send your ideas by using the 'Feature Request' button on the main toolbar (see item 8).

Alternatively, email: [support@grantadesign.com](mailto:support@grantadesign.com)

There is a general CES FAQ at the following location that may answer some of your questions.

<http://www.grantadesign.com/members/kbase.htm>