TeXsword

Version 0.8

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TeXsword is a macro package for Microsoft WordTM that allows one to:

1. Insert equations with labels (bookmarks). Equations can be referenced further on and are automatically numbered.
2. Use LaTeX to typeset equations.

TeXsword is free software: it is released under the terms of the GNU General Public License version 2 or later.

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## I don’t have time to read all that text below

Then, a very brief installation procedure and hints about usage:

1. Install MikTeX ([www.miktex.org](http://www.miktex.org)) or texlive (<http://www.tug.org/texlive/>), make sure you can run latex and dvipng from a command prompt.
2. Close all MSWord windows. Copy texsword.dotm (for MSWord version 2007 and later) or texsword.dot (for older MSWord versions) into the StartUp directory of MSWord (probably, in “C:\Documents and Settings\<your\_user\_name>\Application Data\Microsoft\Word\STARTUP” or “C:\Users\<your\_user\_name>\AppData\Roaming\Microsoft\word\STARTUP”).
3. Start MSWord. You will see the texsword buttons in the Add-Ins ribbon (starting from MSWord 2007) or in a new “tools panel” (for older MSWord versions).
4. Optional: Click on “insert equation” button screenshot_toollbar. Assign a “label”, which later can be used to refer to the equation.
5. Click on TeX button, type in your equation. Click Run LaTeX.
6. To modify an existing equation, double click on it or select it and click the TeX button.
7. To insert a reference to an existing equation, click on (1) button and choose the right label from the list.
8. Enjoy!

Note: Staring from version 0.8, support for the older style texsword.dot is discontinued. The file texsword.dot is still included in the distribution, but contains the version 0.7 of the software. Please use texsword.dotm.

# Installation

TeXsword “distribution” includes the following ﬁles:

texsword.dotm MSWord template ﬁle, new version (Word 2007 and up)

texsword.dot MSWord template ﬁle, old version (before Word 2007)

not supported anymore, frozen at TeXsword version 0.7

texsword\_readme.docx the ﬁle you are reading now

texsword\_equation\_test.docx MSWord document showing some features of TeXsword

gpl-2.0.txt text of the GNU General Public License version 2

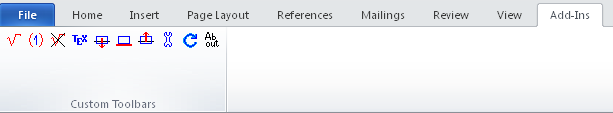
## MSWord template

### Word version 2007 or later

Copy the macro-file texsword.dotm (MSWord macro-enabled template) to the StartUp directory. To find out where it is,

* Click on the **File** ribbon (Office 2010) or **Office button** (Office 2007)
* Click **Options**
* Click **Advanced**
* Scroll down and find a button **File Locations**. Click on it.
* Find **Startup** folder in the list of the Word system folders.
* Remember where it is and close the Word. Copy the file.

If everything went well, upon next Word launch you will see the TeXsword buttons in the Add-Ins ribbon.



### Word version before 2007

Note: Staring from version 0.8, support for the older style texsword.dot is discontinued. The file texsword.dot is still included in the distribution, but contains the version 0.7 of the software. Please use texsword.dotm.

Copy the macro-ﬁle texsword.dot (MSWord template) to the StartUp directory. To ﬁnd out where it is, look in Tools→Options→FileLocations→StartUp in MSWord. Then launch MSWord. If you do not want the template to be loaded automatically, just double click on the texsword.dot ﬁle icon.

If everything went correctly, one should see the TeXsword toolbar[[1]](#footnote-1).

screenshot_toollbar

### TeXsword buttons

Meaning of the buttons is described in more detail later on in the document:

screenshot_toollbar aka [ins Eq](#buttonsinsEq) insert a displayed equation

screenshot_toollbar aka [ins Ref](#buttonsinsRef) insert reference to an existing equation

screenshot_toollbar aka [del Eq](#buttonsdelEq) delete a displayed equation

screenshot_toollbar aka [TeX](#_Equation_Typesetting_(With) insert TeX code

screenshot_toollbar aka move an inline equation 1 point up/down or to the “0-baseline”

[-1 0 +1](#buttons10)

screenshot_toollbar aka [opts](#_Customizing_TeXsword) edit options

screenshot_toollbar aka [upd all](#buttonsupdall) update all formulas in the current document

screenshot_toollbar aka About show some information about the program

## LaTeX and dvipng

Install LaTeX (texlive or MikTeX is a good choice) if you plan to typeset equations in LaTeX (but you do plan to, right?).

- A very complete distribution called “texlive” can be obtained from www.tug.org/texlive/ .

- Alternatively MikTeX distribution can be obtained from [www.miktex.org](http://www.miktex.org) .

- If you already have LaTeX installed, you do not need to install it again.

For our purposes, start with a *basic install*: LaTeX and dvipng as well as quite some basic styles and fonts are included in there. The only strongly recommended extra package is txfonts. If you plan typeset documents in Arial or Palatino, install arev and mathpazo as well[[2]](#footnote-2).

