

## Introduction

This document lists the default **colour database** which is based on a selection of materials and boundary conditions from EN ISO 10077-2, EN 6946, EN ISO 10456, ISO 15099 and NFRC.

The Physibel colour database is a set of predefined colours which are easily accessible from within the Physibel programs: *Colours* → *List All* or *List Defined*.




















The colour database is directly accessible from within a project file:  
*File* → *Open Colour Database*<sup>1</sup>.

To adjust the colour database: see document 'How to modify the colour database?'

<sup>1</sup>The colour database is stored in :


































































- In BISCO: C:\Users\...\AppData\Roaming\Physibel\BISCO\*\ColourDatabase.bsc
- In TRISCO: C:\Users\...\AppData\Roaming\Physibel\TRISCO\*\ColourDatabase.trc
- In SOLIDO: C:\Users\...\AppData\Roaming\Physibel\SOLIDO\*\ColourDatabase.sld
- In Trisco2D: C:\Users\...\AppData\Roaming\Physibel\Trisco2D\*\ColourDatabase.tr2
- In BISTRA: C:\Users\...\AppData\Roaming\Physibel\BISTRA\*\ColourDatabase.bst
- In VOLTRA: C:\Users\...\AppData\Roaming\Physibel\VOLTRA\*\ColourDatabase.vtr

























































\*major version

Boundary conditions	Colour	Colour index	Temperature $\theta$ °C	Surface heat transfer coefficient	
				h W/(m <sup>2</sup> .K)	
Outdoors		170	0	25	[3],[5]
Outdoors (summer)		188	30	13.5	[4]
Indoors, horizontal heat flow		174	20	7.7	[3],[5]
Indoors, horizontal heat flow, reduced		182	20	5	[5]
Indoors, upwards heat flow		190	20	10	[3]
Indoors, downwards heat flow		166	20	5.9	[3]
Indoors, horizontal heat flow, BC_SKY		181	20 / 20	2.5 / Rad	
Indoors, upwards heat flow, BC_SKY		184	20 / 20	5.0 / Rad	
Indoors, downwards heat flow, BC_SKY		187	20 / 20	0.7 / Rad	
Cavity slightly ventilated indoors side (radiosity)		249	20	3.33	[5]
Cavity slightly ventilated outdoors side (radiosity)		251	0	3.33	[5]
Highly ventilated cavity, horizontal heat flow		185	0	7.7	[3]
Highly ventilated cavity, upwards heat flow		177	0	10	[3]
Highly ventilated cavity, downwards heat flow		175	0	5.9	[3]
Adiabatic		191	0	0	
Outdoor NFRC 100 (Blackbody)		171	-18	31.25	[7,8]
Indoors, center of glass (Automatic Enclosure Model), BC_SKY		167	21	2.18 / Rad	[7,8]
Indoors, edge of glass (Automatic Enclosure Model), BC_SKY		168	21	2.18 / Rad	[7,8]
Indoors, frame (Automatic Enclosure Model), BC_SKY		169	21	function of frame type	[7,8]

## References

- [1] ISO 10456, 2007
- [2] Energy simulation in building design, J A Clarke, 2001
- [3] EN ISO 6946, 2017
- [4] EN ISO 13792
- [5] EN ISO 10077-2, 2017
- [6] EN ISO 673, 2024
- [7] ISO 15099, 2003
- [8] NFRC 100, 2024

