

READ THIS FIRST

PTC[®] Mathcad[®] 15.0 M045

Important Installation and Usage Information

Directory of Online and CD-ROM Information

Platform Support	http://www.ptc.com/partners/hardware/current/support.htm
PTC Mathcad Support Center	http://www.ptc.com/support/mathcad.htm
Reference Documents	http://www.ptc.com/appserver/cs/doc/refdoc.jsp

PTC[®] Introduces Mathcad 15.0 M045

PTC is pleased to present Mathcad 15.0 M045. This maintenance release builds on features introduced in Mathcad 15.0 F000 by providing a number of important fixes.

Mathcad 15.0 M045 Features

Fixes to Known Mathcad 15.0 M040 Issues

This maintenance release features a number of important fixes for issues found in the Mathcad 15.0 M040 release. Refer to Notable Fixes for Mathcad 15.0 at the end of this document.

Microsoft Windows 8.1 Support

Windows 8.1 is now a fully supported platform for Mathcad 15.0 M045. Windows 7.0 continues to be supported. Windows XP, following Microsoft's lead, is no longer supported.

MSXML 6.0 Support

Mathcad 15.0 M045 now supports MSXML 6.0, replacing MSXML 4.0. MSXML 6.0 is included with the installation of Windows 7.0 and Windows 8.1.

Converter Support for MCDX Format

Mathcad 15.0 M045 is necessary to convert all previous Mathcad worksheets to Mathcad Prime 3.1 MCDX format. To convert your worksheets to MCDX format, you must have Mathcad Prime installed.

Mathcad 15.0 F000 Features

Design of Experiments (DOE) Functions and Plot Types

With the DOE functions, you can construct design matrices, analyze and screen factors, develop statistical models, and perform Monte Carlo simulations.

The following functions were added: `anova`, `block`, `boxbehnken`, `boxplot`, `boxwilson`, `doelabel`, `effects`, `foldover`, `fractalalias`, `fractfact`, `fractresol`, `fractruns`,

Copyright © 2015 PTC Inc.

November 2015
English

Read This First
Mathcad 15.0 M045

fullfact, graphBoxplot, graphEffects, LogNormal, montecarlo, mtaguchi, multidfit, Normal, pareto, plackettburman, polyfit, polyfitc, polyfitstat, quickscreen, randomize, taguchi, Uniform, Weibull

You can now create 2D plot representations such as box plots, Pareto plots, and effect plots, which represent DOE processes.

Microsoft Excel 2007 Support

Various components that previously supported only Microsoft Excel 2003 .xls format can now handle Microsoft Excel 2007 .xlsx and .xlsm format.

- New `READEXCEL` and `WRITEEXCEL` functions to read and write data to and from Excel 2007 file format
- New `READCSV` and `WRITECSV` functions for access to data files in comma-separated value format

New Integrated Capabilities from Mathcad Partners

Mathcad 15.0 offers integrated capabilities and access to rich engineering and analytical toolsets provided by the following strategic Mathcad partners:

- Kornucopia®—Offers a broad collection of functions and interactive templates specifically designed to easily and quickly blend Experimental Data, Simulation Results (FEA and others), Analytical Calculations, and Analysis Algorithms into more accurate, reusable, well documented Mathcad worksheets.
- Truenumbers®—Register to download and install the Truenumbers application and plug-in. They allow you to turn Mathcad numbers into Truenumbers for use in Microsoft Office or on the Web.

To access these toolsets, click the Mathcad **Tools** menu.

Installing Mathcad 15.0 M045

For the most up-to-date installation information, see the *Mathcad 15.0 Administrator's Guide*. You can find the guide in the installation CD and on the **Reference Documents** page at <http://www.ptc.com/appserver/cs/doc/refdoc.jsp>.

Note: The latest version of the guide is the Mathcad 15.0 M020 Administrator's Guide. That version of the document is also valid for the Mathcad 15.0 M045 release except for the operating system support. The operating system support in this document supersedes the operating system support in the guide.

Coexistence with Previous Versions

If you have Mathcad 15.0 F000, Mathcad 15.0 M005, Mathcad 15.0 M010, Mathcad 15.0 M020, Mathcad 15.0 M030 or Mathcad 15.0 M040 installed, PTC recommends that you upgrade to the latest version and not uninstall the prior one first. This method saves the user-defined settings. Previous versions of Mathcad are automatically removed from the system during the upgrade.