To install extra packages, run the MikTeX Settings utility (Start → Programs → MikTeX → Settings), choose the tab “Packages”, and select txfonts (arev, etc) in the “Fonts → Outline Fonts” group. Pressing “OK” will do the rest. Note that arev requires also some other packages – if everything goes right, they should be installed automatically.

Note for the earlier version users: Since version 0.6 you do not need Ghostscript anymore: dvi is converted directly to PNG by dvipng, which is included in MikTeX distribution.

Just in case something went wrong – set the PATH by hand. Find out where latex.exe and dvipng.exe have been copied to and add the full path to their location to the PATH.

* On a WinXP machine, go to Start → Settings → Control Panel → System → Advanced and press the button “Environment Variables”.
* On a Win7 machine,
  + select Computer from the Start menu,
  + then “System Properties“ from the context menu,
  + click Advanced system settings, Advanced tab
  + click on “Environment variables”, under System variables
* Add the location of the LaTeX and dvipng executables, e.g.

D:\bin\MiKTeX2.5\miktex\bin

Important note:

Version 0.6 of this software has been tested under Windows XP SP2 using Microsoft Word 2003, MikTeX versions 2.8.3582-portable (basic install + txfonts + arev + mathpazo).

Version 0.7 of the package has been tested under Windows 7 using Microsoft Word 2010 and texlive 2013 distribution, full install.

Please, let me know if you get it working under other Windows or MSWord versions. Mac OS X port would be appreciated.

# 

# Terminology

As far as TeXsword was initially meant for LaTeX users who wanted (actually, were forced) to use MSWord, we shall adopt the terminology generally used by TeXnics.

Inline equation is an equation “in line” with the text, as this one %FontSize=12
%TeXFontSize=12
\documentclass{article}
\pagestyle{empty}
\begin{document}
\[
E=mc^2
\]
\end{document}. They are not numbered and are generally not referred to.

Displayed equations are printed in between the text lines like the one below

|  |  |  |
| --- | --- | --- |
| %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty} \begin{document} \[ %--  here is my equation -- E = h \nu %------------------------------- \] \end{document}. | ZEqn1 | (1) |

Generally, they are numbered (or “labeled”) and can be referenced as “see ()”. Of course, displayed equations without label can be used as well

|  |  |  |
| --- | --- | --- |
| %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty} \begin{document} \[ E = \hbar \omega \] \end{document}. |  |  |

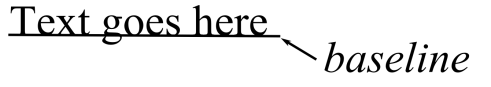
Label (it is called a bookmark in MSWord) is not the same as the number, which you see next to the equation . It is a unique name (in our example above, “ZEqn1”: use “Show All” ¶-button in MSWord to see it) assigned to an equation. Actually, you assign the name (*label*) and TeXsword will automatically “number” it.

If one adds a numbered equation above eq. (), the *number* of equation () will change (it will become 2 automatically) but the *label* will stay the same. The advantage of using labels instead of typing the numbers directly is that every time an equation is added, you need not to renumber all the other equations by hand – it will be done automatically.

Reference points to a numbered (labeled) equation. In fact, when inserting a reference, one must always use the corresponding label, not the number. Apparently, only “labeled” equations can be referenced. You always refer to an equation by “name” (label), the corresponding number will be inserted by TeXsword automatically.

If a new equation is added somewhere above eq. , not only the equation number (to the right of the equation) will change automatically but also all references to it. Equation label will always stay the same!

Baseline What baseline means is explained in the picture below:



# Usage

## Equation Numbering and Referencing (Without LaTeX)

Without LaTeX, TeXsword helps the end user to manage equation positioning and numbering. Three basic operations are provided:

screenshot_toollbar “Insert displayed equation” (“ins Eq” button, shortcut Alt+E) inserts a one-row table and labels it, as below

|  |  |  |
| --- | --- | --- |
| E = h nu. | ZEqn2 | (2) |

It also asks for a label-name and provides a default value of the form “ZEqnX” (where X=1,2,3…) – if you do not like it, type any other name, e.g., “myeq”, and click on Insert button. The macro may reject the name you propose if it has been used already or if it contains some special characters. Then you have to choose another label-name.

In the document, each *label-name* is “shown” as a hidden text: use “Show All” ¶-button to display it. One may not change the label after an equation has been created! Equation *number* is assigned automatically and will be changed automatically if you add an equation somewhere above the current one.

“Ins Eq” button does not insert the formula itself but only creates a well-formatted equation-table and labels it. In fact, it is absolutely irrelevant what the user inserts in the ﬁrst column of the “equation-table”: it can be a simple text as in (), Equation Editor Object as in () or a LaTeX generated formula as in ().

|  |  |  |
| --- | --- | --- |
| . | ZEqn3 | (3) |

If no label is needed (unlabeled displayed equation, like “equation\*” in LaTeX), just delete the content of the second and the third columns by hand.

