



Certification Document

Manufacturer:	Metecno Bausysteme GmbH Am Amselberg 1 99444 Blankenhain Germany
Production plant:	Metecno Bausysteme GmbH Am Amselberg 1 99444 Blankenhain Germany
Panel types:	HIPERTEC Roof (SISCOTEK Roof 4G 1000), HIPERTEC Wall (SISCOTEK Wall FV 1000), Superwall HF with steel faces and mineral wool core material
Date of issuing:	20.09.2021
Date of expiry:	20.09.2027
Certification number:	09-05-01-02-0029

The Quality Label EPAQ shall be used only in combination with this certification number.

This Certification Document consists of 11 pages.

This Certification Document is only valid in combination with the valid accompanying Quality Certificate. The Quality Certificate is awarded only after the first External Quality Control (EQC), if the requirements of this Certification Document are fulfilled.

European Association for Panels and Profiles

1 GENERAL

This Certification Document (CD) specifies all characteristics of panel types HIPERTEC Roof (SISCOTEK Roof 4G 1000), HIPERTEC Wall (SISCOTEK Wall FV 1000) and Superwall HF, which must be declared according to EN 14509. Additionally to the requirements of EN 14509, ZA2 for the mechanical resistance and thermal performance, the EPAQ system A (the following tasks are performed by one or more EPAQ third parties: type testing of the product; initial inspection of the plant and of the FPC; continuous surveillance and assessment of the FPC; regular audit-testing of samples) applies. All reports of the initial inspection and continuous surveillance have to be sent also to the secretariat of the association.

2 SANDWICH PANEL TYPES AND DEFINITION OF USED MATERIALS

2.1 Panel types

The sandwich panels of type HIPERTEC Roof (SISCOTEK Roof 4G 1000), HIPERTEC Wall (SISCOTEK Wall FV 1000) and Superwall HF consist of mineral wool (MW) core material in between steel faces, with a panel width of 1000 mm and panel thicknesses within the range $50 \div 200$ mm in accordance with Table 1. The geometry of the panels is displayed in Figure 1 to 3. The dimensions of the panels shall be within the tolerances given in Figure 1 to 3 of this CD, in EN 14509, annex D and in the Quality Regulations for Panels and Profiles of PPA-Europe, Table 2.3. The outer and inner faces are flat, quasi-flat or profiled; they are made out of steel sheets with nominal thicknesses $0,45 \text{ mm} \leq t_N \leq 0,80 \text{ mm}$ for the inner face and $0,50 \text{ mm} \leq t_N \leq 0,80 \text{ mm}$ for the outer face.

The sandwich panels are intended to be used as self-supporting panels for use in internal walls, external walls, roofs and ceilings.

2.2 Characteristics and composition

2.2.1 Faces

The faces are made out of steel sheets with the following characteristics: organic coated galvanised steel S320GD according to EN 10346. The protective coating systems shall be selected according to their durability in the application environment. The agreed characteristics in EN 10169 for the organic coating and in EN 10346 for the metallic coating shall be fulfilled. The faces shall have backside coating on the side of the adhesive. The backside coating system shall fulfil at least the requirements of the CPI2 corrosion protection category in EN 10169. The thickness of the steel sheets for the faces has to be within the normal tolerances given in EN 10143.

2.2.2 Core material

The core of the sandwich panels consists of closely arranged lamellas, which are cut from MW plates and arranged in upright fiber orientation. The resin-bonded MW plates of type Isover SP80, produced by the company Saint-Gobain Construction Products CZ a.s. are the basic product of the core material. The MW plates have to fulfil the requirements of EN 13162. The declared value of the thermal conductivity is $\lambda_{\text{declared}} = 0,044 \text{ W/(m}\cdot\text{K)}$. The core material shall fulfil the reaction to fire requirements of class A1 according to EN 13501-1.

2.2.3 Adhesive

The MW lamellas have to be bonded to the faces using polyurethane based adhesive, type "Isolemfi 50061" of the company Emfi SAS or "SikaForce 7742L20F" of the company Sika Deutschland GmbH.

The amount of adhesive has to be:

- $\leq 190 \text{ g/m}^2$ per side in case of Isolemfi 50061 E or
- $\leq 206 \text{ g/m}^2$ per side in case of SikaForce 7742L20F, for the panels of type HIPERTEC Roof (SISCOTEK Roof 4G 1000) or
- $\leq 213 \text{ g/m}^2$ per side in case of SikaForce 7742L20F, for the panels of type HIPERTEC Wall (SISCOTEK Wall FV 1000) and Superwall HF.

