

# Isover NF 333

## Stone wool insulation



### TECHNICAL SPECIFICATION

Insulating slabs made of Isover mineral wool with perpendicular fibres. The production is based on the defibring method of the mineral composition melt with other additives and ingredients. The mineral fibres produced are processed into the final slab shape on the production line. The entire fibre surface is hydrophobic and the fibres are perpendicular to the wall plane. The slabs in the construction have to be suitably protected (layers of the contact wall insulation system).



### APPLICATION

Isover NF 333 slabs are suitable for ETICS facade systems where the insulating slabs are fully glued on a sufficiently flat and bearing surface. The layers of contact insulating systems are applied on the slabs: bond, reinforcement grid, penetration, plaster, and paint. Smaller slab size and perpendicular orientation of fibres enables matching to curved surfaces. Furthermore, there is the possibility to regrind slab surface for keeping its face smooth. There are lesser requirements for the mechanical bond due to full gluing (see manufacturers of the ETICS system anchors for recommended bond plans).

### PACKAGING, TRANSPORT, WAREHOUSING

Isover NF 333 insulation slabs are packed into PE film foil-covered packets or as packets on a pallet. Isover NF 333 is standardly delivered on pallets. The material must be transported and stocked under conditions preventing them from getting wet and from other degradation. Thicknesses of 260-320 mm are available only as bulk goods on pallets.

### DIMENSIONS AND PACKAGING

Thickness [mm]	Length × width [mm]	Volume per package			Quantity per palette [m <sup>2</sup> ]	Declared thermal resistanc R <sub>D</sub> [m <sup>2</sup> ·K·W <sup>-1</sup> ]
		[pcs]	[m <sup>2</sup> ]	[m <sup>3</sup> ]		
30	1000 × 333	20	6.66	0.200	106.56	0.75
40	1000 × 333	15	5.00	0.200	80.00	1.00
50	1000 × 333	12	4.00	0.200	64.00	1.25
60	1000 × 333	8	2.66	0.160	53.20	1.50
70*	1000 × 333	8	2.66	0.186	42.56	1.75
80	1000 × 333	6	2.00	0.160	40.00	2.00
100	1000 × 333	6	2.00	0.200	32.00	2.50
120	1000 × 333	4	1.33	0.160	26.60	3.00
140	1000 × 333	3	1.00	0.140	24.00	3.50
150	1000 × 333	4	1.33	0.200	21.28	3.75
160	1000 × 333	3	1.00	0.160	20.00	4.00
180	1000 × 333	3	1.00	0.180	20.00	4.50
200	1000 × 333	3	1.00	0.200	16.00	5.00
220*	1000 × 333	2	0.67	0.147	16.08	5.50
240*	1000 × 333	2	0.67	0.160	13.40	6.00
260*	1000 × 333	40**	13.32**	**	13.32**	6.50
280*	1000 × 333	40**	13.32**	**	13.32**	7.00
300*	1000 × 333	32**	10.66**	**	10.66**	7.50
320*	1000 × 333	32**	10.66**	**	10.66**	8.00

\* Consult with producer for terms of delivery. \*\* Free boards on a pallet, wrapped in PE foil.

### TECHNICAL PARAMETERS

Parameter	Unit	Methodology	Value	Designation code
<b>Geometric shape</b>				
Length /	[% , mm]	EN 822	±1%	
Width b	[% , mm]	EN 822	±1,5%	
Thickness d	[% , mm]	EN 823	-1 % or -1 mm <sup>D</sup> and +3 mm	Class of thickness tolerances T5
Deviation from squareness of the edge on length and width S <sub>e</sub>	[mm·m <sup>-1</sup> ]	EN 824	2	
Deviation from flatness S <sub>max</sub>	[mm]	EN 825	5	
Relative change in length Δε <sub>l</sub> , in width Δε <sub>b</sub> , in thickness Δε <sub>d</sub>	[%]	EN 1604	1	Dimensional stability under the specified temperature and humidity conditions DS(70/90)