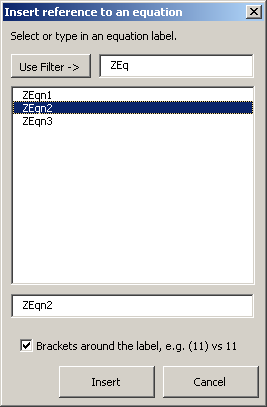
The equations table is formatted in such a way that its sizes change to ﬁt the page width automatically. So, you are not supposed to change it manually.

screenshot_toollbar“Insert reference” (“ins Ref” button, shortcut Alt+R) is used to insert a reference to an (already existing) equation. Put the cursor at the place you want to insert the reference to and press “ins Ref”-button or Alt+R. You will see a list of bookmarks (labels) you can reference to. Not necessarily all of them are equation labels. So, a ﬁlter can be used to show only some subset of bookmarks. For instance, if you start all equation labels with “eq”, e.g. like in eq23, then typing “eq” (without quotes) in the “Use Filter”-box and pressing “Use Filter”-button will display all the labels, which contain “eq” in their names. Attention: the ﬁlter is *case sensitive*!

If you remember the name of the label, just type it in the text box below the labels list – sometimes it is faster than searching in a long list.

The checkbox “Brackets around the label” inﬂuences the reference to be inserted. If checked, a reference like (1) will be produced (brackets can be also manually deleted afterwards). If not checked, a reference without brackets is produced, like here 1.

When a label is chosen, click “Insert”



screenshot_toollbar “Delete Equation” (“del Eq” button, shortcut Alt+Del) deletes a displayed equation. In fact, it just deletes (one and the only row of) the corresponding “equation-table” together with all bookmarks and stuff in it.

Important Notes:

1. Labels, ones assigned, cannot be changed anymore. So, if you decide to change a label, just create a new displayed equation (“insert equation”) and move the content of the old one there. However, the references to the old label will not be directed to the new one automatically!

2. When you delete a label, the corresponding bookmark is deleted as well. So, you will get “Error! Reference source not found” instead of a references to a nonexistent label.

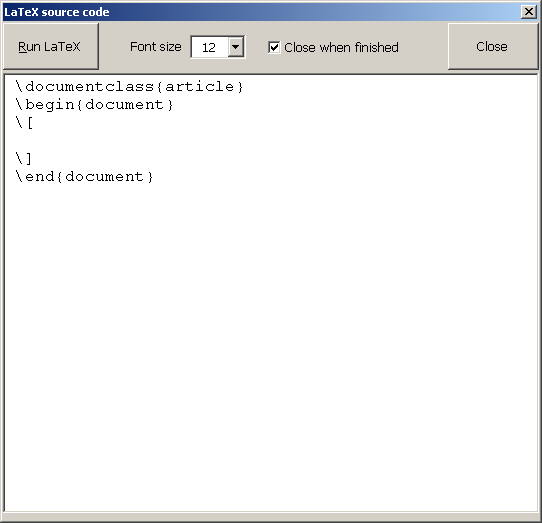
3. Sometimes, if one inserts a new equation somewhere above already existing equations, MSWord does not update the numbering automatically. Use “Print preview” to force MSWord to do so.

## 

## Equation Typesetting (With LaTeX)

In this section, it is assumed, that LaTeX (e.g., MikTeX or texlive) is installed and functions well. All the methods of the previous section still should be used for the equation numbering and referencing. Extra capabilities allow one to typeset equations in LaTeX.

screenshot_toollbar “TeX equation” (“TeX” button, shortcut Alt+T): when pressed, the following window pops up



Type the formula and press “Run LaTeX” (shortcut “Alt-R”). Do not get scared when you see a “DOS window” with some programs running: these are LaTeX and dvipng. A PNG-picture will be generated and inserted in the current position as an InlineShape.

The font size will be automatically set to the font size of the surrounding text. If necessary, modify it.

To edit an existing LaTeX formula, double click on it or select it and press “TeX” button.

It is also possible to select some text, like E=h \nu before pressing “TeX”. The text will be inserted into the TeX-source window automatically. After pressing “Run LaTeX” or “Alt-R”, the corresponding picture will substitute the selected text.

Important Note:

During translation of the LaTeX code into PNG graphics, external programs are run. If something goes wrong and they hang, the script will wait for 30 seconds and complain. It may happen that one needs to kill a hanging external program (e.g., LaTeX) manually by closing its window.

LaTeX equation can be inserted both as displayed math (see section “Insert displayed equation” above) and as an inline equation. In the latter case, however, it will probably be misaligned with the rest of the text. At the moment, it is only possible to correct this manually: use the buttons “-1” and “+1” to move the equation (picture) one point down or up, respectively. The button “0” aligns the bottom of the picture with the baseline of the surrounding text. The shortcuts are “Alt+↓”, “Alt+↑” and “Alt+0”, respectively.

Important note:

The bottom of a picture is not always the same as the baseline of the formula it displays; for example, the bottom and the baseline are *almost* the same in case of this formula  but are quite different for . To make it look better, the latter equation needs to be moved 2 points down: . Unfortunately, MSWord disallows one to move the baseline by a fraction of a point, so the alignment of the inline formulas is never perfect.