The values given in this CD are only valid for the formulation on which the type testing has been performed.

2.2.4 Sandwich panels

The sandwich panels consist of a core according to chapter 2.2.2 and faces according to chapter 2.2.1. The mass of the panels, determined by the manufacturer, is given in Table 9. The core material has to

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fulfil the requirements of the production control according to Table 4. The sandwich panels have to be produced on continuous line.

The thermal transmittance U-values shown in Table 3 are based on the design value of the thermal conductivity without national safety factors $\lambda_{\text{design}} = 1,0 * \lambda_{\text{declared}}$.

3 MATERIAL SAFETY FACTORS AND WRINKLING STRESSES

For design procedure of EN 14509, appendix E, the material safety factors for the ultimate limit state and for the serviceability limit state shall be used according to Table 5 and the wrinkling stresses according to Tables 7 and 8 of this CD. The long term shear values shall be used according to Table 6. The bending moment capacity shall be calculated by the help of EN 14509, annex E, Tables E.10.1 and E.10.2.

4 BENDING MOMENT CAPACITY

For bending moment capacities, no values are given, because these values are not needed in any case for the design according to the normative Annex E of EN 14509. Bending moment capacities on the basis of full scale tests are dependent on the span and the static systems and do not take into account any effects due of temperature and creeping. A design with these values is therefore not possible on the stage of the valid EN 14509.

5 REACTION TO FIRE

Table 1: Reaction to fire classification of the sandwich panels with core material acc. to 2.2.2 and adhesive acc. to 2.2.3

Panel type	Panel thickness [mm]	Base metal thickness [mm]		Classification		Remarks
		inner face	outer face	inside	outside	
HIPERTEC Roof (SISCOTEK Roof 4G 1000)	50÷200	0,45÷0,8	0,5÷0,8	A2-s1,d0	A2-s1,d0	-
HIPERTEC Wall (SISCOTEK Wall FV 1000)	50÷200	0,45÷0,8	0,5÷0,8	A2-s1,d0	A2-s1,d0	-
Superwall HF	60÷200	0,45÷0,8	0,5÷0,8	A2-s1,d0	A2-s1,d0	-

Table 2: Valid field of application for the classification given in Table 1

Parameter	Valid field of application
Metal facings	
Grade of metal	S320GD
Profile geometry flat or light profiling ≤ 5 mm	P, S, SU1
Profile geometry profiles > 5 mm	T
Surface coating – tested face – PCS	Valid for all coatings with PCS-value in the range 0 ÷ 0,43 MJ/m ²
Colour of coating	Valid for all colours
Joint design	
Joint types I to VIII	Valid for: HIPERTEC Roof (SISCOTEK Roof 4G 1000) and HIPERTEC Wall, (SISCOTEK Wall FV 1000), Superwall HF
Seals and gaskets (integral with panel)	Not valid for the use with seals or gaskets
MW insulating core	
MW type	Isover SP80
Density	100 kg/m ³ ≤ ρ ≤ 130 kg/m ³

Adhesive	<p>Polyurethane based adhesive,</p> <ul style="list-style-type: none"> - SikaForce 7742L20F with a PCS value $\leq 16,7$ MJ/kg and amount ≤ 213 g/m² for HIPERTEC Wall / SISCOTEK Wall FV 1000, Superwall HF and ≤ 206 g/m² for HIPERTEC Roof / SISCOTEK Roof 4G 1000 or - Isolemfi 50061 E with a PCS value $\leq 18,11$ MJ/kg and amount ≤ 190 g/m²
Application	
Orientation of panels, vertical or horizontal application of sandwich panels	Valid for vertical and horizontal installed panels and ceiling application
Metal corner flashings	External and/or internal flashing of zinc coated steel, at least 50 mm wide and of 0,6 mm thickness, with PCS value in the range $0 \div 0,43$ MJ/m ²
Plastic corner flashings	Not valid for plastic corner flashings
Fixings for metal flashings	Valid for fixing spacing of 400 mm or less
Seals which are applied in end use but not part of the manufactured panel	Not valid for seals which are applied in end use but not part of the manufactured panel

6 FIRE RESISTANCE

NPD

7 EXTERNAL FIRE PERFORMANCE

NPD

8 DURABILITY

NPD

9 WATER PERMEABILITY

NPD

10 AIR PERMEABILITY

NPD

11 WATER VAPOUR PERMEABILITY

The sandwich panels of type HIPERTEC Roof (SISCOTEK Roof 4G 1000), HIPERTEC Wall (SISCOTEK Wall FV 1000) and Superwall HF are considered to be impermeable to water vapour.