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Parameter	Unit	Methodology	Value	Designation code					
<b>Thermal technical properties</b>									
Declared value of thermal conductivity coefficient $\lambda_D^{2)}$	[W·m <sup>-1</sup> ·K <sup>-1</sup> ]	Declaration according to EN 13162+A1 Measurement according to EN 12667	0.041						
Design thermal conductivity $\lambda_D^{3)}$	[W·m <sup>-1</sup> ·K <sup>-1</sup> ]	ČSN 73 0540-3	0.043						
Specific heat capacity $c_D$	[J·kg <sup>-1</sup> ·K <sup>-1</sup> ]	ČSN 73 0540-3	800						
<b>Mechanical properties</b>									
Compressive stress at 10% deformation $\sigma_{10}$	[kPa]	Declaration according to EN 826	40	Declared level of compressive stress at 10% deformation CS(10)40					
Tensile strength perpendicular to faces $\sigma_{nt}$	[kPa]	Declaration according to EN 1607	80	Declared level of tensile strength perpendicular to faces TR80					
Shear strength $\tau$	[kPa]	Declaration according to EN 12090	20 <sup>5)</sup>	Level of shear strength SS20					
The point load at a given deformation $F_p$	[N]	Declaration according to EN 12430	1000 <sup>5)</sup>						
<b>Fire safety properties</b>									
Reaction to fire class	[-]	Declaration according to EN 13501-1+A1	A1						
Maximum temperature for use	[°C]		200						
Melting temperature $t_f$	[°C]	DIN 4102 part 17	≥ 1000						
<b>Hydrothermal properties</b>									
Short-term water absorption $W_p$	[kg·m <sup>-2</sup> ]	Declaration according to EN 13162+A1 Measurement according to EN 1609	1	Declared level for short term water absorption WS					
Long-term water absorption by partial immersion $W_{ip}$	[kg·m <sup>-2</sup> ]	Declaration according to EN 13162+A1 Measurement according to EN 12087	3	Declared level for long term water absorption by partial immersion WL(P)					
Water vapour diffusion resistance factor $\mu$	[-]	Declaration according to EN 13162+A1 Measurement according to EN 12086	1	Declared value for water vapour diffusion resistance factor MU1					
<b>Other properties</b>									
Density $\rho$	[kg·m <sup>-3</sup> ]	EN 1602	80-100 <sup>4)</sup>						
<b>Acoustic properties<sup>5)</sup></b>									
Practical sound absorption coefficient $\alpha_p$	[-]	EN 13162+A1	Level of practical sound absorption coefficient						AP
		EN ISO 11654							
		Measurement according to EN ISO 354							
		Frequency	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	
Thickness	60 mm	0.20	0.70	1.00	1.00	0.95	0.95		
	100 mm	0.45	1.00	1.00	1.00	1.00	1.00		
	140 mm	0.65	1.00	1.00	1.00	1.00	1.00		
Weighted sound absorption coefficient $\alpha_w$	[-]	EN ISO 11654	Level of weighted sound absorption coefficient						AW
		(for NRC according ASTM C423)							
		Single number value							
		Thickness	60 mm	0.95	-	-	-	0.90	
Noise Reduction Coefficient NRC	Thickness	100 mm	1.00	-	-	-	1.00	1.00	
		140 mm	1.00	-	-	-	1.00	1.00	
Specific air flow resistivity $r$	[mm]	ČSN EN 13162+A1	Level of air flow resistivity						
		Measurement according to ČSN EN ISO 9053-1	100	120 <sup>6)</sup>	140 <sup>6)</sup>	150 <sup>6)</sup>	160	180 <sup>6)</sup>	200 <sup>6)</sup>
		[kPa·s·m <sup>-2</sup> ]	11.5	11.5	11.5	11.5	11.5	11.5	11.5
		[MN·m <sup>-3</sup> ]							
Dynamic rigidity $s'$	[mm]	ČSN EN 13162+A1	Value of dynamic rigidity						
		Measurement according to ČSN EN ISO 9052-1 (idt. EN 29052-1)	100	120 <sup>6)</sup>	140 <sup>6)</sup>	150 <sup>6)</sup>	160	180 <sup>6)</sup>	200 <sup>6)</sup>
		[MN·m <sup>-3</sup> ]	81.5	73.4	65.4	61.3	57.3	49.2	41.2
<b>Environmental properties / impacts</b>									
Volume of pre-consumer recycled content for production <sup>5)</sup>	[%]	ČSN ISO 14021	67						
Volume of post-consumer recycled content for production <sup>5)</sup>	[%]	ČSN ISO 14021	0						
Non-hazardous waste disposed <sup>6)</sup>	[kg /FU <sup>8)</sup> ]	EN 15804+A1, ČSN ISO 14025	2.51				NHWD		
Total use of non-renewable primary energy resources	[MJ /FU]	EN 15804+A1, ČSN ISO 14025	133				PENRT		
Global warming potential	[kg CO <sub>2</sub> ekv. /FU]	EN 15804+A1, ČSN ISO 14025	12.7				GWP		
Ozone depletion	[kg CFC 11 ekv. /FU]	EN 15804+A1, ČSN ISO 14025	6.65E-07				ODP		
Acidification potential	[kg SO <sub>2</sub> ekv. /FU]	EN 15804+A1, ČSN ISO 14025	0.0898				AP		
Eutrophication potential	[kg PO <sub>4</sub> <sup>3-</sup> ekv. /FU]	EN 15804+A1, ČSN ISO 14025	0.00846				EP		
Photochemical ozone creation	[kg C <sub>2</sub> H <sub>4</sub> ekv. /FU]	EN 15804+A1, ČSN ISO 14025	0.0132				POPC		
Abiotic depletion potential for non-fossil resources	[kg Sb ekv. /FU]	EN 15804+A1, ČSN ISO 14025	2.44E-07				ADP-elements		
Abiotic depletion potential for fossil resources	[MJ (Calorific value) /FU]	EN 15804+A1, ČSN ISO 14025	123				ADP-fossil fuels		

<sup>1)</sup> Whichever gives the greatest numerical tolerance.

<sup>2)</sup> Declared values were set under the following conditions (reference temperature 10 °C, humidity  $u_{dry}$  which is reached by drying) according EN ISO 10456.

<sup>3)</sup> Valid for typical use in construction with risk of condensation. In the case of construction without any risk of condensation it is possible to use the declared value of thermal conductivity. <sup>4)</sup> The density is not constant and varies with the thickness of the product. <sup>5)</sup> Informative non-declared value beyond scope of CPR, obtained by concrete tests.

<sup>6)</sup> Interpolated and extrapolated values <sup>7)</sup> According to EN ISO 14021, part 7.8 Recycled content. <sup>8)</sup> In this case it is standard mixed waste.

<sup>9)</sup> FU = functional unit (1 m<sup>2</sup> of insulation by 120 mm thick for live cycle phases A1-A3).

## RELATED DOCUMENTS

- Certificate of constancy of performance 1390-CPR-312/11/P
- Declaration of Performance CZ0001-023
- Quality class A
- Environmental Product Declaration
- ISO 9001, ISO 14001, ISO 45001, ISO 50001

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