In fact, not only equations but any LaTeX’able code can be translated into PNG using %FontSize=12
%TeXFontSize=12
\documentclass[12pt]{article}
\begin{document}
\thispagestyle{empty}
\TeXsword
\end{document}. For instance, to produce logos, e.g. %FontSize=12
%TeXFontSize=12
\documentclass[12pt]{article}
\begin{document}
\thispagestyle{empty}
\LaTeX
\end{document}, or even quite large pieces of text:

%FontSize=12
%TeXFontSize=12
\documentclass{article}
\pagestyle{empty}
\begin {document}
\noindent
This is some piece of text typeset in \LaTeX.\\
It can be easily inserted into Microsoft Word{\texttrademark } using \TeXsword.
\end{document}

Tip:

Try using \usepackage{txfonts}. Note that it is not a part of the basic MikTeX install. Standard CM TeX fonts look thinner than, e.g. Times New Roman used in MSWord.

Starting at version 0.3, using txfonts has become default. To change it, go to “Optionsscreenshot_toollbar![%FontSize=12
\documentclass[12pt]{article}
\usepackage{amsmath}\usepackage{txfonts}
\begin{document}
\thispagestyle{empty}
\[
\to
\]
\end{document}](data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAAB4AAAAQCAYAAAABOs/SAAAAAXNSR0IArs4c6QAAAARnQU1BAACxjwv8YQUAAAAJcEhZcwAAIdUAACHVAQSctJ0AAACESURBVEhLY2CgLWChrfHYTS8BCv8HYjF6Wy4AtRhkOd1B6UBafg5q+Xe6exto4V+o5a/pbTkPUpBvh1m+H0kQlBDogWtAlg+ExeCUngLEbXTAj5FCU4deca2AZGkVvSwF2QNLNwfpaembgchKC6GWfqGnT+Whlv6jp6Ugu8KhFnNgsxgAmf1n/rM3b/EAAAAASUVORK5CYII=)Custom style ﬁle” and remove “\usepackage{txfonts}” line.

Compare:

default TeX (Computer Modern)  and

txfonts (URW Nimbus Roman) .

Read more about fonts further on in this document.

### TeXsword and PDF converters

It is a good practice to distribute not the original DOC-ﬁle but a PDF created from it. Newer versions of MSWord allow saving as PDF. In the older versions, conversion step is sometimes done by printing to a “virtual PDF printer” or using a Word-macro, which provides an interface between the MSWord and the PDF-converter.

The potential caveat of the conversion is that PDF-writers down-sample images or compress them using JPG in order to save space. As far as every single TeXsword formula is a picture, the quality of the equations in PDF will be not the same as in the Word-document they originate from. If the equations in PDF look fuzzy or pixilated, consult the documentation of your PDF-converter and switch the space-saving options off.

# Customizing TeXsword

Pressing the button screenshot_toollbar “opts” brings up a TeXsword options window. The main options are:

TAB Options:

TeX template: The text you insert here is displayed in the TeX source window when a new TeX-equation is being created. For instance, if you do not like \[ and \] being inserted by default, remove them from here. Do not forget to click on “Save” of “Save for new” (see below for an explanation)!

“TeX template” consists of two parts. In principle, one can use the upper part of the “template” for the \usepackage statements and alike. However, a preferred way to do it is by using a “custom style ﬁle”.

Use custom style ﬁle: If checked, it enables an extra options tab “Custom style ﬁle” described below. Default is Yes.

LaTeX executable name: Default is latex.

Dvipng executable and options: Default is “dvipng”.

All external programs are supposed to be in the PATH: see the Installation section. If this is not an option for you (e.g., you use a portable MikTeX version), put the full path to the executables, e.g.,

C:\bin\miktex2.8portable\miktex\bin\latex

instead of

latex

PNG resolution (dpi): Resolution of a PNG picture, which is generated from the tex-source. A value of 600dpi is a good guess to get nice print outs.

Temporary tex ﬁle basename: The name of a temporary tex-ﬁle created. Default is formula. Note that you should not provide any path or extension – this will be done automatically.

Temporary directory: The name of a temporary directory where all the temporary files are created. If not set (or the directory does not exist), the system temporary directory from the environment variable TEMP is used. If you get an error message, check the temporary directory is set correctly and is writable for the user.

Timeout for running external programs: To process a TeX input into a PNG picture, one needs to run several external programs. The problem is that sometimes those programs hang. To avoid too long waiting times in such a case, set the timeout value to something between 10 and 30 seconds. The default value of 30 seconds is a safe guess for a reasonably new PC. Setting the timeout to larger values will not inﬂuence the normal functioning of the external programs: if they are ﬁnished sooner that the timeout, the user immediately sees their output.

TAB Custom Style: relevant only if the “Use custom style ﬁle” is checked.

Custom style ﬁle: TeXsword allows usage of a custom style ﬁle (in other words, custom LaTeX package). This style ﬁle is saved together with the document and is a good place to keep all the user deﬁned LaTeX commands, which will be accessible all throughout the document. In fact, it is the same as making your own package, e.g. mypack.sty, in LaTeX and using it in your LaTeX documents as \usepackage{mypack}. The difference is that there is no need to use the \usepackage{} command as TeXsword does it for you.

