

# **GRANTA MI 2.0**

## **Release Notes**



## Introduction

GRANTA MI™ 2.0 from Granta Design Limited is the latest version of the leading materials information management software system for engineering enterprises. GRANTA MI meets the disparate needs of the materials experts, product designers, engineering analysts, data publishers, and other professionals who work with information related to metals, composites, ceramics, plastics, and other materials.

Granta is committed to maintaining GRANTA MI's leading position. Regular update releases deliver new features and performance improvements, guided by input from our customers, while keeping pace with changing systems requirements. This document provides a brief overview of changes to the system modules in the latest release, and details some known issues.

GRANTA MI 2.0 contains over 20 new features and improvements. Many of these were implemented at the request of customers and partners, including the Material Data Management Consortium and the Materials Strategy Forum – two collaborative projects of leading engineering organizations that help to guide GRANTA MI development. We recommend that you upgrade to version 2.0 as soon as possible.

To install GRANTA MI please read the installation instructions available in the download. You will also need the alphanumeric key from your license agreement (and used in the download). If you have any problems, questions or feedback, please contact us at Granta:

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## Overview

GRANTA MI has a range of system modules supporting the workflow of different roles in materials and related engineering disciplines.

- MI:Server – the core of the system. All GRANTA MI components are built around this.
- MI:Server Configuration – a Windows® application for configuring the GRANTA MI system.
- MI:Viewer – displayed in standard web-browsers, this is the main interface. ‘Read mode’ is for standard search, browsing, and use of the data. ‘Edit mode’ enables editing.
- MI:Admin – a Windows application for database schema construction and maintenance.
- MI:Toolbox – a Windows application for import, export, or transformation of data within the system (formerly known as MI:Lab).
- MI:Lab Analysis – a test data processing option that works alongside MI:Toolbox:
  - tensile, compression, creep, stress relaxation data analysis.
  - low and high cycle fatigue, fatigue crack growth, fracture toughness data analysis.
- MI:Enterprise Materials Optimizer (EMO) – helps organizations to make strategic decisions relating to materials selection or substitution, and to implement these decisions enterprise-wide by providing their engineers and designers with web-based materials selection tools customized to the organization’s business rules.

Comprehensive descriptions of these tools and the combined capabilities of the resulting materials information management system are addressed in the accompanying documentation. Please refer to the User’s Guide and the Administrator’s Guide in the download.

### The main improvements in this release of GRANTA MI are:

- Version Control – at the record level enables a systematic approach to the control and presentation of changing data. See items (1, 6, and 17) below.
- Data Quality – A quality rating can be associated with items of data. See items (2, 7, and 12) below.
- Improved graphical user interface and data display – a clearer layout and new display options in MI:Viewer enhance usability and help users to navigate data. See item (8) below.
- Improved integration with CAD, FEA, and CAE software. See item (10) for details of Pro/ENGINEER Wildfire integration, available now. Granta will also shortly deliver plug-in integration to Abaqus/CAE – see the Granta website or contact Granta for details.
- New and updated reference data – new version of the MMPDS aerospace reference data, a new ASME Boiler and Pressure Vessel Code module, new data on plastics and stainless steels, and enhanced information on materials prices and eco properties. See the Reference Data section items (18 to 27) below.

These and other enhancements are detailed below. Descriptions are organized in sections according to GRANTA MI system modules. Customer support staff at Granta will be pleased to provide advice on optimizing the performance of your GRANTA MI installation.

## What is new in GRANTA MI 2.0?

This section details the enhancements in GRANTA MI 2.0 compared with the previous release, GRANTA MI 1.3.

### GRANTA MI system

#### 1. Version Control – at the record level:

Version control allows the tracking of changes to a record. The 'released' version of a record is the one that read users see by default. Users with write privileges may make ongoing changes to 'unreleased' versions. Once changes to an unreleased version are complete and approved, it becomes the released version. Previous released versions of the record are retained but become classed as 'superseded'. Users with appropriate access privileges can view these previous versions. Records can also be withdrawn from use. The login information of the user responsible for any change is also stored in the database and, optionally, notes may be added explaining any change. For more on how version control is experienced in the MI:Viewer and MI:Toolbox interfaces, see items 6 and 17 below.

Note that access control still applies to version controlled records.

- Version control is enabled on a per table basis in MI:Admin – i.e., administrators can choose to which parts of the database (if any) it is applied.
- All version control actions take place in MI:Viewer.
- MI:Toolbox tree displays version control information.
- The actions available depend on a user's privileges.

