Material database dialog DELPHIN 6.1.7

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1. Overview

Every DELPHIN project needs material data. There are several ways to import them into a project. Mostly, materials are selected from a database. There are two databases in DELPHIN, a supplied database and a user database. The user database is empty directly after installation and is built up gradually by the user. These materials can be changed and, if necessary, removed again. The supplied database does not allow the user to change, remove or add materials. This database is based on a central system that serves several programmes (DELPHIN, COND, THERAKLES, NANDRAD). Therefore, it also contains materials that can only be used by certain software products. For example, THERAKLES only requires thermal characteristic values for simulation or COND does not require a moisture storage function. As a result, not all materials can be used for every calculation type in DELPHIN. More about this can be found in the chapter 'Filter by Simulation Type'.

For the selection of materials from the database, a dialogue exists in DELPHIN. In this tutorial, the dialogue of DELPHIN version 6.1.2 is explained. There are two possibilities to call up this dialogue:

- automatically at the end of the asisstent for a new project
- manually from the project material list



Image 1. Start the material database dialogue from the material list

The database dialogue itself shows all materials of the supplied database and the user database at the start. The user materials are marked in colour (see bitumen in the picture below). Only these can be changed or removed.

				Material database						
Category:	All · Name:									Language: English
Simulation type	thermal • hydrot	hermal	<u> </u>							search similar material
	Name	(aregory	Producer	KDO LKO/D SL	CD L VKOKI	Lampda IW//mkl	Illeri	W801K0/0031	wsat iko/mai	Aw (Kg/m/s05)
1830	Expanded clay	Insulation materials	Modulbau Kohlschein	741.3	2049.2	0.182/	10.4	31.4	160.9	0.015 \${Material Database}/Blaehton 1830.n
1829	Hemp concrete turned, 50% soda lime	Insulation materials	Modulbau Kohlschein	402.9	828.0	0.062/	6.9	18.9	567.2	0.097 \${Material Database}/HanfbetonGewei
1828	Finishing plaster (for inside)	Plaster and mortar	Putze Henke	1646.8	990.0	0.670/	3.4	5.9	189.6	0.235 \${Material Database}/FinishingPlasteri
1827	Masonry mortar / undercoat plaster (inside and outside)	Plaster and mortar	Putze Henke	1811.5	960.0	0.870/	19.0	18.2	176.2	0.056 \${Material Database}/MasonryMortarU
1826	Pointing mortar	Plaster and mortar	Putze Henkel	1650.9	950.0	0.700/	2.6	22.8	249.1	1.075 \${Material Database}/PointingMortar
1825	Historic fine and exterior finishing plaster (for outside)	Plaster and mortar	Putze Henkel	1722.2	950.0	0.700/	5.0	13.2	149.8	0.088 \${Material Database}/HistoricFineAndE
1824	Old building brick	Building brick		1698.3	928.6	0.599/	28.3	20.4	324.0	0.097 \${Material Database}/Altbauziegel2NA
1823	Old building brick monastery format	Building brick	Resandes	1799.3	952.7	0.828/	13.5	1.4	222.8	0.226 \${Material Database}/AltbauziegelNAV
1822	Slentex	Insulation materials	BASE	190.7	1500.0	0.019/	3.1	5.1	500.0	0.005 \${Material Database}/Slentex 1822.m6
1821	Mineral Foam Multipor 2019	Insulation materials	Xella Deutschland GmbH	94.3	835.0	0.040/	2.3	3.3	390.0	0.003 \${Material Database}/MineralFoamMul
1820	Uu pure silt	Soil		1500.0	750.0	0.547/	7.7	67.3	403.0	0.550 \${Material Database}/UuPureSilt 1820
1819	Ut4 strongly clayey silt	Soil		1500.0	750.0	0.547/	7.7	94.9	416.2	0.447 \${Material Database}/Ut4StronglyClaye
1818	Ut3 medium clayey silt	Soil		1500.0	750.0	0.547/	7.7	73.2	403.1	0.475 \${Material Database}/Ut3MediumClaye
1817	Ut2 slightly clayey silt	Soil		1500.0	750.0	0.547/	7.7	67.8	400.1	0.548 \${Material Database}/Ut2SlightlyClaye
1816	Us sandy silt	Soil		1500.0	750.0	0.547/	7.7	52.1	394.6	0.476 \${Material Database}/UsSandvSilt 181
1815	Uls sandy-loamy silt	Soil		1500.0	750.0	0.547/	7.7	70.9	400.3	0.600 \${Material Database}/UlsSandyLoamyS
1814	Tu4 strong silty clay	Soil		1500.0	750.0	0.603/	7.7	150.2	437.2	0.278 \${Material Database}/Tu4StrongsiltvCl
1813	Tu3 medium silty clay	Soil	2	1500.0	750.0	0.609/	7.7	207.2	458.9	0.200 \${Material Database}/Tu3MediumSilty(
1812	Tu2 slightly silty clay	Soil		1500.0	750.0	0.801/	7.7	270.9	497.1	0.121 \${Material Database}/Tu2SlightlySiltyC
1811	Tt pure tone	Soil		1500.0	750.0	1.666/	7.7	312.2	523.8	0.057 \${Material Database}/TtPureTone 181
1810	Ts4 strong sandy clay	Soil		1500.0	750.0	0.604/	7.7	123.0	435.5	0.433 \${Material Database}/Ts4StrongSandy(
1809	Ts3 medium sandy clay	Soil		1500.0	750.0	0.634/	7.7	163.8	437.4	0.318 \${Material Database}/Ts3MediumSand
1808	Ts2 slightly sandy clay	Soil		1500.0	750.0	0.949/	7.7	221.8	483.6	0.250 \${Material Database}/Ts2SlightlySandy
1807	Tl loamy clay	Soil		1500.0	750.0	0.865/	7.7	264.0	493.1	0.137 \${Material Database}/TlLoamyClay_18(
1806	Su4 heavily silty sand	Soil		1500.0	750.0	0.603/	7.7	43.2	383.9	0.732 \${Material Database}/Su4HeavilySiltySi
1805	Su3 medium silty sand	Soil		1500.0	750.0	0.603/	7.7	42.3	376.5	0.668 \${Material Database}/Su3MediumSilty
1804	Su2 slightly silty sand	Soil		1500.0	750.0	0.308/	7.7	28.3	378.6	0.670 \${Material Database}/Su2SlightlySiltyS
1803	St3 medium clayey sand	Soil		1500.0	750.0	0.603/	7.7	99.3	421.4	0.502 \${Material Database}/St3MediumClave
1803	SC Incolon Caver Sano	SUR	3	1300.0	730.0	0.005/		77.3	421,4	0.502 SIMULEIA Database/SLSMediumcia
Show materia	I properties Show depricated or removed materials									Help Import Close