*Example 1:* by default, the custom style ﬁle includes only a couple of lines:

\usepackage{amsmath}

% use Times fonts

\usepackage{txfonts}

% use Bitstream Vera Sans fonts (~Arial)

%\usepackage{arev}

% use URW Palladio (~Palatino Linotype)

%\usepackage{mathpazo}

\newcommand{\TeXsword}{{\TeX}\texttt{sword}}

They mean that any TeX formula in your document can make use of the commands and fonts deﬁned in amsmath and txfonts packages. Also a new command \TeXsword is deﬁned to produce the %FontSize=12
%TeXFontSize=12
\documentclass{article}
\pagestyle{empty}
\begin{document}
\TeXsword
\end{document} “logo”.

*Example 2:* one can deﬁne his own commands in the custom style ﬁle. E.g., adding

\newcommand{\gamdot}{\dot{\gamma}}

deﬁnes a command \gamdot, which can be used in any formula of the document like is done here: %FontSize=12
%TeXFontSize=12
\documentclass[12pt]{article}
\pagestyle{empty}
\begin{document}
\[
\sigma_{xy} = \eta \gamdot
\]
\end{document}.

**When the options are changed, there are several possibilities to apply/save them:**

Back to default: Return back to the default (hardcoded in the TeXsword) options. They are applied but not saved. To save them, press the Save button.

Save: Saves the options for the current document only. Next time it will be opened, these options will supersede the default ones.

Save for new: Saves the options for the current and for the future documents. Make sure to answer “Yes” when asked whether you want to save the changes in the texsword.dot.

# Adjusting font family and size in TeXsword

In principle, font family can be adjusted on a “per formula” basis by loading an appropriate packages (e.g., txfonts, arev, etc) in a \usepackage{} statement after \documentclass{} command.

The same holds for the font sizes: choose the right size in the drop-down box in the TeX-source window.

The real problems start when one wants to change font family or size of all the formulas in the current document: going through a hundred of equations and adjusting them manually has little fun in it. TeXsword proposes (or better to say, borrows from LaTeX) the following scheme, which allows one to manage the fonts in a more ﬂexible way:

0. Use custom style ﬁle [see [Custom style ﬁle](#bookmarkCustomStyleFile)]

1. Choose font family by loading an appropriate package. The two main options are

- txfonts for use with Times New Roman is the default one.

- arev can be used in case you prefer Arial in your documents. Just go to the Custom style ﬁle in the options, comment the txfonts out and uncomment \usepackage{arev}. Of course, we suppose the corresponding MikTeX packages are installed.

- mathpazo provides Palatino fonts, which are the best suited if Palatino Linotype is used in your Word document.

- feel free to use any other LaTeX font package, e.g., kpfonts. A good overview of the font-related packages is given here: <http://www.tug.dk/FontCatalogue/mathfonts.html>.

2. Click on the “Update all formulas” button screenshot_toollbar.

3. If font size needs to be changed, check the appropriate checkbox. Choose the increment for the font size. For example:

- Originally, document was designed in 10pt (meaning also all the formulas where typeset in 10pt font).

- At the end, you have decided to change it to 12pt. So, all the formulas must become 12pt as well.

- Choose “Change font size by” 2pt.

If a reverse situation has occurred, so a 12pt document needs to be converted to 10pt, choose “Change font size by” -2pt (note the minus sign!).

3. The preferred way to proceed is to check “Run latex on all equations” checkbox.

- If you do **not** do that, all the formulas (or better to say, picture which represent the formulas) will be rescaled to match the desired font size. This is a fast way.

- If you do that, LateX will be run on all the formulas one by one. This is slower but the results are better.

One always needs to use “Run latex on all equations” if also the font family has to be changed! Although it may take some time, the process is fully automated and (normally) needs no user intervention.

4. Pressing “Run update all” button will update all the equation in the current document.

Your current ﬁle will be saved ﬁrst. Also, a backup ﬁle is created in the working directory.

**Note for LaTeX users:**

Although TeXsword allows one to control the font size via a drop-down box in the TeXsource window, also a more familiar LaTeX mechanisms can be used. Feel free to use \tiny, \scriptsize, \footnote, \small, \normalsize, \large, \Large, \LARGE, \huge, \Huge.

The overall summary of the sizes is shown in the table below (note, tiny is never smaller than 5pt):

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| \tiny | \scriptsize | \footnote | \small | \normalsize | \large | \Large | \LARGE | \huge | \Huge |
| *0.5·X* | *0.7·X* | *0.8·X* | *0.9·X* | *X* | *1.2·X* | *1.4·X* | *1.8·X* | *2·X* | *2.4·X* |
| 5 formula | 6 formula | 6 formula | 7 formula | **8 formula** | 10 formula | 11 formula | 14 formula | 16 formula | 19 formula |
| 5 formula | 6 formula | 7 formula | 8 formula | **9 formula** | 11 formula | 13 formula | 16 formula | 18 formula | 22 formula |
| 5 formula | 7 formula | 8 formula | 9 formula | **10 formula** | 12 formula | 14 formula | 18 formula | 20 formula | 24 formula |
| 6 formula | 8 formula | 9 formula | 10 formula | **11 formula** | 13 formula | 15 formula | 20 formula | 22 formula | 26 formula |
| 6 formula | 8 formula | 10 formula | 11 formula | **12 formula** | 14 formula | 17 formula | 22 formula | 24 formula | 29 formula |
| 7 formula | 10 formula | 11 formula | 13 formula | **14 formula** | 17 formula | 20 formula | 25 formula | 28 formula | 34 formula |
| 8 formula | 11 formula | 13 formula | 14 formula | **16 formula** | 19 formula | 22 formula | 29 formula | 32 formula | 38 formula |
| 9 | 13 | 14 | 16 | **18** | 22 | 25 | 32 | 36 | 43 |
| 10 | 14 | 16 | 18 | **20** | 24 | 28 | 36 | 40 | 44 |
| 12 | 17 | 19 | 22 | **24** | 29 | 34 | 43 | 48 | 58 |
| 14 | 20 | 22 | 25 | **28** | 34 | 39 | 50 | 56 | 67 |
| 16 | 22 | 26 | 29 | **32** | 38 | 45 | 58 | 64 | 77 |
| 18 | 25 | 29 | 32 | **36** | 43 | 50 | 65 | 72 | 86 |
| 20 | 28 | 32 | 36 | **40** | 48 | 56 | 72 | 80 | 96 |