#### Benefits:

- Provides a systematic, fully configurable process for review and approval of data, and release to authorized users.
- Ensures that the full context for any change can be reliably documented.
- Stores all previous versions of data, together with its context, and allows authorized users to view this history – supports full traceability.

#### 2. Data Quality: A quality rating can be associated with an item of data.

A Quality Ratings System can be set up as a discrete or continuous system. In a discrete system the quality of a set of data is described using one of a user-defined set of values (e.g., these could be text strings such as "Excellent", "Good," "Poor" etc.). In a continuous system, quality is described using a numeric scale. A quality threshold can be set for both types of system, and data that does not meet the threshold may be highlighted when displayed in MI:Viewer (e.g., 'low quality' data could be made to appear red in a table) – see item 7 below for more on display.

- Quality Ratings Systems are set up in MI:Admin and assigned on a per table basis.

- Individual ratings are edited in MI:Viewer, and can be imported via the Excel Importer plug-in.

**Benefits:**

- Helps to ensure that data is only used for appropriate purposes.
- Can be configured to existing data quality systems – supports your current process.

**3. Speed optimization in GRANTA MI:**

Improvements have been made to the following areas since 1.3:

- Viewing static links on a datasheet.
- Cross tabular selections.
- Cross tabular x-y charts.
- Viewing data in cross tabular x-y charts.
- Creating and populating new records.
- The Excel Exporter plug-in in MI:Toolbox.
- Database caching (see item 5 below).

**Benefits:**

- Save time and experience greater interactivity working with materials property data.

**4. .Net Framework:**

- The GRANTA MI system can be used with the 3.0 or 2.0 version of the .Net Framework.

**Benefits:**

- Reduces the number of cases in which system components must be installed/updated to support GRANTA MI.

**5. Database caching:**

- The overall memory overhead during caching has been reduced, allowing larger databases to be cached.
- Synchronous caching is now enabled as the default, so only one database caches at a time. In association with other changes, this has made caching a database faster.
- Restarting MI:Server is now quicker due to the caches being loaded from disk if they already exist.

**Benefits:**

- Faster performance for large databases.

## GRANTA MI:Viewer

### 6. Version control in MI:Viewer:

- The browse tree displays version control information.
- Information on the history of a record and its data can be accessed from its datasheet. Users with appropriate authorization can navigate to previous versions and read information about the changes.
- Version control operations – e.g., to approve a record for release, or to withdraw it – are available in edit mode to users with the appropriate privileges.
- A filter tool allows users with grant or admin privileges to find records based on version control criteria – e.g., find all records released after a particular date.

#### Benefits:

- Allows use of the new version control feature (see item 1) via straightforward controls within the web browser user interface

### 7. Data quality in MI:Viewer:

- The quality rating for data is displayed with the data on the datasheet and reports.
- Display of quality ratings can be set as a user option.
- A threshold value can be set as a user option, overriding the default threshold value set in the database.
- Data that does not meet the threshold value can be highlighted (e.g., using color).
- Individual quality ratings can be edited by users with the appropriate privileges.
- Where data can be exported to CSV, e.g. for compare reports, the quality rating is exported with the data.
- An FEA exporter can be set to export quality ratings.

#### Benefits:

- Makes the new data quality feature useful by interactively displaying quality information to the user.
- User can easily identify data values that pass or fail a quality threshold, ensuring appropriate use of data.

### 8. Improvements to the graphical user interface:

- A completely new look and feel, with significant design changes to the toolbars and datasheets.
- Preferences page renamed to 'options'.
- Diagnostics page renamed to 'admin'.

**Benefits:**

- Enhanced usability and attractiveness – makes the software easier and more appealing to use. In particular, encourages occasional users to employ GRANTA MI as their source of materials data.

**9. Miscellaneous improvements:**

Other improvements to the application include:

- Browse
  - Clicking on a folder in the browse tree will expand/contract the node.
  - Access control messages are displayed on their own page.
- Report
  - Add to List available for a table i.e. you can add all records in the table to the report list with one click.
  - Add to List now available from some pages in Edit mode.
  - Records in the report list are hyperlinked to their datasheet.
- Editing
  - The default view for functional data can be edited: set to graph or table.
  - The access control settings for a record and its data can be changed together.
- Administration
  - Admin users can temporarily restrict their privileges for a database, in order to 'impersonate' other users.
  - User stylesheets.
- Use of AJAX improves the responsiveness of MI:Viewer.