The image shows the dialogue with marking of the following areas:

- 1. Filter and language setting
- 2. Material table
- 3. Remarks and dates for the selected material
- 4. Buttons for function graphics and obsolete materials
- 5. Editing of user materials and material view

2. Filter and language

In the upper part of the dialogue there are input elements for filtering the material table. This can be used to narrow down the selection of materials so that it is easier to select the desired materials.



Image 3. Filter area of the database dialogue

The following filter options are offered:

- 1. Material category
- 2. Name and manufacturer

- 3. Simulation type
- 4. Materials with similar basic parameters

2.1. Material category

This selection box allows classification into the following categories:

- All no filtering
- Coatings paints and similar
- Plaster and mortar also screed
- Building brick all types of bricks
- Natural stone
- Concrete containing building materials concretes and aerated concretes
- Insulation materials
- Building boards
- Timber
- Natural materials not used
- Soil
- Cladding panels and ceramic tiles
- Foils and waterproofing products
- Miscellaneous metals, glass, air, water, etc.



Image 4. Expanded list of categories

Each material can be divided into 3 categories. The first category is to be considered as the main category. It is shown in the fourth column of the material table. For some materials, an exact classification is difficult. Therefore, up to 2 further categories can be specified for each

material. Since version 6.1.2, Delphin filters for all 3 entries. Therefore it can happen that e.g. insulation materials are filtered, but materials of other categories appear in the table. The picture below shows such an example.