Mathcad 15.0 M045 cannot be installed on a workstation currently running Mathcad 14. Mathcad 14 must be uninstalled before installing Mathcad 15.0 M045. If you do not uninstall Mathcad 14, the Mathcad 15.0 M045 installation process backs-up your E-books, templates, and user-defined DLLs; removes Mathcad 14; and then installs Mathcad 15.0 M045.

You can however install Mathcad 15.0 M045 alongside any version of Mathcad Prime and Mathcad 11, 12, and 13. You do not need to uninstall these versions of Mathcad before you install Mathcad 15.0 M045, nor does installing Mathcad 15.0 M045 automatically remove these Mathcad installations.

Note: After Mathcad 14 is uninstalled, you should run a repair of Mathcad 11, 12, and 13 in that order if you have those versions installed.

Restoring Mathcad 14.0 and Mathcad 15.0 Customized Information

When you uninstall Mathcad 14.0 or Mathcad 15.0, your electronic books, user-defined DLLs, and any templates you have created are automatically backed up. To move the backed up files to the Mathcad 15.0 M045 installation directory, follow these steps:

1. **Open the folder %AppData%\Mathcad\14\Installation Backup. For example, D:\Users\jsmith\AppData\Roaming\Mathsoft\Mathcad\14\Installation Backup. Verify that it contains the following subfolders: handbook, template and userefi.**
2. **Copy all template files (*.mct) and subfolders from the Installation Backup\template folder to C:\Program Files (x86)\Mathcad\Mathcad 15\template\<language>. For example, for English, the folder is EN. You must paste the files into their corresponding subfolders.**
3. **Copy all user-defined DLLs and subfolders from the Installation Backup\userefi folder to C:\Program Files (x86)\Mathcad\Mathcad 15\userefi. You must paste the files into their corresponding subfolders.**
4. **To restore all your previously installed handbooks:**
 - a. **Open the folder %AppData%\Mathcad\14\Installation Backup\handbook. For example, the folder D:\Users\jsmith\AppData\Roaming\Mathsoft\Mathcad\14\Installation Backup\handbook contains the ROARKS.HBK and ROARKS folder.**
 - b. **Copy all *.hbk files and the corresponding E-books subfolders under the Handbook folder to C:\Program Files (x86)\Mathcad\Mathcad 15\handbook.**

For example, the ROARKS.HBK and ROARKS subfolder under D:\Users\jsmith\AppData\Roaming\Mathsoft\Mathcad\14\Installation Backup\handbook folder must be copied to C:\Program Files\Mathcad\Mathcad 15\Handbook.

You should now be able to open your previous Mathcad E-books from **Help > E-books**.

Contact technical support if you want to point to those E-books in an alternative location.

Documentation

To access Mathcad documentation from the PTC website, you must have a PTC account.

Licensing

Licensing options include commercial via a server or locked node, academic, and trial licenses.

Operating System Support

Operating System	Version
Microsoft Windows 7	Windows 7 Home Premium Edition, Windows7 Professional Edition, and Windows 7 Ultimate Edition, Base OS (x32 or x64 editions), Internet Explorer 7.0 SP1 or later
Windows 8.1	Windows 8.1, Windows 8.1 Pro and Windows 8.1 Enterprise. Base OS (x32 or x64 editions), Internet Explorer 7.0 SP1 or later

System Requirements and Hardware Certification Information

The Mathcad installation process requires 1.75 GB hard disk space as follows:

- 350 MB on the drive to install the program
- 700 MB on the drive containing the %temp% folder
- 700 MB on the drive containing the %windir% folder

When the installation process is complete, the installer removes all data from the %temp% and %windir% temporary folders. Refer to the Technical Support Knowledge Base at <http://www.ptc.com/support/mathcad.htm> for more information.

