

# Gentium for T<sub>E</sub>X

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## Abstract

This document outlines the T<sub>E</sub>X/L<sup>A</sup>T<sub>E</sub>X/ConT<sub>E</sub>Xt support provided by this package, gentium-tug, for the Gentium font collection released by SIL.

## Contents

|          |  |          |
|----------|--|----------|
| <b>1</b> | <b>Introduction</b>  | <b>1</b> |
| <b>2</b> | <b>Gentium collection background</b>                             | <b>2</b> |
| <b>3</b> | <b>Installation</b>  | <b>2</b> |
| <b>4</b> | <b>Gentium T<sub>E</sub>X support packages</b>                   | <b>3</b> |
| 4.1      | Encodings . . . . .  | 3        |
| 4.2      | L <sup>A</sup> T <sub>E</sub> X . . . . .                        | 4        |
| 4.3      | ConT <sub>E</sub> Xt . . . . .                                   | 4        |
| 4.4      | Changes in the Type 1 fonts vs. the TrueType originals . . . . . | 4        |
| <b>5</b> | <b>Known bugs</b>  | <b>5</b> |
| <b>6</b> | <b>License</b>   | <b>5</b> |
| 6.1      | SIL Open Font License . . . . .                                  | 5        |
| 6.2      | Expat License . . . . .  | 7        |

## 1 Introduction

This document explains how to use the T<sub>E</sub>X/L<sup>A</sup>T<sub>E</sub>X/ConT<sub>E</sub>Xt support in the present package for the Gentium font collection developed by SIL. This package includes fonts in PostScript Type 1 format converted from the original TrueType files released by SIL (using the FontForge routines found in this package). These Type 1 fonts use the name ‘Gentium’ by permission of SIL to the T<sub>E</sub>X Users Group. Therefore the name of this T<sub>E</sub>X package, by request of SIL, is gentium-tug. Its home page is <http://tug.org/gentium>.

Further information about the fonts themselves can be found in the included documentation and at <http://scripts.sil.org/gentium>. The fonts are released under the SIL Open Font License. For details, see `ofl.txt`

and `ofl-faq.txt`. (In the event of releasing modified versions of the fonts, either TrueType or Type 1, it's required to use a name that doesn't include "Gentium", per the OFL.)

This T<sub>E</sub>X/L<sup>A</sup>T<sub>E</sub>X/ConT<sub>E</sub>Xt support package consists of metrics, map files, style files, documentation, and so on. These files are released under the Expat license. The text for both licenses is included at the end of this document, and in files in the distribution.

If you have the package installed and just want to know how to use Gentium in your T<sub>E</sub>X documents, feel free to skip to section 4.2 (L<sup>A</sup>T<sub>E</sub>X usage) or section 4.3 (ConT<sub>E</sub>Xt usage).

Please report any problems (contact info on the web page). If you can also send a fix, so much the better.

## 2 Gentium collection background

This package uses the original fonts GentiumPlus to make the regular and italic styles and GentiumBasic to make the bold and bold italic styles, and combines them into one T<sub>E</sub>X-world family.

GentiumPlus is a serif family designed to support a wide range of Latin, Greek and Cyrillic characters. It currently includes just the regular and italic style, as well as smallcaps.

GentiumBasic has just the Latin characters and it even lacks some Latin characters found in GentiumPlus. Therefore, the bold and bold italic styles of this package support fewer languages than the regular and italic styles (e.g. Czech and Slovak are not fully supported). Moreover, GentiumBasic has no smallcaps and no kerning pairs. When and if SIL releases bold and bold italic GentiumPlus fonts, we will switch to those, of course.

This package does not use the Berry fontname scheme, but longer names similar to those of Latin Modern, etc. One disadvantage of this choice is that you cannot use the additional font selection commands provided by the package `nfssex-cfr`.

## 3 Installation

If you are using a reasonably recent MiK<sub>T</sub>E<sub>X</sub> or T<sub>E</sub>X Live or distro installation it should be enough to install the `gentium-tug` package (if it's not already present).