Category: Insulation ma	iterials • Name:			teriat database						
Simulation type										Language: English -
	⊂ thermal ● hygroth	ermal								search similar material
D ^	Name	Category	Producer	Rho [ka/m3]	co (J/kaK) L	ambda [W/mK]	u []	W80 [kg/m3]	WSat [kg/m3]	Aw [kg/m2s05]
582 Dennert	Mineral foam Poratec Innen	Insulation materials	poratec GmbH	128.4	892.6	0.047/0.045	4.5	5.2	422.2	0.102 \${Material Database}/DennertMinerals
581 Dennert	Mineral Foam Poratec Außen	Insulation materials	poratec GmbH	133.1	1133.1	0.049/	5.2	8.1	650.0	0.096 \${Material Database}/DennertMinerals
580 Blown-ir	Cellulose	Insulation materials	CWA Cellulose Werk	55.2	2544.4	0.048/0.040	2.0	6.3	780.0	0.563 \${Material Database}/CWACelluloseEin
577 Pyrogen	ic Silica Board (hydrophobic)	Insulation materials	CONFIRA Werkstoff GmbH	20.0	840.0	0.019/0.020	6.2	0.8	1.0	0.000 \${Material Database}/ConfiraPyrogene
571 Climate	Board (until 2001)	Insulation materials	Calsitherm Silikatbaustoffe	270.1	1157.9	0.069/	3.8	4.7	900.2	1.115 \${Material Database}/CalsithermCalciu
555 Brick Sch	lagmann WDF 180mm (Perlite-Filling with brick	Building brick	Schlagmann Baustoffwerke	196.6	777.1	0.048/0.055	5.8	2.6	145.0	0.010 \${Material Database}/ZiegelSchlagman
554 Brick Sch	lagmann WDF 120mm (PKS-Filling with brick web)	Building brick	Schlagmann Baustoffwerke	102.5	850.7	0.041/	10.3	1.6	25.1	0.017 \${Material Database}/ZiegelSchlagman
553 Brick Sch	lagmann WDF 120mm (Perlite fliling with brick	Building brick	Schlagmann Baustoffwerke	196.6	777.1	0.048/0.060	5.9	2.6	145.0	0.011 \${Material Database}/ZiegelSchlagman
517 Wood Fi	bre Board (measured over width)	Insulation materials	PAVATEX GmbH	196.9	1684.4	0.064/	12.9	20.6	891.2	0.084 \${Material Database}/Holzwolleleichtb
516 Wood Fi	bre Board (measured over thickness)	Insulation materials	PAVATEX GmbH	196.9	1684.4	0.064/	12.9	20.7	891.2	0.292 \${Material Database}/Holzwolleleichtb
515 Thermol	ork (Insulation materials	HAACKE Energie-Effizienz	114.0	2253.2	0.047/	28.9	9.8	93.3	0.009 \${Material Database}/Thermokork04_5
514 Getifix II	sulation Panel	Insulation materials	Cetifix GmbH	277.4	1063.5	0.081/	5.4	12.4	848.0	0.664 \${Material Database}/GetifixKlimaplatt
474 Cellular	Concrete Ytong	Concrete containin	Xella International GmbH	392.2	850.0	0.095/	7.4	17.8	800.0	0.043 \${Material Database}/YtongPorenbeto
473 Cellular	Concrete	Concrete containin		414.6	850.0	0.100/	8.9	17.7	780.0	0.039 \${Material Database}/Porenbeton_473
438 iO-Therr	n	Insulation materials	Remmers Baustofftechnik	48.9	1400.0	0.037/0.031	27.0	0.4	93.3	0.013 \${Material Database}/RemmersiQTheri
435 Wood Fi	bre Board	Insulation materials	PAVATEX GmbH	240.0	2100.0	0.050/	5.0	31.8	408.2	0.012 \${Material Database}/Holzwolleleichtb
434 Insulatio	n Loam-Polystyrol	Insulation materials	HAACKE Energie-Effizienz	316.0	1208.5	0.075/	14.1	9.2	560.0	0.096 \${Material Database}/Waermedaemmle
433 Insulatio	n Loam Wood	Insulation materials	HAACKE Energie-Effizienz	299.7	1419.3	0.094/	6.5	24.1	637.0	0.113 \${Material Database}/Waermedaemml
432 Insulatio	n Loam with expanded Clay	Insulation materials	HAACKE Energie-Effizienz	483.2	893.5	0.136/	8.8	3.7	650.0	0.094 \${Material Database}/Waermedaemmle
431 Maxit Li	pht Insulation Plaster G74M	Plaster and mortar	maxit Baustoffwerke GmbH	820.4	713.5	0.175/	29.1	58.6	434.0	0.088 \${Material Database}/Waermedaemme
425 Renocel	Cellulose Inside Insulation	Insulation materials	ISOCELL VERTRIEBSGMBH	92.8	2005.1	0.052/0.052	2.4	9.8	970.0	3.509 \${Material Database}/RenocellCellulos
424 Remmer	s SLP	Insulation materials	Remmers Baustofftechnik	296.8	997.4	0.063/0.063	4.6	22.3	871.4	0.387 \${Material Database}/RemmersSLP_42
423 Redston	e Masterclima	Insulation materials	redstone GmbH	277.4	1063.5	0.081/	5.4	12.4	848.0	0.664 \${Material Database}/RedstoneMaster
422 Promat	Promasil	Insulation materials	Promat GmbH	257.4	1085.3	0.073/	4.6	7.2	889.4	1.167 \${Material Database}/PromatPromasil_
419 Klimasar	าโ	Plaster and mortar	Klimasan Perlit GmbH	338.1	1190.1	0.078/0.077	6.2	53.7	499.7	0.314 \${Material Database}/KlimasanI_419.m
417 Insulatio	n Loam Cork Bagged Cargo B	Insulation materials	HAACKE Energie-Effizienz	388.3	969.3	0.082/	36.0	9.1	475.5	0.058 \${Material Database}/HaackeCellcoWa
416 Insulatio	n Loam-Cork Board (F)	Insulation materials	HAACKE Energie-Effizienz	350.1	1056.4	0.077/0.080	28.0	8.0	417.5	0.045 \${Material Database}/HaackeCellcoWa
414 Insulatio	n Loam Cork BigPack	Insulation materials	HAACKE Energie-Effizienz	368.1	884.8	0.074/0.080	7.7	11.5	860.0	0.055 \${Material Database}/HaackeCellcoWa

Image 5. Material table with filter set for the category **insulation materials***.*

The image also shows materials of the categories '*Concrete containing building materials*' (aerated concrete), '*Building brick*' (highly insulating bricks) and '*plaster and mortar*' (insulation plaster), although '*Insulation materials*' is selected as category.

2.2. Name and manufacturer

In the input field '*Name*' you can enter texts or parts of texts. The dialogue will then filter out all materials where this part of the text appears in the name or in the manufacturer's name. Upper and lower case letters are not distinguished. This filter can be used together with the category filter.