Visit the **Platform Support** page for Mathcad 15.0 M045 for current system requirements and certified hardware configurations:

<http://www.ptc.com/partners/hardware/current/support.htm>

Interoperability

PTC Product	Interoperability with Mathcad 15.0 M045
Creo™ Parametric 2.0/3.0	Asynchronously map Creo Parametric input and output parameters to associated Mathcad variables from within the Mathcad Analysis Feature interface within Creo Parametric.
Creo Elements/Pro™ 5.0 (formerly Pro/ENGINEER® Wildfire®)	Asynchronously map Creo Elements/Pro input and output parameters to associated Mathcad variables from within the Mathcad Analysis Feature interface within Creo Elements/Pro.
Windchill Workgroup Manager (Windchill PDMLink®, Pro/INTRALINK®, Windchill ProjectLink™)	Work directly from Mathcad with these products. For example, you can check in and checkout files to Windchill, and you can open and save your Windchill files from Mathcad. Maintain revisions and client-side viewables, and retain necessary file associations.

Language Support

The Mathcad 15.0 M045 user interface is localized into French, German, Italian, Spanish, Japanese, Korean, Simplified Chinese, Traditional Chinese and Russian. The Online Help, Resource Center and documentation are localized into all languages with the exception of Russian. The only documentation localized for Russian is the Mathcad 15.0 User's Guide.

Note: The Mathcad 15.0 M010 versions of the User's Guide and Getting Started Guide are still valid for Mathcad 15.0 M045. The Mathcad 15.0 M020 Administrator's Guide is still valid for Mathcad 15.0 M045 except for operating system support. The operating system support in this document supersedes the operating system support in the guide.

Keyboard Shortcuts

The keyboard shortcuts for each language are linked from the main table of contents for **QuickSheets** and **Tutorials**, under the **Help** menu.

Notable Fixes for Mathcad 15.0

Customer-reported issues that were fixed with the Mathcad 15.0 releases follow:

SPR Number	Description
Mathcad 15.0 M045	
2879283	Fixes issue with Mathcad 15.0 M040 in handling matrices with 256 or more elements
4449605	Fixes Save as HTML issue in Mathcad 15.0 M040
4888389	Fixes worksheet corruption issue after performing Save as Web Page
4868981	Fixes 3D plot partial display issue
Mathcad 15.0 M040	
2227961	Fixes an installation issue with registry key for IMathcadRegion3 interface
2223681	Fixes an issue leading to the error 'This calculation does not converge to a solution' and no related graphs created
2193279	Fixes an issue where Mathcad keeps on calculating while solving specific set of equations symbolically
2211751	Fixes an issue where Mathcad 15.0 M020/M030 takes very long time to complete the calculations compared to datecode M010
2206796	Fixes an issue where Mathcad fails to open specific data with error 'Mathcad Application has stopped working'
Mathcad 15.0 M030	
1519535	Fixes a calculation issue with certain integral routines not converging to a solution by adjusting the TOL value and allowing you to manually set the TOL for the integrator
1821593	Fixes an issue for calculating the determinant of small matrices
1863725	Fixes an issue where the userdll header did not protect input arrays such that, during coding of a dll, the program was able to overwrite input array contents
1906857	Fixes an inline evaluation issue in a FOR loop with more than 999 iterations
1969684	Fixes a calculation issue when solving a specific equation
1996504	Fixes a calculation issue with complementary error function erfc

2035504	Fixes an issue on Windows 7.0 involving the display of Mathcad document types on the desktop shortcut menu command New
2115488	Fixes a calculation issue with an incorrect integral result
2124174	Fixes incorrect description of the function Odesolve in the Insert Function menu
2133542	Fixes a calculation issue giving incorrect results for a specific symbolic integral
2149249	Fixes an issue when using large datasets with the function WRITEEXCEL
2162871	Fixes an issue with Trace operation on 2D plots
2172775	Fixes a zombie process issue that affected the conversion functionality to PTC Mathcad Prime
2172778	Fixes a memory leak issue that affected the conversion functionality to PTC Mathcad Prime
2183809	Fixes an issue with Mathcad installation that impacted Windchill integration
2188982	Fixes a WRITEEXCEL function output that resulted in an array index error
2189469	Fixes a calculation error when replacing a string in a vector with a scalar
2190598	Fixes a calculation error with solve block function Find when using stack command
2194727	Fixes an issue with overlapping regions on opening worksheets with OLE objects that do not have the associated application
2194733	Fixes a calculation issue with a specific indefinite integral
2202079	Fixes a calculation issue when symbolically solving specific integrals
2202083	Fixes a zombie process issue that affected the conversion functionality to PTC Mathcad Prime
Mathcad 15.0 M020	
1425866	Fixes an issue with incorrect results for the invlaplace transform
1453863	Fixes an issue involving the display of floating toolbars when more than one screen is involved

