

Manual

CIRCLY 7.0 Materials database user guide

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1 Introduction

Transport and Main Roads has developed a materials database for use with CIRCLY 7.0 software which is supplied and licenced by the National Transport Research Organisation (NTRO). The materials database is intended to:

- facilitate the design of pavements following Transport and Main Roads guidelines and standards, and
- be used by experienced pavement designers who are familiar with the operation of CIRCLY 7.0.

This user guide summarises the content of the materials database and instructs users on how to install the database so that it can be used with CIRCLY 7.0. More detailed information about CIRCLY 7.0 is available from the [Pavement Science](#) website.

The materials database includes the most common materials used on departmental projects. The designer remains responsible for ensuring the selected materials and their assigned characteristics are suitable and correct for the designs being undertaken. The database may not include all materials needed to undertake any specific pavement design.

2 Materials database content

Materials included in the database are as defined in:

- [Pavement Design Supplement](#) (PDS) (Transport and Main Roads, 2026)
- [Guide to Pavement Technology, Part 2: Pavement Structural Design](#) (AGPT02) (Austroads, 2025)
- [Pavement Rehabilitation Manual](#) (PRM) (Transport and Main Roads, 2020)
- [Guide to Pavement Technology, Part 5: Pavement Evaluation and Treatment Design](#) (AGPT05) (Austroads, 2025), and
- [Technical Specifications](#) (MRTS) (Transport and Main Roads).

The material types included in the database are summarised in Table 2.

Table 2 – Summary of materials included in the materials database

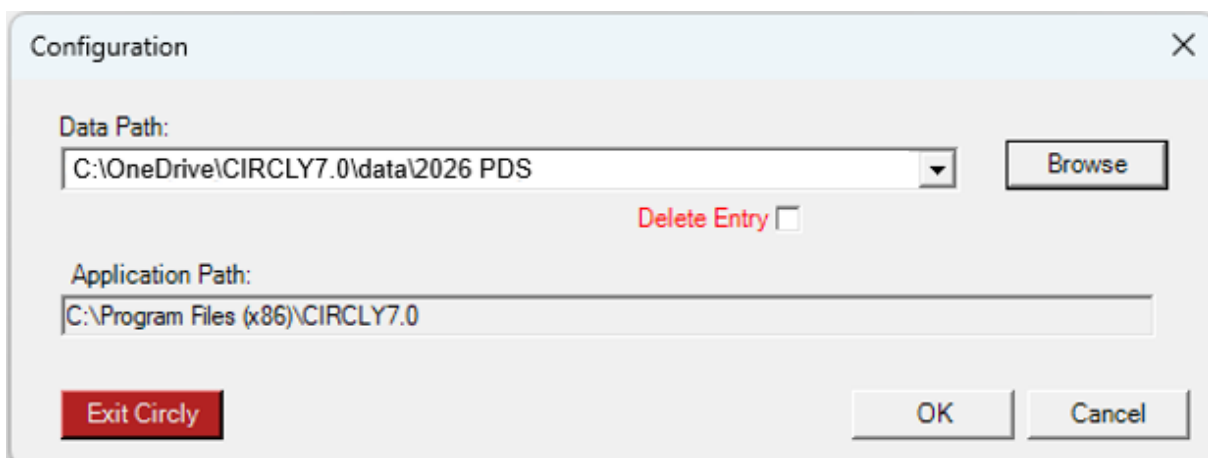
CIRCLY 7.0 database material type	Material description
Asphalt AC10	Size 10 mm dense graded asphalt, with 12.0% binder (by volume).
Asphalt AC14	Size 14 mm dense graded asphalt, with 11.5% binder (by volume).

CIRCLY 7.0 database material type	Material description
Asphalt AC20	Size 20 mm dense graded asphalt, with 11.0% binder (by volume).
Asphalt EME2	High modulus asphalt, with Transport and Main Roads EME2 fatigue relationship.
Asphalt existing cracked / low modulus (no fatigue)	Existing asphalt (cracked / low modulus) (no fatigue).
Asphalt OG	Size 10 mm or 14 mm open graded asphalt.
Asphalt SMA	Size 10 mm stone mastic asphalt with 15.0% binder (by volume), or Size 14 mm stone mastic asphalt with 14.0% binder (by volume).
Cement stabilised (heavily bound)	Pre-cracked phase of heavily bound stabilised granular material and pre-cracked phase of lean-mix concrete (screeded or roller compacted).
Foamed bitumen stabilised granular	Foamed bitumen stabilised granular (either insitu or plant mixed), includes options for binder volumes (V_b) of 7.0, 7.5 and 8.0%.
Isotropic granular (no sublayering)	Post-cracked phase of screeded lean-mix concrete.
Lightly bound (no sublayering)	Lightly bound granular base, lightly bound granular subbase, lightly bound granular improved layer, post-cracked phase of heavily bound cemented material and post-cracked phase of roller compacted lean-mix concrete.
Subgrade – lime stabilised (no sublayering)	Lime stabilised subgrade.
Subgrade – Selected (AGPT02 sublayering)	Fill or subgrade treatments.
Subgrade (AGPT02)	Existing subgrade materials.
Triple blend subbase	Triple blend stabilised subbase.
Unbound granular (AGPT02 sublayering)	Unbound granular material.
Unbound granular (no sublayering)	Unbound granular material when sublayering is not required.