Material database												- 0	×	
Category:	Insulation materials	Name: mineral										Language:	English	•
Simulation typ	e	thermal • hygrotherm	al									search s	imilar material	
ID ^	Namo		Category	Producer	Rho [kg/m3]	cp [J/kgK]	Lambda [W/mK]	µ[] Ч	W80 [kg/m3]	WSat [kg/m3]	Aw [kg/m2s05]			
1821	Mineral Foam Multipor 2019	In	sulation materials	Xella Deutschland GmbH	94.3	835.0	0.040/	2.3	3.3	390.0	0.003	\${Material Database}/M	lineralFoamMu	ti
731	Mineral Wool 035	In	sulation materials		67.0	840.0	0.035/0.035	1.0	0.1	900.0	0.000	\${Material Database}/M	ineralWool035	3
730	Mineral Wool 032	In	sulation materials		37.0	840.0	0.032/0.032	1.0	0.1	900.0	0.000	\${Material Database}/M	ineralWool032	3
649	Mineral Wool	In	sulation materials		195.0	840.0	0.040/	1.0	0.6	900.0	0.000	\${Material Database}/M	ineralWool195	٤.
648	Mineral Wool	In	sulation materials		168.0	840.0	0.040/	1.0	0.4	900.0	0.000	\${Material Database}/M	ineralWool168	6
647	Mineral Wool	In	sulation materials		134.0	840.0	0.040/	1.0	0.4	900.0	0.000	\${Material Database}/M	ineralWool134	
646	Mineral Wool	In	sulation materials		112.0	840.0	0.040/	1.0	0.2	900.0	0.000	\${Material Database}/M	ineralWool112	.¢
645	Mineral Wool	In	sulation materials		67.0	840.0	0.040/	1.0	0.1	900.0	0.000	\${Material Database}/M	ineralWool67_	54
644	Mineral Wool	In	sulation materials		37.0	840.0	0.040/	1.0	0.1	900.0	0.000	\${Material Database}/M	ineralWool37_	4
643	Multipor Minerally insulation board 2	2014 In:	sulation materials	Xella International	98.5	1331.0	0.044/0.045	3.0	5.2	128.0	0.006	\${Material Database}/M	lultipor042Kom	р
597	Ytong Mineral Foam Multipor 2004	In	sulation materials	Xella International GmbH	115.2	1292.3	0.048/	4.1	8.7	366.0	0.017	\${Material Database}/Y	tongMineralsch	а
596	Ytong Mineral Foam Multipor-045 20	007 In	sulation materials	Xella International GmbH	125.7	968.4	0.045/	5.7	4.0	180.0	0.004	\${Material Database}/Y	tongMineralsch	а
595	Mineral Foam Multipor (from 2011)	In	sulation materials	Xella International GmbH	98.5	1331.0	0.042/	6.7	5.2	128.0	0.006	\${Material Database}/Y	tongMineralsch	а
593	Sto Mineral Foam StoTherm-Cell	In	sulation materials	Sto SE & Co. KGaA	98.5	1331.0	0.042/	6.7	5.2	128.0	0.006	\${Material Database}/SI	toMineralschau	m
590	Redstone Mineral Foam Pura Inside	In	sulation materials	redstone GmbH	128.4	892.6	0.047/0.042	4.5	5.2	422.2	0.102	\${Material Database}/R	edstoneMinera	s
589	Mineral Foam Insulation Board	In	sulation materials	quick-mix Gruppe GmbH & C	125.7	968.4	0.045/0.042	5.7	4.0	180.0	0.004	\${Material Database}/Q	uickMixMineral	sı
586	Keimfarben Mineral Foam xPor Outs	ide In	sulation materials	KEIMFARBEN GmbH & CO.KG	125.7	968.4	0.045/0.045	5.7	4.0	180.0	0.004	\${Material Database}/K	eimfarbenMine	ra i
582	Dennert Mineral foam Poratec Innen	i In	sulation materials	poratec GmbH	128.4	892.6	0.047/0.045	4.5	5.2	422.2	0.102	\${Material Database}/D	ennertMinerals	cl
581	Dennert Mineral Foam Poratec Auße	n In	sulation materials	poratec GmbH	133.1	1133.1	0.049/	5.2	8.1	650.0	0.096	\${Material Database}/D	ennertMinerals	cl
														,
C Show materi	al properties 🗆 Show depricated or remove	ed materials										Help	Import Close	
🕺 🗵 🕺 🗙														

Image 6. Material table with filter for insulation materials and name filter

In the image above, the category filter is set to '*insulation*' and the text part 'mineral' is entered in the name filter. This means that all insulation materials containing the text 'mineral' are displayed. In the same way, you can also search for materials from a specific manufacturer by entering its name in the search field.

2.3. Simulation type

Here you can distinguish between two types of simulation, purely thermal and hygrothermal calculations. The simulation type currently set in the project is not queried here. Depending on the setting, only the materials that are valid for this simulation type are displayed. In this case, valid means that all necessary transport and storage parameters are available. The database also contains materials, especially from standards such as ISO 10456, which only contain parameters for purely thermal transport. In most cases, the moisture storage function is missing. Such materials are then only listed for the simulation type '*thermal*'.

2.4. Materials with similar base parameters

In practical projects it is often the case that only a few parameters of the materials used in the construction are known. In order to simplify the search for such materials, it is possible with this filter to carry out a similarity search by entering a few base parameters. Only materials that are sufficiently similar then appear in the list. The other filters are also taken into account. To activate this filter, the checkbox '*search similar material*' must be checked. The following dialogue will appear.



Image 7. Filter to search for materials with similar parameters

Data for 6 basic parameters can be entered:

- Rho in [kg/m³] bulk density
- Lambda in [W/mK] thermal conductivity of the dry material
- μ in [-] Vapour diffusion resistance factor of the dry material (dry cup)
- Aw in $[kg/m^2s^{0.5}]$ water uptake coefficient
- W80 in [kg/m³] water content at 80% relative humidity
- WSat in [kg/m³] water content at effective saturation

In the field '*Min. number*' a minimum number of materials to be found can be set. With the button '*Update*' the list is rebuilt based on the current setting. This also happens if you click on any other dialogue element. If there is a 0 in one of the parameter fields, this value is not taken into account.