1943125	Fixes memory issues that occur while performing multiple recalculations of a program that reads or writes data to an external data file
2008206	Fixes an issue in which, after renaming a defined variable, Mathcad continues to treat certain later references to variables with the old name as if they were still defined
2015694	Fixes a crash when you attempt to open an e-book from a local folder where the maximum filename size is exceeded
2018490	Fixes an issue with worksheet corruption with the normal <code>find</code> function
2035300	Fixes a crash when you select and copy specific regions in a worksheet
2047116	Fixes a memory issue resulting in crash in certain copy and paste operations
2048135	Fixes an Out of Memory error for specific symbolic calculations
2058106	Fixes a failure to borrow a license when you install Mathcad silently
2060257	Fixes a crash when Mathcad tries to solve a specific complex equation
2070478	Fixes a memory leak issue when you manipulate RGB images
2086451	Fixes a crash that occurs while Mathcad solves a particular set of calculations symbolically
2097699	Fixes a crash when you select and copy specific regions in a worksheet
2101947	Fixes an internal error when Mathcad tries to calculate a specific worksheet
2103837	Fixes a crash caused by the use of a particular invalid syntax (nested matrices) within a request for a symbolic solution
2104207	Fixes the calculation of A_i , B_i , DA_i , DB_i and their scaled counterparts when these functions occur in chained symbolic calculations
2109282	Fixes a problem where “partial derivative” display format for certain derivatives was lost when the worksheet was saved and reopened.

2109574	Fixes a worksheet corruption issue related to circular chain of style definitions
2111700	Updates the unhelpful error message <code>This function cannot be used here</code> with a more helpful message when you use the <code>statespace</code> function with certain improper arguments
2112709	Fixes incorrect computation of symbolic limits in certain very specific situations
2118368	Fixes an incorrect result when you are evaluating the <code>rref</code> function numerically for a specific nonsquare matrix
2121711	Fixes a problem where certain controls were missing in the interactive dialog for customizing 3D plots in Simplified Chinese
2124483	Fixes a calculation error with the <code>gcd</code> function
2140151	Addresses a compatibility issue with Windows 7 Aero-enabled themes
2145756	Fixes a problem where the <code>WRITEEXCEL</code> command hangs when writing to large files
2145757	Fixes the calculation of the <code>polyfitc</code> function so that when calculating the p-value for coefficients with negative T-values, the absolute value to the T-value is used
2146795	Fixes memory leak issues involving the <code>MathcadArrayFree</code> API available to user-defined DLLs
2146985	Fixes a file conversion issue related to memory errors
Mathcad 15.0 M010	
1412775	Fixes a problem with symbolic calculation of a single line definition and evaluation combined with units
1417879	Addresses a false error message that appears when symbolically evaluating $e/n!$ from $n=1$ to infinity
1858746	Addresses a problem with an unchanging cursor during worksheet recalculation
1893304, 2056070	Addresses a problem with a combination of an inline evaluation containing units and a symbolic evaluation that is followed by numerical evaluation
1971427	Addresses a problem with the display of the Mathcad file icon when opening a file in some languages from a CAD application