**Benefits:**

- Browse changes make GRANTA MI more intuitive to use.
- Report changes make use of the report feature quicker.
- Editing and Administration changes support customization of GRANTA MI to organizational / individual needs.

**10. New Pro/ENGINEER Wildfire exporter:**

- New Pro/ENGINEER Wildfire exporter included for exporting MaterialUniverse, MMPDS design data, CAMPUS, and ASME data.

**Benefits:**

- Enhanced export capability to a leading CAD/CAM/CAE application.

11. The **Application home page** has a new features that enables a list of the current databases in the GRANTA MI system to be displayed.

**Benefits:**

- User can instantly see all available databases – especially useful for notification when new databases are added.

## GRANTA MI:Admin

12. The **Schema** tool has a number of new functionalities.

- Version control can be enabled for a table.
- Quality Ratings Systems can be set up for a database.
- A single quality ratings system can be assigned to a table.
- The connection information, that is, the user login and the MI:Server hostname, is shown in the title bar of the application.

**Benefits:**

- Support for the new version control and data quality features – administrative users can customize them to the needs of their organization.

13. Users with **Grant privileges** can use the Access Control Editor to edit the settings on records and data.

Note that Grant users still cannot edit the Access Control Schema.

**Benefits:**

- Allows more flexible control and use of the Access Control features.

## GRANTA MI:Toolbox

14. **Text Importer plug-in improvements:**

- Command line interface for the Text Importer uses the MI:Toolbox console. Some of the arguments have changed as a result.
- Improvements to the import of functional data – the ‘Replace / Merge’ options have been expanded to ‘Replace Record / Replace Data / Merge’.

**Benefits:**

- Improved support for running the Text Importer from the command line interface.
- Improved support for functional data.

**15. Excel Importer plug-in improvements:**

- Quality ratings can be imported.
- Improvements to the import of functional data – the ‘Replace / Merge’ options have been expanded to ‘Replace Record / Replace Data / Merge’.

**Benefits:**

- Support for the new data quality feature – in particular, allows ratings from existing quality systems to be imported to GRANTA MI.
- Improved support for functional data.

**16. Statistical Calculation plug-in improvements:**

- The user can select a layout, and the statistical calculation will only be applied to those attributes in the layout. This allows attributes with negative or zero data values to be excluded from geometric calculations, and avoids unnecessary calculations. It also allows different attributes to have different models applied to them.
- The user can select the static record link group to contain the links created during the calculation to link the summary and source records for the calculation.
- The date of the calculation is stored in a new meta-attribute.
- The statistical calculation is applied to existing quality ratings.

**Benefits:**

- Increases usability of the statistical calculations.

**17. MI:Toolbox improvements:**

- The connection information, that is, the user login and the MI:Server hostname, is shown in the title bar of the application.
- Improvements for version control:
  - Version control information is visible on the browse tree.
  - Unreleased and withdrawn records are only visible to users with the appropriate privileges.

**Benefits:**

- Allows appropriate use of the new version control feature (see item 1) via straightforward controls within the MI:Toolbox user interface.

## Reference data modules

### 18. 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.

### 19. New medical data in the MaterialUniverse.

- Two new materials, Nitinol (Ni45Ti) and Co-28Cr-6Mo.
- New attributes for metals used in permanent implants (radiopacity, MRI safety, sterilizability, and specific applications and medical tradenames).
- See also new data on medical polymers – item 20, below.

#### Benefits:

- 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.

### 20. New polymers data in the MaterialUniverse.

- Completely revised rubber section.
- A number of new elastomer chemistries added.
- Updated thermoplastic elastomers (TPE) section.
- New grades of medical plastics covered.
- Updated transparent plastics data, covering more properties and more materials.
- Better links to CAMPUS and IDES data (see items 24 and 25) sources allowing user to easily find specific grades, and medical 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.
- Upgrades support for some commercially-important classes of plastics – rubbers, TPEs, and transparent plastics.
- 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.

**21. New and updated eco attributes in the MaterialUniverse.**

- Improved existing eco attributes: embodied energies, CO2 footprints, recycling and processing energies, recycle fractions.
- New eco attributes: processing energies for more process types, CO2 footprints for processes and recycling, water usage.

**Benefits:**

- More extensive coverage of eco properties for reference and materials selection.
- Supports eco-design for lower carbon footprint and energy usage.