r			Mat	erial database								
Category:	Building brick * Name:										Language:	English -
Classification from a	Otherest 4	however the second									7	les lles escales de la
Simulation type	o thermat	• nygrotnermai									✓ search s	imilar material
	Rho [kg/m3] Lambda [W/mK]	P [-]	Aw [kg/m2s05]		W80 [kg	J/m3]	W	VSat [kg/m3]		Min. Number		Update
	1700	0	20		0		0			05		
ID ^	Name	Category	Producer	Rho [kg/m3] o	p [J/kgK]	Lambda [W/mK]	h []	W80 [kg/m3]	WSat [kg/m3]	Aw [kg/m2s05]		
501	Old Building Brick Dresden ZM	Building brick		1719.6	917.4	0.642/	19.1	4.1	338.9	0.117	\${Material Database}/A	ltbauziegelDresd
685	Lime-Sandbrick	Building brick		1704.6	890.9	1.188/	18.7	10.5	238.5	0.311	\${Material Database}/Li	imeSandbrick_68
497	Old Building Brick Dresden ZI	Building brick		1736.4	881.3	0.456/	21.3	17.1	320.1	0.034	\${Material Database}/A	ltbauziegelDresd
495	Old Building Brick Dresden ZG	Building brick		1715.2	920.2	0.543/	22.2	6.9	322.1	0.137	\${Material Database}/A	ltbauziegelDresd
512	Normal Brick	Building brick	Wienerberger AG	1786.3	888.7	0.548/	18.0	13.4	319.4	0.199	\${Material Database}/B	rickWienerberge
513	Ceramic Brick	Building brick		1952.2	862.6	0.961/	19.4	1.2	239.0	0.142	\${Material Database}/C	eramicBrick_513.
1												
Show materia	I properties Show depricated or removed materials										Help	Import Close

Image 8. Example of filtering when searching for a similar material

In the image above, we searched for bricks (category filter set to '*building bricks*') with a density of about 1700kg/m^3 and a μ -value of about 20. The minimum number set was 5. The filter picked out 6 materials with similar characteristic values. The background colour of the materials is adapted to the similarity to the entered characteristic values. The more similar the material is, the darker the background.

2.5. Language

At the top right of the dialogue there is also a selection field for the language. By default, the set language is used for the dialogue as well as for the material list. However, there are fewer languages available for the material database than for DELPHIN itself. If the database does not support the language, the list is displayed in English. With this dialogue box you can adjust this setting. However, this only affects the material names, the manufacturer names and the remarks. Currently the languages German, English and Italian are available.

3. Material table

The material table shows the materials according to the set filters. The following data is displayed in the corresponding columns:

- 1. Material ID
- 2. Colour code
- 3. Name
- 4. Category
- 5. Manufacturer
- 6. Density in kg/m³ (Rho)
- 7. Heat capacity in J/kgK (cp)
- 8. Thermal conductivity in W/mK (lambda)
- 9. Vapour diffusion resistance factor (μ)
- 10. Water content at 80% humidity in kg/m^3 (W80).
- 11. Water content at effective saturation in kg/m³ (WSat)
- 12. Water uptake coefficient in $kg/m^2s^{0.5}$ (Aw)
- 13. Path to the material file

You can sort by any data type except the path by clicking on the corresponding column header. Another click on the same column header reverses the sort order. Which column is currently sorted by is indicated by a small black triangle in the column header. In the picture this is e.g. the density.

Material database													x
Category:	Building	brick V Name:										Language: Eng	lish V
Simulation type 🔿 thermal 💿 hygrothermal												search similar m	aterial
ID		Name	Category	Producer	Rho [kg/m3]	cp [J/kgK]	Lambda [W/mK]	μ[]	W80 [kg/m3]	WSat [kg/m3]	Aw [kg/m2s05]		Mate ^
	554	Brick Schlagmann WDF 120mm (PKS-Filling with brick	Building brick	Schlagmann	102.5	850.7	0.041/	10.3	1.6	25.1	0.017	{Material Database	}/
	812	Brick Schlagmann WDZ_Perlite filling	Building brick	Schlagmann	146.7	766.6	0.050/	3.4	1.7	282.0	0.004	{Material Database)/
	555	Brick Schlagmann WDF 180mm (Perlite-Filling with brick	Building brick	Schlagmann	196.6	777.1	0.048/0.055	5.8	2.6	145.0	0.010	{Material Database)/
	553	Brick Schlagmann WDF 120mm (Perlite fliling with brick	Building brick	Schlagmann	196.6	777.1	0.048/0.060	5.9	2.6	145.0	0.011	{Material Database	}/
	1	Autoclaved Aerated Concrete	Concrete containing	Xella International GmbH	390.0	1081.0	0.095/	7.0	15.3	700.0	0.043	{Material Database	/Auto
	474	Cellular Concrete Ytong	Concrete containing	Xella International GmbH	392.2	850.0	0.095/	7.4	17.8	800.0	0.043	{Material Database	}/Yton
	473	Cellular Concrete	Concrete containing		414.6	850.0	0.100/	8.9	17.7	780.0	0.039	{Material Database)/Porer
	405	Pumice Concrete	Concrete containing		668.0	850.0	0.140/	4.0	110.7	427.1	0.035	{Material Database)/Bims
	557	Brick Schlagmann WDZ Brick Shell	Building brick	Schlagmann	1394.6	1018.7	0.266/	14.0	13.3	403.1	0.443	{Material Database)/
	552	Brick Schlagmann (solid brick)	Building brick	Schlagmann	1394.6	1018.7	0.266/	14.0	13.3	403.1	0.443	Material Database)/Ziege
	508	Perforated Brick	Building brick	Wienerberger AG	1400.0	1000.0	0.350/	18.8	11.4	319.4	0.177	{Material Database	}/Wien
	547	Old Building Brick Tivoli Berlin (outer brick 2)	Building brick		1469.3	1014.9	0.429/	7.2	5.7	440.0	0.489	{Material Database	}/
	545	Old Building Brick Schloss Güterfelde (GF outer brick 2)	Building brick		1531.8	907.0	0.383/	10.4	4.9	357.0	0.218	{Material Database	i}/
	704				1545.0	000.0	0 5461	11.2	4.0	257.0	0.007		

Image 9. Material table sorted by density

The column widths can be changed by moving the mouse to the line between two columns in the column header. The mouse cursor then changes as shown in the picture below. Then hold

down the left mouse button and move the width of the column. DELPHIN remembers the widths set in this way for the next call.