To get an impression of how well LaTeX fonts can be combined with the corresponding Windows font, some simple formula is typeset in LaTeX and Word below. Note, that to see the MSWord version of the corresponding font, the font itself has to be installed in your system.

|  |  |  |  |
| --- | --- | --- | --- |
|  | *Times-like* | *Arial-like* | *Palatino-like* |
| *MSWord font* | Times New Roman | Arial | Palatino Linotype |
| *LaTeX font* | txfonts  URW Nimbus Roman | arev  Bitstream Vera | mathpazo  URW Paladio |
| *Word vs LaTeX* | *E = mc*2 vs | *E = mc*2 vs %FontSize=12 %TeXFontSize=12 \ d o c u m e n t c l  a s s {article} \usepackage{arev} \pagestyle{empty} \begin{document} \[ E=mc^2 \] \end{document} | *E = mc*2 vs %FontSize=12 %TeXFontSize=12 \ d o c u m e n t c l a s s {article} \usepackage{mathpazo} \pagestyle{empty} \begin{document} \[ E=mc^2 \] \end{document} |

Examples of the LaTeX default (Computer Modern), txfonts (URW Nimbus Roman), arev (Bitstream Vera) and mathpazo (URW Paladio) fonts are shown below (all at 12pt):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LaTeX default | %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty} \begin{document}  The quick brown fox jumps over the sleazy dog  \end{document} | | %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty} \begin{document} \[ E=\hbar \int_0^\infty \frac{q^2(t)}{1+(\omega t)^2} \text{d}t \] \end{document} | |
| txfonts | | %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty}  \usepackage{txfonts} \begin{document}  The quick brown fox jumps over the sleazy dog  \end{document} | | %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty}  \usepackage{txfonts} \begin{document} \[ E=\hbar \int_0^\infty \frac{q^2(t)}{1+(\omega t)^2} \text{d}t \] \end{document} | |
| arev | | %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty}  \usepackage{arev} \begin{document}  The quick brown fox jumps over the sleazy dog  \end{document} | | %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty}  \usepackage{arev} \begin{document} \[ E=\hbar \int_0^\infty \frac{q^2(t)}{1+(\omega t)^2} \text{d}t \] \end{document} | |
| mathpazo | | %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty}  \usepackage{mathpazo} \begin{document}  The quick brown fox jumps over the sleazy dog  \end{document} | | %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty}  \usepackage{mathpazo} \begin{document} \[ E=\hbar \int_0^\infty \frac{q^2(t)}{1+(\omega t)^2} \text{d}t \] \end{document} | |
| fouriernc | | %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty}  \usepackage{fouriernc} \begin{document}  The quick brown fox jumps over the sleazy dog  \end{document} | | %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty}  \usepackage{fouriernc} \begin{document} \[ E=\hbar \int_0^\infty \frac{q^2(t)}{1+(\omega t)^2} \text{d}t \] \end{document} | |
| MinionPro MnSymbol | | %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty}  \usepackage[textosf,mathlf,swash,italicgreek,openg]{MinionPro} \usepackage{MnSymbol}  \begin{document}  The quick brown fox jumps over the sleazy dog  \end{document} | | %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty}  \usepackage[textosf,mathlf,swash,italicgreek,openg]{MinionPro} \usepackage{MnSymbol}  \begin{document} \[ E=\hbar \int_0^\infty \frac{q^2(t)}{1+(\omega t)^2} \text{d}t \] \end{document} | |
| cmbright | | %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty}  \usepackage{cmbright} \begin{document}  The quick brown fox jumps over the sleazy dog  \end{document} | | %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty}  \usepackage{cmbright} \begin{document} \[ E=\hbar \int_0^\infty \frac{q^2(t)}{1+(\omega t)^2} \text{d}t \] \end{document} | |

In practice, any font supported by your LaTeX distribution can be used. Try, e.g.,

\usepackage{fouriernc}

to use a beautiful Fourier math font combined with New Centure Schoolbook text symbols.

