Physical material properties
of the applied materials

FRINORM®

Frame extension elements for wooden and wood-metal windows
Standard

Chipboard	Symbol	Test method	Unit	Value
Classification	P5 in acc. with EN 312, boards for load-bearing purposes in damp environments			
Emission category	E1			
Certification	PEFC-certified			
Gross density	ρ_a		kg/m³	~715–740
Thermal conductivity	λ_D		W/mK	0.140
Fire behaviour		EN 13501-1		D-s2, d0
Thickness tolerance within and between the boards		EN 324-1	mm	±0.3
Board moisture		EN 322	%	5–13
Formaldehyde potential category E1		EN 120	mg/100 g	Max. 8.0
Thickness swelling (after 24 hrs)		EN 317	%	10.0
Bending strength		EN 310	N/mm²	16.0
Bending elasticity modulus		EN 310	N/mm²	2400
Transverse tensile strength		EN 319	N/mm²	0.45
Transverse tensile strength after boil test		EN 1087-1	N/mm²	0.14
Water vapour permeability (density: 600 kg/m³)		EN 13986	μ, damp μ, dry	15 50
Degree of sound absorption			250–500 Hz 1000–2000 Hz	0.10 0.25
Swelling and shrinkage in panel plane (Change of board moisture: 1%)			%	0.02–0.05

MDF	Symbol	Test method	Unit	Value
Classification	Medium-density fibreboard for use in damp environments, low-swelling, water-resistant			
Formaldehyde emission		EN 120	Class	E1
Fire behaviour		EN 13501-1	Class	C-s2, d0
Raw density		EN 323	kg/m³	750
Thermal conductivity			W/mK	0.100
Transverse tensile strength		EN 319	N/mm²	1.35
Surface soundness		EN 311	N/mm³	2.0
Bending strength		EN 310	N/mm⁴	22.0
Elasticity modulus		EN 310	N/mm⁵	2300

PUR rigid foam	Symbol	Test method	Unit	Value
Gross density	ρ_a	EN 1602	kg/m³	31–33
Thermal conductivity	λ_D	EN 12667	W/mK	0.022–0.024
Fire behaviour		DIN 4102		B3
Compressive strength		EN 826	kPa	200–240
Bending strength		EN 12089	kPa	250–300
Transverse tensile strength		EN 1607	kPa	320–380
Shear strength		EN 12090	kPa	150–200
Shear resistance		EN 12090	kPa	170–230
Closed-cell structure		ISO 4590	%	90–95
Water absorption		EN 12087	%	3
Applicable in a temperature range			°C	From –20 to +120

Wood	Symbol	Test method	Unit	Value
Type	Spruce			
Certification	PEFC-certified			
Thermal conductivity	λ_D		W/mK	0.140

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