Material group	Material	Colour	Colour index	Design thermal conductivity $\lambda$ W/(m.K)	Density $\rho$ kg/m <sup>3</sup>	Specific heat capacity $c_p$ J/(kg.K)	Ref.	
Bitumen	Bitumen sheet		32	0.23	1100	1000	[1]	
Concrete	Concrete density 1800 kg/m <sup>3</sup>		72	1.15	1800	1000	[1]	
	Concrete density 2000 kg/m <sup>3</sup>		88	1.35	2000	1000	[1]	
	Concrete density 2400 kg/m <sup>3</sup>		120	2.0	2400	1000	[1]	
	Reinforced concrete (steel 2 %)		136	2.5	2400	1000	[1]	
	Gypsum	Gypsum 900		129	0.30	900	1000	[1]
Gypsum	Gypsum 1200		145	0.43	1200	1000	[1]	
	Gypsum plasterboard		161	0.25	900	1000	[1]	
	Insulation	Insulation 0.020 W/mK		118	0.020	30	1000	[1]
	Insulation 0.025 W/mK		135	0.025	30	1000	[1]	
	Insulation 0.030 W/mK		133	0.030	30	1000	[1]	
Insulation	Insulation 0.035 W/mK		151	0.035	30	1000	[1]	
	Insulation 0.040 W/mK		131	0.040	30	1000	[1]	
	Insulation 0.045 W/mK		155	0.045	30	1000	[1]	
	Insulation 0.050 W/mK		149	0.050	30	1000	[1]	
	Masonry	Masonry very light		156	0.19	470	840	[2]
	Masonry light		132	0.22	750	840	[2]	
	Masonry medium density		148	0.32	1050	840	[2]	
	Masonry semi-heavy		164	0.60	1350	840	[2]	
	Masonry heavy		180	0.90	1850	840	[2]	
	Masonry calcium silicate		153	1.50	2000	840	[2]	
Metals	Aluminium anodized, painted or coated		8	160	2800	880	[1]	
	Copper		4	380	8900	380	[1]	
	Lead		9	35	11300	130	[1]	
	Steel		13	50	7800	450	[1]	
	Stainless steel		11	17	7900	460	[1]	
	Zinc		37	110	7200	380	[1]	
	Plastics	Polycarbonates		21	0.20	1200	1200	[1]
Polyvinylchloride (PVC)			41	0.17	1390	900	[1]	
Polyamide (nylon)			36	0.25	1150	1600	[1]	
Polyamide 6,6 with 25 % glass fibre			44	0.30	1450	1600	[1]	
Polyurethane (PU) 1200 kg/m <sup>3</sup>			40	0.25	1200	1800	[1]	
Polyester resin			81	0.19	1400	1200	[1]	
Silicone, pure			102	0.35	1200	1000	[1]	
Polyurethane (PU) foam			103	0.05	70	1500	[1]	
Renders	Cement sand		57	1.0	1800	1000	[1]	
Rubber	EPDM		60	0.25	1150	1000	[1]	
	Butyl solid / hot melt		92	0.24	1200	1400	[1]	
Soils	Clay or silt		31	1.5	1500	2100	[1]	
Stone	Sand and gravel		23	2.0	1900	1000	[1]	
	Basalt		16	3.5	2700	1000	[1]	
	Granite		64	2.8	2500	1000	[1]	
	Marble		49	3.5	2800	1000	[1]	
	Slate		48	2.2	2000	1000	[1]	
	Limestone, hard		17	1.7	2200	1000	[1]	
	Sandstone (silica)		143	2.3	2600	1000	[1]	
	Natural pumice		159	0.12	400	1000	[1]	
	Tiles (other)	Ceramic/porcelain tiles		26	1.3	2300	840	[1]
	Tiles (roofing)	Clay roofing tiles		68	1.0	2000	800	[1]
Concrete roofing tiles			51	1.5	2100	1000	[1]	
Timber		Timber 500 kg/m <sup>3</sup>		15	0.13	500	1600	[1]
Wood-based panels	Timber 700 kg/m <sup>3</sup>		12	0.18	700	1600	[1]	
	Plywood 300 kg/m <sup>3</sup>		121	0.09	300	1600	[1]	
	Plywood 500 kg/m <sup>3</sup>		124	0.13	500	1600	[1]	
	Plywood 700 kg/m <sup>3</sup>		139	0.17	700	1600	[1]	
	Plywood 1000 kg/m <sup>3</sup>		140	0.24	1000	1600	[1]	
	Cement-bonded particleboard		137	0.23	1200	1500	[1]	
	Particleboard 300 kg/m <sup>3</sup>		113	0.10	300	1700	[1]	
	Particleboard 600 kg/m <sup>3</sup>		144	0.14	600	1700	[1]	
	Particleboard 900 kg/m <sup>3</sup>		179	0.18	900	1700	[1]	
	Oriented strand board (OSB)		183	0.13	650	1700	[1]	
	Fibreboard, incl. MDF(e) 250 kg/m <sup>3</sup>		71	0.07	250	1700	[1]	
	Fibreboard, incl. MDF(e) 400 kg/m <sup>3</sup>		87	0.10	400	1700	[1]	
	Fibreboard, incl. MDF(e) 600 kg/m <sup>3</sup>		76	0.14	600	1700	[1]	
	Fibreboard, incl. MDF(e) 800 kg/m <sup>3</sup>		108	0.18	800	1700	[1]	