🎢 Material di	atabase									
Category:	Building	brick V Name:								
Simulation type O thermal O hygrothermal										
ID		Name	Category	Producer	Rho [kg/m3]	cp [J/kgK]	Lambda [W/mK]	μ[]	W	
	554	Brick Schlagmann WDF 120mm (PKS-Filling with brick	Building brick	Schlagmann	102.5	850.7	0.041/	10.3		
	812	Brick Schlagmann WDZ_Perlite filling	Building brick	Schlagmann	146.7	766.6	0.050/	3.4		
	555	Brick Schlagmann WDF 180mm (Perlite-Filling with brick	Building brick	Schlagmann	196.6	777.1	0.048/0.055	5.8		
	553	Brick Schlagmann WDF 120mm (Perlite filing with brick	Building brick	Schlagmann	196.6	777.1	0.048/0.060	5.9		
	1	Autoclaved Aerated Concrete	Concrete containing	Xella International GmbH	390.0	1081.0	0.095/	7.0		
	474	Cellular Concrete Ytong	Concrete containing	Xella International GmbH	392.2	850.0	0.095/	7.4		
	473	Cellular Concrete	Concrete containing		414.6	850.0	0.100/	8.9		
	405	Pumice Concrete	Concrete containing		668.0	850.0	0.140/	4.0		
	557	Brick Schlagmann WDZ Brick Shell	Building brick	Schlagmann	1394.6	1018.7	0.266/	14.0		
	552	Brick Schlagmann (solid brick)	Building brick	Schlagmann	1394.6	1018.7	0.266/	14.0		
	508	Perforated Brick	Building brick	Wienerberger AG	1400.0	1000.0	0.350/	18.8		
	547	Old Building Brick Tivoli Berlin (outer brick 2)	Building brick		1469.3	1014.9	0.429/	7.2		
	545	Old Buildina Brick Schloss Güterfelde (GF outer brick 2)	Buildina brick		1531.8	907.0	0.383/	10.4		

Image 10. Change column width

The background colour and font may also vary. Materials from the standard database have a white or light grey background. For user materials, the background is yellow. If the font of a material is grey, then it is an deprecated material. In this case, the ID of the material that replaces it is also displayed in the material name. If the font is grey and striked through, then this material has been marked as removed. Both material types should no longer be used. They are only included for reasons of compatibility with old projects. The visibility of such materials can be adjusted with the checkbox at the bottom left of the dialogue.

Simulation type	⊖ thermal ● hygrothe	rmal				
ID	Name	Category	Producer	Rho [kg/m3]	cp [J/kgK]	
554	Brick Schlagmann WDF 120mm (PKS-Filling with brick	Building brick	Schlagmann	102.5	850.3	
164	Minerally insulation board - replaced by material with ID	Insulation materials	Xella International	110.0	1290.0	
283	Minerally insulation board - removed	Insulation materials	Xella International GmbH	125.7	968./	
812	Brick Schlagmann WDZ_Perlite filling	Building brick	Schlagmann	146.7	766.	
556	Brick Schlagmann WDZ_Perlite filling - replaced by	Building brick	Schlagmann	146.7	766.6	
553	Brick Schlagmann WDF 120mm (Perlite filing with brick	Building brick	Schlagmann	196.6	777.	
555	Brick Schlagmann WDF 180mm (Perlite-Filling with brick	Building brick	Schlagmann	196.6	777.	
1	Autoclaved Aerated Concrete	Concrete containing	Xella International GmbH	390.0	1081.0	
474	Cellular Concrete Ytong	Concrete containing	Xella International GmbH	392.2	850.0	
472				414.6	850	

Image 11. Material table with obsolete or removed materials

The **material ID** is a number that uniquely identifies each material record. This number is assigned by the central administration tool of the software manufacturer. Even if materials are removed from the database, this number is retained. This enables a precise allocation even for older projects.

The **colour code** shows the transport options available for the material. They have the following meaning:

red	Heat transport
dark blue	Liquid water transport
blue	Vapour transport
light blue	Air transport

The **name** and the **manufacturer name** are displayed in the language set in the dialogue. The **category** is always displayed in the language of the system.

Columns 6 to 12 show a selection of basic parameters to give an impression of the properties of the material.

4. Comments and dates

Directly below the table are two areas containing comments and dates for the currently selected material, if these are stored with the material.