From the realm of commercial fonts, MinionPro (not included in the free LaTeX distributions), combined with a free MnSymbol, gives quite a neat result:

\usepackage[textosf,mathlf,swash,italicgreek,openg]{MinionPro}

\usepackage{MnSymbol}

If you consider using sans serif font for math (e.g., to be combined with the used by default Calibri font in Word), also Computer Modern Bright is a usable option

\usepackage{cmbright}

For an overview of LaTeX fonts, see <http://www.tug.dk/FontCatalogue/> .

# Hacking TeXsword

Normally, none of the options needs to be changed in the source for TeXsword to function properly. If for some reason you decide to adjust some options, feel free to edit the code. Just read the GNU General Public License version 2.0, start MSWord and open the template ﬁle texsword.dotm. Press Alt+F11 and Visual Basic editor window will appear.

# Known Bugs

1. When two displayed equations are inserted one after the other, the resulting table is quite messy. So, after inserting one displayed equation, press Enter (create a new paragraph), and only then “ins Eq”.
2. In the Options dialog, pressing the cross in the upper-right corner to close it inﬂuences the values of the options. Only the Close button must be used.

# Acknowledgements

The idea is borrowed from TeXPoint, which allows inserting TeX formulas into Power PointTM. Unfortunately, MSWord is not supported by TeXPoint (at least by the version I used to have). No code from that project has been used in TeXsword.

After version 0.1 of TeXsword was ready, I discovered another project with very similar goals: “LaTeX in Word” [[3]](#footnote-3). As you can see in the source, the form EqnBookmark in TeXsword uses some GPL’ed code from “LaTeX in Word”. The main conceptual difference between “Latex in Word” and “TeXsword” is that the former sends TeX code to the author’s server and gets the picture back via the Internet so the end user does not need to install LaTeX and Ghostscript (personally, I find it a very elegant solution). TeXsword does everything locally. Both approaches have their pros and contras.

Some code is inspired or borrowed from IguanaTex: A Free LaTeX Add-In for PowerPoint[[4]](#footnote-4).

Function FileThere() originates from Allen Wyatt’s WordTips[[5]](#footnote-5).

The TeXsword’s logo-picture (see “About”) is based on a SVG picture from The Open Clip Art Library[[6]](#footnote-6).

# Disclaimer

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# Contributors

Giovanni Casolari : a nasty bug with “Bookmark” instead of “wdTypeRefBookmark” (corrected in version 0.5.1)

Thanks to SUN Jian-Hu and Luiz France-Neto for reporting TeXsword problems in MSWord 2013.

Thanks to Xianchao Tang for useful suggestions.

# Appendix: Equation Editor and LaTeX

|  |  |  |
| --- | --- | --- |
| Text example: Times New Roman 12pt typeset in MSWord | | |
| Word 2010 build-in equation | Equation Editor | %FontSize=12 %TeXFontSize=12 \documentclass[12pt]{article} \pagestyle{empty} \begin{document} \noindent {\LaTeX }\\ ({\TeXsword} with \texttt{txfonts}) \end{document} |
|  |  | %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty} \usepackage{txfonts} \begin{document} \[ f(\Delta h)=\frac{1}{\sqrt{2\pi\sigma^2}} \exp\left(   -\frac{\Delta h^2}{2\sigma^2} \right) \] \end{document} |
|  |  | %FontSize=12 %TeXFontSize=12 \documentclass{article} \usepackage{txfonts} \pagestyle{empty} \begin{document} \[ Z=2I_0\int\limits_{t_0}^{t_z} \frac{1}      {       \exp\left[-t/\tau_{1/2}\right] + 1      } \,\textrm{d}t \] \end{document} |
|  |  | %FontSize=12 %TeXFontSize=12 \documentclass[12pt]{article} \usepackage{amsmath} \usepackage{txfonts} \pagestyle{empty} \begin{document} \[ p(x)=\left\{  \begin{array}{ll}  p_0 & \text{if } x>0   \\[2mm]  0   & \text{otherwise}  \end{array} \right. \] \end{document} |
|  |  | %FontSize=12 %TeXFontSize=12 \documentclass[12pt]{article} \usepackage{amsmath} \usepackage{txfonts} \pagestyle{empty} \begin{document} \[ \left[  \sum_{i=1}^\infty a_i    \left|      \prod_{j=1}^N x_{ij}    \right|^\nu \right]^{1/\nu} \] \end{document} |