1971450	Addresses a problem with opening a file from Mathcad in some languages
1990321, 1990338, 1990387, 1990725	Addresses a problem with missing information in the setup license agreement of the Excel add-in
1992079	Fixes a problem with sending an unsaved Mathcad file
1999572, 2073923	Fixes a problem with accessing handbooks that were downloaded for Mathcad 14.0 after upgrading to Mathcad 15.0
2003017	Resolves a problem with missing search criteria in Windows XP after installing Mathcad 15.0
2007304	Fixes a problem with assigning data to a variable using an Excel component and an existing Excel 2007 file
2013054	Fixes a problem with <code>rref</code> function calculation
2015172	Addresses a problem of an inaccurate message about Mathcad adapters and an inaccurate tooltip
2031800	Fixes a problem with a duplicated PTC Places icon in the Open File dialog box
2031831	Fixes a problem with WRITEEXCEL function where decimal numbers are converted to strings if Windows is set to use a decimal comma
2035004	Fixes a problem with PDM actions that were missing in Mathcad
2035612	Fixes a problem with adding a row to a matrix that was pasted from Excel 2007
2045673	Addresses a problem with missing product code text boxes in some languages in the license wizard
2046815	Addresses an installer issue for untranslated dialog boxes for some languages
2050585	Fixes the problem with the installer deleting the user templates and DLLs while upgrading from Mathcad 15.0 F000 to Mathcad 15.0 M005
2053486	Fixes a crash that occurs when opening Mathcad under a Windows account name with double-byte characters
2055836	Addresses a problem with unavailable controls in the Overview and Quick Tour of Mathcad tutorial specifically in the Automation Example

2062986	Fixes a problem of different results for <code>VHlookup</code> and <code>Vlookup</code> deprecated functions in Mathcad 15.0 and in Mathcad Prime 1.0
2063201	Fixes a problem with density calculation for Chi-squared probability
2067322	Fixes incorrect results returned by the <code>eigenvals</code> function for skew symmetric matrices
207393	Addresses an issue of backing up and restoring Mathcad 14 E-books, templates, and user-defined DLLs after installing Mathcad 15 M010
Mathcad 15.0 M005	
1863876, 1980262	Addresses the problem of a Mathcad process running after exiting a Mathcad session
1998193	Fixes incorrect search results in a search of the Resource Center
2012625, 2063227	Fixes the problem of illegal Anova function calculation
2014092	Resolves a problem with opening a file containing an Excel component that cannot be loaded
Mathcad 15.0 F000	
N/A	Resolves all reported compatibility issues with Windows 7
1401398	Fixes the incorrect Invlaplace transform result Mathcad returns for simple rational function
1406906	Fixes a problem in automation involving setting the value of Greek letters
1425866	Fixes specific incorrect results from inverse Laplace transform.
1454096	Resolves a problem borrowing the last license from a pool of Mathcad licenses
1507803	Fixes a specific memory leak problem
1611658	Enhances the <code>eigenvals</code> and <code>eigenvec</code> functions for handling special cases of real symmetric and Hermitian matrices
1703193	Addresses a calculation problem that occurs when parsing or displaying a cross-product equation
1734123	Extends the <code>rref</code> function to accept matrices of symbolic expressions, not just scalars

1743813	Fixes a problem related to the export of data tables containing integers and strings from Mathcad to Excel
1744290	Fixes a problem of incorrect result for symbolic definite integral involving the <code>sin</code> function
1751901	Addresses a problem of incorrect result for the definite integral of $A \cdot \sin(2 \cdot \pi \cdot t / T)$ between 0 to $T/2$
1773587	Fixes a performance problem related to embedding a Mathcad object in an Excel file
1779509	Fixes a problem related to delete and insert elements on a matrix that is copied from Excel
1779925	Fixes a problem with Print and Print Preview in specific situations involving the Microsoft Multilingual User Interface
1792234	Corrects erroneous results when Mathcad multiplies uneven arrays by truncating the calculations
1815545	Fixes a problem with silent installations of Mathcad under the Windows Vista operating system
1841454	Resolves a problem related to saving a <code>.mcd</code> file as <code>.xmcd</code>
1863876	Corrects a situation where <code>mathcad.exe</code> continued to run after exiting
1905987	Fixes an incorrect result for a definite integral involving the <code>sin</code> function
1906846	Addresses a symbolic solve issue that causes stack overflow memory problems
1939524	Fixes a result from the inverse Laplace transform

©2015 PTC Inc. The information contained herein is provided for informational use and is subject to change without notice. The only warranties for PTC products and services are set forth in the express warranty statements accompanying such products and services and nothing herein should be construed as constituting an additional warranty. PTC shall not be liable for technical or editorial errors or omissions contained herein. Important Copyright, Trademark, Patent, and Licensing Information: See the About Box, or copyright notice, of your PTC software. 01012015