			Material databa	se						- e ×
Category:	All • Name:									Language: English -
Simulation type	⊂ thermal ● h	ygrothermal								search similar material
ID ^	Name	Category	Producer	Rho [kg/m3] c	p [J/kgK] I	Lambda [W/mK]	н []	W80 [kg/m3] W	Sat [kg/m3]	Aw [kg/m2s05]
1779	VAPOR INNEN 120	Foils and	Holz Technic	120.0	1800.0	0.300/	30560.0	0.0	2.2	\${Material Databa
1778	VAPOR IN 120	Foils and	Rotho Blaas srl	120.0	1800.0	0.300/	30560.0	0.0	2.2	\${Material Databa
1777	VAPOR 150	Foils and	Rotho Blaas srl	150.0	1800.0	0.300/	13807.0	0.0	2.2	\${Material Databa
1776	TRASPIR WELD EVO 360	Foils and	Rotho Blaas srl	360.0	1800.0	0.400/	241.0	0.0	2.2	\${Material Databa
1775	TRASPIR WAND 110	Foils and	Holz Technic	112.0	1800.0	0.300/	32.3	0.0	2.2	\${Material Databa
1774	TRASPIR EVO UV 210	Foils and	Rotho Blaas srl	210.0	1800.0	0.300/	40.0	0.0	2.2	\${Material Databa
1773	TRASPIR EVO 300	Foils and	Rotho Blaas srl	300.0	1800.0	0.300/	37.0	0.0	2.2	\${Material Databa
1772	TRASPIR EVO 220	Foils and	Rotho Blaas srl	220.0	1800.0	0.300/	238.0	0.0	2.2	\${Material Databa
1771	TRASPIR EVO 160	Foils and	Rotho Blaas srl	160.0	1800.0	0.400/	150.0	0.0	2.2	\${Material Databa
1770	TRASPIR DACH MONO 160	Foils and	Holz Technic	160.0	1800.0	0.400/	150.0	0.0	2.2	\${Material Databa
1769	TRASPIR DACH 150	Foils and	Holz Technic	150.0	1800.0	0.300/	18.0	0.0	2.2	\${Material Databa
1768	TRASPIR 150	Foils and	Rotho Blaas srl	150.0	1800.0	0.300/	18.0	0.0	2.2	\${Material Databa
1767	TRASPIR 110	Foils and	Rotho Blaas srl	112.0	1800.0	0.300/	32.3	0.0	2.2	\${Material Databa
1766	CLIMA CONTROL NET 160	Foils and	Rotho Blaas srl	160.0	1800.0	0.300/	3460.0	0.0	2.2	\${Material Databa
1765	CLIMA CONTROL 80	Foils and	Rotho Blaas srl	80.0	1700.0	0.200/	4200.0	0.0	2.2	\${Material Databa
1764	BARRIER NET SD40	Foils and	Rotho Blaas srl	110.0	1800.0	0.400/	43800.0	0.0	2.2	\${Material Databa
1763	BARRIER ALU NET SD1500	Foils and	Rotho Blaas srl	200.0	1700.0	0.390/	352123	0.0	2.2	\${Material Databa
1762	Wood Fibre Board indoor	Insulation materials	best wood SCHNEIDER®	119.1	1000.0	0.040/	1.1	12.7	590.3	0.005 \${Material Databa
1759	Bronze	Miscellaneous		8700.0	380.0	65.000/65.000				\${Material Databa
1758	Zinc	Miscellaneous		7200.0	380.0	110.000/110.0				\${Material Databa
1757	Stainless steel, ferritic	Miscellaneous		7900.0	460.0	30.000/30.000				\${Material Databa
1756	Stainless steel, austenitic	Miscellaneous		7900.0	500.0	17.000/17.000				\${Material Databa
1755	Steel	Miscellaneous		7800.0	450.0	50.000/50.000				\${Material Databa*
Comment Material Type: H Use in DELPHIN Material Descrij URL Datasheet: Producer Show material	S iigh breathable monolithic membrane resistant to UV: mo if used as a material the layer thickness must always be 1 iton (producer): TRASPIR EVO 300 is a high-performance https://www.rothoblaas.com/products/airtightness-and-w data cheet properties : Show depricated or removed materials	nolithic film and PL layer - Thi mm, since DELPHIN 5.9 use as monolithic wind barrier, prote vaterproofing/membranes	ckness = 0.41 mm - contact condition instead as m cts the envelope and improves	aterial layer is rec the durability of n	ommende naterials. It	d - t can be used for r	oofs			Dates Data set date 16.07.2021 Sampling date GGAL-2010 Help Import Close

Image 12. Display of notes and dates for the selected material (silty clay)

The text in the comments is adapted to the language selected in the dialogue. This area can also contain a link to the manufacturer's data sheet, if this is stored in the material. There are 3 options for the dates on the right:

- Data set date Date on which the data set (material file) was created.
- **Sampling date** Date on which the material samples were taken.
- **Production date** date on which the material was produced

5. Checkboxes for function graphics and deprecated materials

At the bottom left of the dialogue there are two checkboxes.



Image 13. Checkbox for charts and deprecated materials

With the left selection box you can make a view of selected material functions visible for the selected material. The view then changes as shown in the picture below.