|  |  |
| --- | --- |
| Word Text example: Calibri 12pt | Word Text example: Arial 11pt |
| %FontSize=11 %TeXFontSize=11 \documentclass{article} \pagestyle{empty}  \usepackage{cmbright} \begin{document} {\LaTeX } ({\TeXsword} with cmbright fonts) \end{document} | %FontSize=11 %TeXFontSize=11 \documentclass{article} \pagestyle{empty}  \usepackage{arev} \begin{document} {\LaTeX } ({\TeXsword} with \texttt{arev}) \end{document} |
| %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty}  \usepackage{cmbright}\begin{document} \[ f(\Delta h)=\frac{1}{\sqrt{2\pi\sigma^2}} \exp\left(   -\frac{\Delta h^2}{2\sigma^2} \right) \] \end{document} | %FontSize=11 %TeXFontSize=11 \documentclass{article} \pagestyle{empty}  \usepackage{arev} \begin{document} \[ f(\Delta h)=\frac{1}{\sqrt{2\pi\sigma^2}} \exp\left(   -\frac{\Delta h^2}{2\sigma^2} \right) \] \end{document} |
| %FontSize=12 %TeXFontSize=12 \documentclass{article} \pagestyle{empty}  \usepackage{cmbright} \begin{document} \[ Z=2I_0\int\limits_{t_0}^{t_z} \frac{1}      {       \exp\left[-t/\tau_{1/2}\right] + 1      } \,\textrm{d}t \] \end{document} | %FontSize=11 %TeXFontSize=11 \documentclass{article} \pagestyle{empty}  \usepackage{arev} \begin{document} \[ Z=2I_0\int\limits_{t_0}^{t_z} \frac{1}      {       \exp\left[-t/\tau_{1/2}\right] + 1      } \,\textrm{d}t \] \end{document} |
| %FontSize=12 %TeXFontSize=12 \documentclass[12pt]{article} \usepackage{amsmath} \pagestyle{empty}  \usepackage{cmbright} \begin{document} \[ p(x)=\left\{  \begin{array}{ll}  p_0 & \text{if } x>0   \\[2mm]  0   & \text{otherwise}  \end{array} \right. \] \end{document} | %FontSize=11 %TeXFontSize=11 \documentclass{article} \usepackage{amsmath} \pagestyle{empty}  \usepackage{arev} \begin{document} \[ p(x)=\left\{  \begin{array}{ll}  p_0 & \text{if } x>0   \\[2mm]  0   & \text{otherwise}  \end{array} \right. \] \end{document} |
| %FontSize=12 %TeXFontSize=12 \documentclass{article} \usepackage{amsmath} \pagestyle{empty}  \usepackage{cmbright} \begin{document} \[ \left[  \sum_{i=1}^\infty a_i    \left|      \prod_{j=1}^N x_{ij}    \right|^\nu \right]^{1/\nu} \] \end{document} | %FontSize=11 %TeXFontSize=11 \documentclass{article} \usepackage{amsmath} \pagestyle{empty}  \usepackage{arev} \begin{document} \[ \left[  \sum_{i=1}^\infty a_i    \left|      \prod_{j=1}^N x_{ij}    \right|^\nu \right]^{1/\nu} \] \end{document} |

Note, that at the same size of 12pt, Arial and arev look somewhat larger than Times (or Times-like) fonts. Therefore 11pt Arial and Arev fonts are used in the example.

# Appendix: Tips and Tricks

## Using TeXsword to include EPS ﬁles

The following code allows one to include an EPS picture into an MSWord document.[[7]](#footnote-7)

\documentclass{article}

\usepackage{graphicx}

\pagestyle{empty}

\begin{document}

\includegraphics[scale=0.75]{c:/temp/example.eps}

\end{document}

Note, it needs an absolute path to your picture! Also, graphicx.sty must be loaded.

%FontSize=12
%TeXFontSize=12
\documentclass{article}
\usepackage{graphicx}
\pagestyle{empty}
\begin{document}
\includegraphics[scale=0.75]{c:/temp/example.eps}
\end{document}


## Using color

Using color is simple: just load xcolor.sty and use \color command. Below is a simple example:

%FontSize=12
%TeXFontSize=12
\documentclass{article}
\usepackage[svgnames]{xcolor}
\pagestyle{empty}
\begin{document}
\noindent
\color{Red}
$E=mc^2$ \phantom{ww}
%
\color{Green}
$E=mc^2$ \phantom{ww}
%
\color{Blue}
$E=mc^2$ \phantom{ww}
%
\color{SkyBlue} 
$E=mc^2$ \phantom{ww}
%
\color{Gray} 
$E=mc^2$ \phantom{ww}
\end{document}

The corresponding TeX code is:

\documentclass{article}

\usepackage[svgnames]{xcolor}

\pagestyle{empty}

\begin{document}

\noindent

\color{Red}$E=mc^2$ \phantom{ww}

\color{Green}$E=mc^2$ \phantom{ww}

\color{Blue}$E=mc^2$ \phantom{ww}

\color{SkyBlue}$E=mc^2$ \phantom{ww}

\color{Gray}$E=mc^2$ \phantom{ww}

\end{document}

1. If you don’t like the pictures, choose Tools→Customize in MS Word menu, then right-click on the buttons and choose “Text Only (Always)”. [↑](#footnote-ref-1)
2. It will be described later on what these packages are needed for. [↑](#footnote-ref-2)
3. http://sourceforge.net/projects/latexinword/ [↑](#footnote-ref-3)
4. http://www.technion.ac.il/~zvikabh/software/iguanatex/ [↑](#footnote-ref-4)
5. http://wordtips.vitalnews.com/Pages/T0440\_Determining\_if\_a\_File\_Exists.html [↑](#footnote-ref-5)
6. http://openclipart.org/people/zeimusu/zeimusu\_Crossed\_swords.svg [↑](#footnote-ref-6)
7. Although reasonably new (at least 2007) versions of MSWord do allow inserting EPS graphics “natively” without TeXsword, the result is, in my opinion, unsatisfactory. [↑](#footnote-ref-7)