Otherwise, or if you want to install the font manually, you will in general need to perform these steps:

1. choose whether to install the font system-wide or in a personal directory;
2. move or copy the package files to the appropriate location;
3. refresh the T<sub>E</sub>X database;
4. incorporate the included map file fragments for the different engines.

However, that's all that it make sense to say here. It's beyond the scope of this Gentium documentation to explain all the myriad ways in which T<sub>E</sub>X-world map files can be installed and used; there are differences between T<sub>E</sub>X Live and MiK<sub>T</sub>E<sub>X</sub>, too.

Instead, we refer you to an explanation of the system-wide installation, with information for both MiK<sub>T</sub>E<sub>X</sub> and T<sub>E</sub>X Live, at <http://tug.org/fonts/fontinstall.html>. A corresponding explanation for personal installation is at <http://tug.org/fonts/fontinstall-personal.html>.

Those pages describe using `testfont.tex` for a basic test of the font; a `tfm` file name to use with that is `ec-gentiumplus-regular`.

To further test your installation and that the package works on your system, run  $\LaTeX$  on this `gentium.tex` source file. (You'll need some commonly-available  $\LaTeX$  packages too, or comment them at.) The console output and/or log should tell you whether any fonts were not found. You can also compare your output with the original `gentium.pdf`.

## 4 Gentium $\TeX$ support packages

In short, for  $\LaTeX$  it suffices to include `\usepackage{gentium}` in your document preamble, and for Con $\TeX$ t MKIV, `\setupbodyfont{gentium}`. Details follow.

The only prerequisite is that the  $\LaTeX$  package (`gentium.sty`) requires `xkeyval`, which you almost certainly already have.

### 4.1 Encodings

The package supports not only the most common Latin encodings such as OT1, TeXnANSI/LY1, Cork/EC/T1 and Text Companion/TS1 encodings, but also (in regular and italic) other Latin, Greek and Cyrillic encodings. Most characters in the text encodings and some of those in the Text Companion encoding are available, including the €. You can see the available encodings in table 1. The Greek encoding LGR is supported only in  $\LaTeX$ , AGR only in Con $\TeX$ t.

| script   | available encodings                  | styles                             |
|----------|--------------------------------------|------------------------------------|
| Latin    | OT1, T1, LY1, L7x, QX, T5, TS1       | regular, italic, bold, bold italic |
| Cyrillic | T2A, T2B, T2C, X2                    | regular, italic                    |
| Greek    | LGR ( $\LaTeX$ ), AGR (Con $\TeX$ t) | regular, italic                    |

Table 1: Available encodings in `gentium-tug`.

The regular and italic styles support all these Latin, Greek and Cyrillic encodings. They support also small caps for the Latin and Cyrillic encodings, but there are no small caps for Greek.

The bold and bold italic styles support only the Latin encodings and they have no small caps.

Cork/T1 encoding lacks visible space, `cwm` (compound work mark), `SS` and the character for composing per mille sign.

Missing characters in bold styles for Latin encodings:

T1: Aogonek / aogonek, Eogonek / eogonek, Lcaron / lcaron, Scedilla / scedilla, uni021A (Tcommaaccent) / uni021B (tcommaaccent), dcaron, tcaron

L7x: Rcommaaccent, Gcommaaccent, Kcommaaccent, Lcommaaccent, Ncommaaccent, Aogonek, Eogonek, Iogonek, Uogonek

QX: Aogonek, Eogonek, Iogonek, uni021A (Tcommaaccent)

## 4.2 $\LaTeX$

To use Gentium fonts in a  $\LaTeX$  document, add `\usepackage{gentium}` to your document preamble. This will set the default serif/roman family to gentium.