			Material database					
Category:	All * Name:					Langu	age: English -	Material View
								Sorption isotherm: ThetaL(rh) *
Simulation type	○ thermal ● hyg	grothermal search similar mater					rch similar material	월 0.3
ID ^	Name	Category	Producer	Rho [kg/m3] c	p [J/kgK] L	.ambda [W/mK]	μ [] W80 [kg	50.25
846	Rotkalk in-Board 045 TecTem	Insulation materials	KNAUF Gips KG	100.3	1640.1	0.046/0.040	8.0	9 0.2
845	TUBAG Insulation Plaster DUP01 kapillaraktiv	Insulation materials	TUBAG / quickmix	1126.9	850.0	0.229/	10.7	50.15
844	Spruce Longitudinal	Timber		414.6	2416.3	0.148/	3.8	·50.05
843	StoDecosil K	Plaster and mortar	Sto SE & Co. KGaA	1760.3	772.2	0.740/	251.4	Σ 0
842	Lime cement mortar	Plaster and mortar	Project Wooden Beam Heads	1876.1	757.9	0.803/	41.3	0 20 40 60 80 100
841	Loam Adhesive	Plaster and mortar		1652.4	889.0	0.724/	9.9	Relative Humidity [%]
840	Lime Plaster fine	Plaster and mortar	SCHAEFER KALK GmbH & Co	1249.0	999.2	0.281/	11.1	Moisture retention function: ThetaL(pC)
839	Gypsum Board Knauf Diamant	Building boards	Knauf Gips KG	1054.5	1334.7	0.311/	11.7	8 0.3 1
838	Old Building Brick Bologna 3enCult	Building brick		1731.2	1092.2	0.624/	24.6	50.25
837	CasiPlus	Insulation materials	CasiPlus GmbH	225.0	1129.0	0.061/	2.4	0.2
836	Transputz SG	Plaster and mortar	Hydroment GmbH	1281.0	203.0	0.522/	8.0	50.15
835	Gypsum Plaster	Plaster and mortar	Maxit	1043.4	1046.8	0.261/	11.3	10.15 10.05
834	Flowing Screed (Cement)	Plaster and mortar	Knauf Gips KG	2040.2	688.5	0.940/	95.5	Σ
833	Brick Joens	Building brick		1903.3	868.0	0.871/	13.0	0 2 4 6 8 10 12
820	WP DS Levell	Plaster and mortar	Remmers Baustofftechnik	1712.5	855.4	0.828/	63.9	Logarithm of Suction Pressure [log10(Pa)]
819	Old Building Brick Tivoli Berlin (outer brick 1)	Building brick		1773.1	862.4	0.838/	43.1	Vapor permeability: Kv(ThetaL) -
818	Tri-O-Therm	Plaster and mortar	quick-mix Gruppe GmbH & C	268.3	1047.0	0.058/0.055	7.1	£1e-11
817	water with 50% glykogen	Miscellaneous		1077.0	3259.1	0.420/		8
816	water with 40% glykogen	Miscellaneous		1062.1	3481.2	0.442/		E 16-12
815	water with 30% glykogen	Miscellaneous		1048.2	3706.2	0.468/		₫ 1e-13
814	water with 20% glykogen	Miscellaneous		1032.1	3904.6	0.500/		&1e-14
813	pure water	Miscellaneous		999.8	4219.0	0.569/		S _{1e-15}
812	Brick Schlagmann WDZ_Perlite filling	Building brick	Schlagmann Baustoffwerke	146.7	766.6	0.050/	3.4	0 0.05 0.1 0.15 0.2 0.25 0.3 Moisture Content [m3/m3]
Comment	s					Dat	es	Liquid conductivity: Kl(ThetaL)
Measured for H	he recearch project 3epCult							15 1e-05 -
newly calibrate	d					Data	a sec dace	
	-					01.07	. 2020	51e-15
						6 m	alian data	T 1e-20
						Sam	pung date	-1e-25
						01.02	2011	- 1e-30
✓ Show materia	0 0.05 0.1 0.15 0.2 0.25 0.3 Moisture Content [m3/m3]							
💓 🌆 🌌 🕅	L.							monscare concerte [msymb]

Image 14. Material list with material functions

The following material functions are shown by default (from top to bottom):

- Sorption isotherm
- moisture storage function
- Vapour conduction function
- Liquid water conduction function

For a more detailed display, the material view should be used.

The second checkbox can be used to change the view of obsolete or removed materials. An explanation of this can be found here.

6. Editing user materials and material view

The buttons for editing the user materials and for the material view are located at the bottom left.



Image 15. Buttons User Materials and View

- 1. Add new user material
- 2. Edit selected user material
- 3. Copy selected material and add it to the user database
- 4. Delete selected user material
- 5. Show material data for selected material (all databases).

The buttons are only visible when a material is selected. For button 4 (Remove), the selected material must be a user material. The procedure for clicking on one of the buttons is shown below:

6.1. New user material

Immediately after the click, a hint window is displayed with instructions on how to design the file name. Then a file selection dialogue opens in which the directory of the user database is already open. Now the file name must be entered and confirmed.



Image 16. Creation of a new user material - selection of the file name

After clicking on '*Save*' the material file is created and then the editor is called up. First there is another hint box.



Image 17. Hint box for the material editor

These hints can also be switched so that they do not appear the next time. To do this, simply tick the checkbox '*Do not show this dialogue again*'. After confirming the hint box, the material editor opens with an empty material. All necessary information must now be entered here. Notes on the material editor can be found here:

```
www.bauklimatik-
dresden.de/delphin/2nd/doc/DELPHIN6_1_MaterialEditor_de/MaterialEditor_en
```

6.2. Edit selected material

When you click on this button, the further process depends on whether a user material or a material from the built-in database is selected. If it is a user material, the material editor is

simply opened with this material. In the other case, you are first asked whether the selected material should be copied. If yes, a new material file is created, which can then be edited.

6.3. Copy selected material

The procedure here is similar to creating a new material. Here too, a new material name is first defined and then the material editor is opened. In this case, however, the data of the previously selected material is already available and only needs to be changed. This simplifies the material creation somewhat compared to the complete new creation.

6.4. Delete user material

This button is only active if the selected material is a user material. After clicking, there is only a short query whether the material should really be deleted.

6.5. Material view

After clicking on this button the material editor is opened with the data of the selected material. However, it is not possible to edit the data here.