**22. 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.

**23. 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, and PDF copies of the original handbook pages, providing full traceability to the data source.
- 11 new alloys.
- Graphical data on strain-controlled fatigue (the source data is included as well as the best-fit curve).
- Graphical data on stress-corrosion cracking of steels.
- Graphical data on bending modulus and torsional modulus.
- Improved traceability of graphical data (a link is now shown between an individual graph and its Handbook source figure).
- New exporter to Pro/ENGINEER Wildfire and Patran.

**Benefits:**

- On-line access to the latest MMPDS-03 data – GRANTA MI helps organizations to share this data across groups and departments, provides 'live' data ready for analysis and use, and makes it easy to import this data directly to third party applications.
- Access to data for a wider range of material properties.
- Easier comparison of the Granta data module with the published Handbook.

**24. 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.
- New exporter to Pro/ENGINEER Wildfire.

**Benefits:**

- On-line access to the latest CAMPUS data.

**25. 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.

**26. New ASME Boiler and Pressure Vessel Code data module.**

Data from Part II-D of the code, relating to materials:

- 450 materials in 3200 records.
- Includes 'live' numerical data, and PDF copies of the ASME service book pages.
- Properties include maximum allowable stress, design stress intensity, tensile and yield strengths, thermal expansion and conductivity, Poisson's ratio, and typical physical properties such as density, melting range, and specific heat.
- Export to Abaqus, Ansys Workbench, Pro/ENGINEER Wildfire, and MatML.

**Benefits:**

- Easy online access to the American Society of Mechanical Engineers' authoritative data source on materials for power plant components (nuclear and conventional) and process industries (chemical, oil, and gas).
- Enables sharing of this data across groups and departments, provides 'live' data ready for analysis and use, and makes it easy to import this data directly to third party applications.

**27. Attribute Help Pages in the MaterialUniverse and ProcessUniverse.**

The content of the attribute information used to provide background scientific information in the MaterialUniverse and ProcessUniverse data modules has been enhanced.

- Descriptions for more 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.

## Issues Fixed in this Release

The number given relates to the internal tracing reference. Please use this if you need to contact Granta.

### MI:Viewer

11337/      After performing a cross-tabular selection, the cross-tabular criteria is retained.  
12778

### MI:Toolbox

11527/      Export to Creep Summary Module plug-in  
12765      When the “Remove Selected” button is used to remove records from the list, they are removed from view and the analysis.

## Known Issues

There are a small number of known issues with the software and its functionality in this release. A summary of these is given below. The number given relates to the internal tracing reference. Please use this if you need to contact Granta.

### Upgrading from GRANTA MI 1.3

- Backup** It is strongly recommended that you backup any custom files to a different directory before performing the upgrade.
- Database** It is strongly recommended that you backup your database before performing the upgrade. The database update is performed by the Installation Manager. In a few cases it may encounter some issues, if this happens, please contact Granta.
- If you are upgrading GRANTA MI 1.3 standard databases e.g. 'MI Starter Database', if these databases do not contain additional customer information that must be retained, Granta recommends that the new GRANTA MI 2.0 versions of these databases are used instead.
- FE Exporters** The GRANTA MI 2.0 FE Exporters will not be available for use with the upgraded GRANTA MI 1.3 standard databases e.g. 'MI Starter Database'. If these databases do not contain additional customer information that must be retained, Granta recommends that the new GRANTA MI 2.0 versions of these databases are used instead, for which the FE Exporters will be available.
- If you wish to use the upgraded v1.3 databases with the v2.0 FE Exporters, please contact Granta.

### Database import from CES to GRANTA MI

- 10181/  
12790 When a database is imported from CES to GRANTA MI, record link groups are not added automatically to the datasheet layout.
- The workaround is to use MI:Admin to add a record link group to a layout manually. Note that record link groups can now be added under any layout heading.