3 Installation instructions

1. Install CIRCLY 7.0.
2. In Windows Explorer – choose the location that you would like to store your CIRCLY 7.0 database files. When you run CIRCLY 7.0, it will also save job files to this same location. It is recommended to choose a location that is backed up (for example, a OneDrive folder).
3. In Windows Explorer – create a new folder at the chosen location; for example: C:\OneDrive\CIRCLY7.0\data\2026 PDS.
4. Download the materials database (LAYERS7.cmdb) from the [Pavement design supplement](#) page on the Transport and Main Roads website.
5. In Windows Explorer – save the materials database (LAYERS7.cmdb) into the folder created in Step 3.
6. In Windows Explorer – locate the CIRCLY 7.0 loads database on your computer (LOADS7.cmdb). This may be in C:\Users\Public\Public Documents\Mincad Systems\CIRCLY7.0\data, C:\OneDrive\CIRCLY7.0\data\2021 PDS or a similar folder.
7. In Windows Explorer – copy the LOADS7.cmdb file and paste the file into the folder you created in Step 3.
8. You should now have 2 files in the created folder: LAYERS7.cmdb and LOADS7.cmdb.
9. Open CIRCLY 7.0 and go to Options / Paths – in the pop up window, browse to find the folder that you created in Step 3, as shown following in Figure 3(a):

Figure 3(a) – Setting the data path in CIRCLY 7.0



10. Click OK. You will be prompted to close and restart CIRCLY 7.0. Close CIRCLY 7.0 (it may close automatically or you may need to click Cancel).

11. Open CIRCLY 7.0. When restarting CIRCLY 7.0, ignore the errors about 'no job files' and 'unable to backup data files'. If you are asked 'Are you sure you want to exit?', select 'No'.
12. You should then be able to select from the material types in the materials database, as shown following in Figure 3(b).

Figure 3(b) – Selecting material types in CIRCLY 7.0

The screenshot shows the 'Material Type' dropdown menu open, listing various asphalt and cement materials. Below the menu is a table with columns: ID, Modulus, Ratio, VB (%), Performance Exponent (b), Performance Constant (k), and Shift Factor. The first row is highlighted in blue.

ID	Modulus	Ratio	VB (%)	Performance Exponent (b)	Performance Constant (k)	Shift Factor
A1-12.0-1000	1,000.00	0.40	12.0	5.00	0.006532	6.00
A1-12.0-1100	1,100.00	0.40	12.0	5.00	0.006312	6.00
A1-12.0-1200	1,200.00	0.40	12.0	5.00	0.006117	6.00
A1-12.0-1300	1,300.00	0.40	12.0	5.00	0.005943	6.00
A1-12.0-1400	1,400.00	0.40	12.0	5.00	0.005787	6.00
A1-12.0-1500	1,500.00	0.40	12.0	5.00	0.005645	6.00
A1-12.0-1600	1,600.00	0.40	12.0	5.00	0.005515	6.00
A1-12.0-1700	1,700.00	0.40	12.0	5.00	0.005396	6.00
A1-12.0-1800	1,800.00	0.40	12.0	5.00	0.005286	6.00
A1-12.0-1900	1,900.00	0.40	12.0	5.00	0.005184	6.00
A1-12.0-2000	2,000.00	0.40	12.0	5.00	0.005090	6.00
A1-12.0-2100	2,100.00	0.40	12.0	5.00	0.005001	6.00
A1-12.0-2200	2,200.00	0.40	12.0	5.00	0.004919	6.00

13. If a material you need is not included, you can still add new materials in the usual way in CIRCLY 7.0.
14. If you want to revert to your previous database or jobs, then you need to change the file path in CIRCLY 7.0 back to what it was previously, as shown in Step 9 (for example, C:\Users\Public\Public Documents\Mincad Systems\CIRCLY7.0\data, or C:\OneDrive\CIRCLY7.0\data\2021 PDS).