Material group	Material	Colour	Colour index	Design thermal conductivity $\lambda$ W/(m.K)	Density $\rho$ kg/m <sup>3</sup>	Specific heat capacity $c_p$ J/(kg.K)	Ref.
Black & white			0	1	1000	1000	
			1	1	1000	1000	
Frame	Copper		4	380	8900	380	[5]
	Aluminium anodized, painted or coated (em. 0,9)		8	160	2800	880	[5]
	Aluminium untreated surface (em. 0,1)		2	160	2800	880	[5]
	Aluminium slightly oxidized surface (em. 0,3)		6	160	2800	880	[5]
	Brass		14	120	8400	375	[5]
	Steel		13	50	7800	450	[5]
	Stainless steel (ferritic/martensitic)		10	30	7900	460	[5]
	Stainless steel (austenitic/aust.ferritic)		11	17	7900	460	[5]
	PVC rigid		3	0.17	1390	900	[5]
	Hardwood		12	0.18	700	1600	[5]
	Softwood 500 kg/m <sup>3</sup>		15	0.13	500	1600	[5]
	Softwood 450 kg/m <sup>3</sup>		43	0.12	450	1600	[5]
	Fibreglass (UP-resin)		5	0.40	1900	1500	[5]
Glass	Soda lime		18	1.0	2500	750	[5]
	PMMA		29	0.18	1180	1470	[5]
	Polycarbonates		21	0.20	1200	1100	[5]
	Insulation panel		28	0.035	50	1000	[5]
Thermal break	ABS (acrylonitrile butadiene styrene)		22	0.20	1050	1300	[5]
	Polyamid nylon		36	0.25	1150	1600	[5]
	Polyamide 6,6 with 25 % glass fibre		44	0.30	1450	1600	[5]
	Polyethylene HD		38	0.50	980	1800	[5]
	Polyethylene LD		46	0.33	920	1800	[5]
	Polypropylene solid		39	0.22	910	1800	[5]
	Polypropylene with 25 % glass fibre		47	0.25	1200	1800	[5]
	PU (polyurethane), rigid		40	0.25	1200	1800	[5]
	PVC-U (polyvinylchloride) rigid		41	0.17	1390	900	[5]
Weather stripping	PCP e.g. Neoprene		52	0.23	1240	2140	[5]
	EPDM		60	0.25	1150	1000	[5]
	Silicone pure		62	0.35	1200	1000	[5]
	Silicone filled		63	0.40	1450	1000	[5]
	PVC flexible		67	0.14	1200	1000	[5]
	Pile weather stripping (polyester mohair)		79	0.14	50	1000	[5]
	Elastomeric foam, flexible		56	0.05	70	1500	[5]
Sealant & glass edge	PU (polyurethane)		85	0.40	1500	1800	[5]
	Butyl solid / hot melt		92	0.24	1200	1400	[5]
	Polysulfide		86	0.40	1700	1000	[5]
	Silicone pure		62	0.35	1200	1000	[5]
	Silicone filled		63	0.40	1450	1000	[5]
	Polyisobutylene		100	0.20	930	1100	[5]
	Polyester resin		81	0.19	1400	1200	[5]
	Silica gel		104	0.13	720	1000	[5]
	Molecular sieve		105	0.10	700	1000	[5]
	Silicon foam LD		111	0.12	750	1000	[5]
Silicon foam MD		119	0.17	820	1000	[5]	
Cavities	Cavity non-ventilated Xy horizontal flow		192		1.2	1005	[3],[5]
	Glass cavity 10% air 90% argon 0.837/0.037		193				[7]
	Glass cavity 10% air 90% argon 0.837/0.037		194				[6]
	Cavity non-ventilated Yx horizontal flow		200		1.2	1005	[3],[5]
	Cavity non-ventilated Yx upwards flow		208		1.2	1005	[3],[5]
	Cavity non-ventilated Yx downwards flow		216		1.2	1005	[3],[5]
	Cavity slightly ventilated Xy horizontal flow		224		1.2	1005	[5]
	Cavity slightly ventilated Yx horizontal flow		232		1.2	1005	[5]
	Air layer (unventilated) Xy horizontal flow		240		1.2	1005	[3]
	Air layer (unventilated) Xy upwards flow		243		1.2	1005	[3]