If you want to use Gentium together with another font (sans or typewriter) with a different x-height, you should consider using the option `scaled`. This scales Gentium font and if you choose the right scaling factor, you will get the same x-height of both fonts. Here is an example of this option:

```
\usepackage[scaled=0.9]{gentium}
```

## 4.3 $\ConTeXt$

In  $\ConTeXt$  MKIV, to switch to the Gentium typeface you only need:

```
\setupbodyfont[gentium]
```

In  $\ConTeXt$  MKII, before doing that you need either (for  $\pdfTeX$ ):

```
\usetyescriptfile[type-gentium]
\usetyescript[gentium][ec] % or whatever encoding
```

or (for  $\XeTeX$ ):

```
\usetyescriptfile[type-gentium]
\usetyescript[gentium]
```

## 4.4 Changes in the Type 1 fonts vs. the TrueType originals

The shapes of all characters in the Type 1 fonts are the same as in the original TrueType fonts, except for the unavoidable changes are induced by the format conversion (that is, the spline representations are necessarily different).

However, a few small changes—hopefully improvements—were made to the metrics of the GentiumPlus family (that is, regular and italic; bold and bold italic are untouched). The Type 1 fonts are used to generate the  $\TeX$  font metric files (tfm), so these changes propagate to the 8-bit engines like  $\pdfTeX$ .

The first change concerns Greek. 8-bit Greek encodings (LGR and AGR) do not use precomposed accented capital letters. These letters are composed as a sequence of two glyphs: accent + capital letter. The problem is that this sequence does not look like the precomposed letter—there is often big space between the accent and the letter. Therefore, there are some extra kerning pairs between accents and capital Greek letters. These kerning pairs are created automatically (the script is included in the sources) and the goal is to have the same relative position between the accent and the letter as in the precomposed letter. Thanks to these extra kerning pairs you should get better results for 8-bit engines. These changes are irrelevant for Unicode engines—they use the precomposed letters.

The second change is in the letters dcaron (ď) and lcaron (ľ) that are used in the Czech and Slovak languages. (There was no need to change tcaron (ť) and Lcaron (Ľ) with the same accent.) There is no change of their shapes, and their advance widths are also untouched—the change is to add several kerning pairs with quite big negative values. Without these changes there was often a large space between dcaron or lcaron and the following letter, so the changes make the words containing these letters much more compact. You get

these changes automatically if you use 8-bit engines. If you use Unicode engines with the original TrueType fonts, you get the original metrics. However, you can tell the Unicode engines to use the Type 1 fonts (which append PS to the family name) like this:

```
\usepackage{fontspec}  
\setmainfont{GentiumPlusPS}
```

Then you get the additional kern pairs for dcaron and lcaron. The unfortunately disadvantage is that you cannot use small caps.

The last (similar) change is that additional kerning pairs were added to the Type 1 fonts for accented Latin letters and small caps. The original TrueType fonts have no such kerning pairs. As with the Czech/Slovak changes, you get these changes automatically if you use 8-bit engines. If you use Unicode engines with the original TrueType fonts, you get the original metrics, but you can override as above (but since you cannot use small caps with that method, the kerning pairs for small caps become irrelevant).

## 5 Known bugs

There are problems in older versions of pdf $\TeX$  with small caps when using TrueType fonts. Especially the Latin encoding  $\tau 5$  and all Cyrillic encodings are unusable. You can use the Type 1 version of the fonts or at least pdf $\TeX$  version 1.40.13 to avoid these problems.

The Gentium fonts are a work in progress and as such they still miss some features like kerning pairs for some letters. Currently, there are no kerning pairs in the GentiumBasic family at all and the GentiumPlus family has kerning pairs just for Latin letters without accents and for Greek letters; there are no kerning pairs for small caps, accented Latin letters or Cyrillic letters. The Type 1 fonts in this package have some additional kerning pairs for accented Latin letters and for small caps. Kerning pairs for Cyrillic are under consideration.

## 6 License

The fonts in this page, both the SIL originals and the derived Type 1 versions, are released under OFL. The  $\TeX$  support files are licensed under the Expat License. Here are the full license texts.

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PREAMBLE

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