

Data required to create material datasets for the WUFI database

Group			Group A	Group B	Group C	Group D	Group E	Group F
Character of material			Capillary active material	Non capillary active fiber insulation material	Non hygroscopic material	Capillary active interior insulation material	Membrane (constant s_d -value)	Variable membrane (moisture dependent s_d -value)
Example			Concrete, masonry, wooden materials, plaster	Mineral wool	Glass, metal, VIP, EPS, XPS, PU, UF	CaSi-board, woodfiber insulation board	PE-membrane, vapour barrier with constant s_d -value	PA-membrane, vapour barrier with moisture dependent s_d -value
Bulk density	kg/m ³	lb/ft ³	o	o	o	o	o	o
Porosity	m ³ /m ³	ft ³ /ft ³	o	o	o ²⁾	o	o ²⁾	o ²⁾
Heat capacity, 10 °C, dry	J/kgK	Btu/lb°F	o ²⁾	o ²⁾	o ²⁾	o ²⁾	o ²⁾	o ²⁾
Thermal conductivity, 10 °C, dry ¹⁾	W/mK	Btu/hft°F	o	o	o	o	o ²⁾	o ²⁾
Water Vapour Diffusion Resistance Factor (μ -value)	-	perm in	o	o	o	o	o	o
Moisture Storage Function	kg/m ³	lb/ft ³	o	o	-	o	-	-
Liquid Transport Coefficient, Suction	m ² /s	ft ² /s	o	-	-	o	-	-
Liquid Transport Coefficient, Redistribution	m ² /s	ft ² /s	o	-	-	o ⁴⁾	-	-
μ -value, moisture dependent	-	perm in	# ²⁾	-	-	# ²⁾	-	o ³⁾
Thermal Conductivity, moisture dependent	W/mK	Btu/hft°F	# ²⁾	# ²⁾	# ²⁾	# ²⁾	# ²⁾	# ²⁾
Thermal Conductivity, temperature dependent	W/mK	Btu/hft°F	# ²⁾	# ²⁾	# ²⁾	# ²⁾	# ²⁾	# ²⁾
Enthalpy, temperature dependent	J/kg	Btu/lb	# ²⁾	# ²⁾	# ²⁾	# ²⁾	# ²⁾	# ²⁾

List of values: [o : necessary, # : if property relevant, - : not necessary]

¹⁾ For insulation materials the measured values are preferable (if available) instead of design values.

²⁾ If property is missing, values from literature or estimated values may be used.

³⁾ The measured moisture dependent μ -values should be evaluated according to

<https://wufi.de/de/service/downloads/#tab2> -> "Leitfaden zur Auswertung von Cup-Messungen variabler μ -Werte." (only available in German)

⁴⁾ Measurement using Kapi-Test:

<https://www.ibp.fraunhofer.de/en/Expertise/Hygrothermics/projects/das-kapillaer-ruecktransportvermoegen-kapillaraktiver-innendaemm.html>