## MI:Viewer

- 10132/  
13462      The default limit for uploading a file using MI:Viewer is 4 MB. This limit is set by .NET. The limit is most relevant to pictures and embedded media files. Attempting to upload a larger file will result in an exception.
- A user with sufficient privileges can change the limit for GRANTA MI. Add the element  
<httpRuntime maxRequestLength="4096"/>  
inside the <system.web> element in the MI:Viewer web.config file. Change the maxRequestLength value as desired, note that the value is given in KB. (The default location of the file is 'C:\Inetpub\wwwroot\MI\web.config'.)
- 10189/  
12789      If a folder is converted to a record, its name is not indexed.
- 10562      Configuring MI:Viewer to use anonymous access fails because anonymous access is disabled in the main MI:Viewer configuration file.
- 11260/  
11427/  
12780      For float functional data that is set to show as a table by default, when the table view is filtered, the alternate graph view does not reflect the filter settings.
- 11380      After performing a selection, clicking the browser 'Back' button displays an error message in the left pane, replacing the selection results.
- 11550      In some circumstances, when the browser 'Back' button is clicked after displaying two (or more) datasheets in succession, the same datasheet is redisplayed. The workaround is to use the browser functionality to go back two pages.
- 12477      When a comparison table report is saved to Microsoft Excel, attempting to rename the worksheet results in an error message from Excel.
- The workaround is to save the workbook, this renames the worksheet with a valid name and it can then be renamed as required.
- 11228      Cookies shared across tabs in IE7. If you have more than one tab open for MI:Viewer and perform an action such as changing databases in one tab, you may experience problems if you go on to use the system in the other tab.
- The workaround is to only have one tab in IE7 open for MI:Viewer at a time.
- 13087      On the version control filter page, the date format given for the US locale is [M/d/yyyy] However, it will accept [MM/dd/yyyy]
- 13331      When copying and pasting graphics from MI:Viewer you may be asked for your GRANTA MI login information. This is because IE adds the URL of the image rather than the image itself to the clipboard.

## MI:Admin

- 10546 When an existing discrete value is renamed, and that value has been set for data in the database, the new name will not be searchable (in MI:Viewer) until the full text cache for the database has been regenerated.
- 12801 A version controlled table cannot be deleted.  
The workaround is to hide the table from users in MI:Viewer by editing the table properties in MI:Admin. Clear the 'Browse table' option and check the 'Hide table' option.

## MI:Toolbox

- 7729 Excel Importer or Excel Exporter plug-in  
If the client operating system (OS) is set to a French locale, but Microsoft Excel on the client OS is set to an English locale, the Excel Importer or Excel Exporter plug-in will report the following error when attempting to import or export 'Ancien format ou bibliothèque de types non valide' (Translation: 'Old format or invalid type library').  
This is an issue with Microsoft Excel, see <http://support.microsoft.com/kb/320369> for more information. - Can be fixed by installing the multilingual user interface pack.
- 7232 Excel Importer plug-in  
When importing data from an Excel workbook, an error occurs if the worksheet is incorrectly formatted. When identifying worksheets for import, the plug-in matches the worksheet name used in the Attribute Lookup worksheet on any part of the name. Therefore, if the workbook contains worksheets that are not intended for import, but have similar names, they may be erroneously matched.  
The workarounds are to identify worksheets for import by their index number, or to ensure that worksheets that are not for import have a completely different name.
- 13676 Excel Importer and Excel Exporter plug-in  
The Excel plug-ins will not work on the Microsoft Vista OS. This is a Vista security issue.

## MI:Lab Analysis

- Installation** When the MI:Lab Analysis add-ins are installed, they are only loaded as add-ins for the user who installed them. To register the add-ins for a new user, run the MILab1.4.4\_UserReg.exe, which is installed in 'Program Files\Granta\Granta MI\MILab1.4' directory.
- Compatibility** The MI:Lab Analysis modules are no longer compatible with the CES4 range of software. Data can only be imported and exported from GRANTA MI.
- Tensile Summary** Typical tensile curves generated by the MI:Toolbox 'Export to Tensile Summary Module' plug-in suffer from sharp corners and irregularities around the yield point. This only occurs for stress-strain curves that exhibit double yield point characteristics.
- Fatigue Crack Growth Analysis (7460)** FCG analysis - threshold calculation: When importing da/dn and DK data, if the analysis option to calculate the threshold is checked, in some cases the resultant threshold lies in the middle of the DK range rather than being in the region of its lower bound. This problem only occurs for decreasing deltaK test data. Automatic calculation of the threshold value cannot be used with decreasing deltaK test data. No such problem is encountered if the crack, load and cycle data are imported and da/dn and DK data are calculated by MI:Lab prior to the threshold calculation.
- Importing data (10236/7)** When importing data from the Compression and E561 Fracture Toughness module, errors may be reported.
- Microsoft Office 2007** Please note the MI:Lab Analysis is not compatible Microsoft Office 2007.