12 AIRBORNE SOUND PERMEABILITY

NPD

13 SOUND ABSORPTION

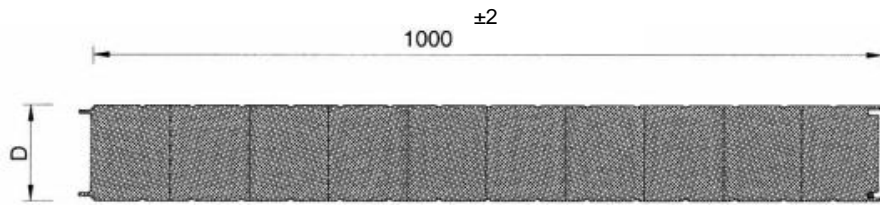
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14 WALKABILITY

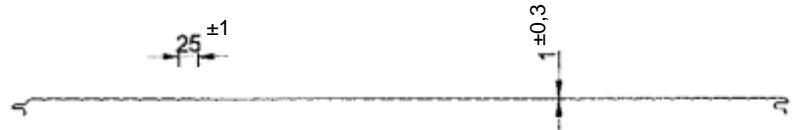
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Table 3: Thermal transmittance U-values (W/m²K)

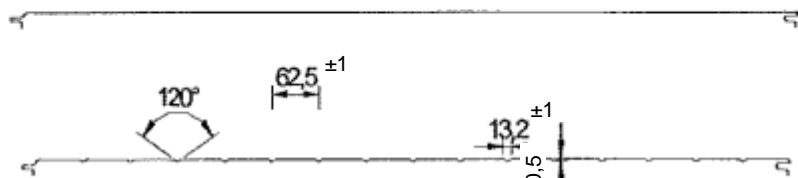
Panel type	HIPERTEC Roof	HIPERTEC Wall	HIPERTEC Wall	HIPERTEC Wall	Superwall HF	Superwall HF
Faces	T / S	S / S	S / P	ML / S	ML / S	P / S
Panel thickness class D [mm]	U-value [W/m ² K]	U-value [W/m ² K]	U-value [W/m ² K]	U-value [W/m ² K]	U-value [W/m ² K]	U-value [W/m ² K]
50	0,848	0,936	0,900	0,917	-	-
60	0,707	0,731	0,728	0,734	0,778	0,773
80	0,535	0,548	0,546	0,549	0,566	0,563
100	0,43	0,438	0,437	0,439	0,449	0,447
120	0,36	0,365	0,365	0,366	0,372	0,371
150	0,289	0,292	0,292	0,293	0,297	0,296
200	0,218	0,219	0,219	0,220	0,222	0,221



External face type SU1:



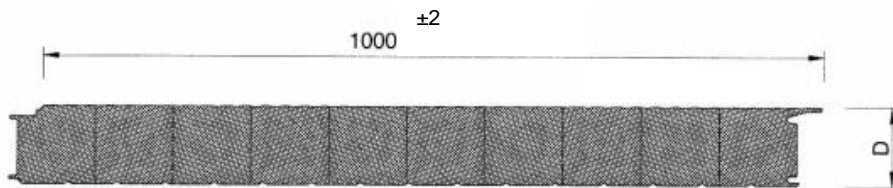
External and internal face type P:



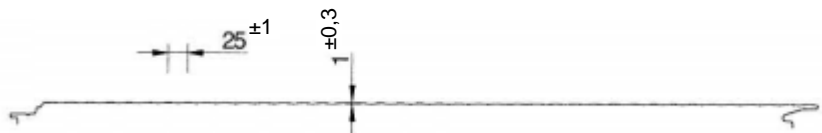
External and internal face type S:



Figure 1: Cross-section of panel type HIPERTEC Wall / SISCOTEK Wall FV 1000



External face type SU1:



Internal face type S: see figure 1

External and internal face type P: see figure 1

Figure 2: Cross-section of panel type Superwall HF

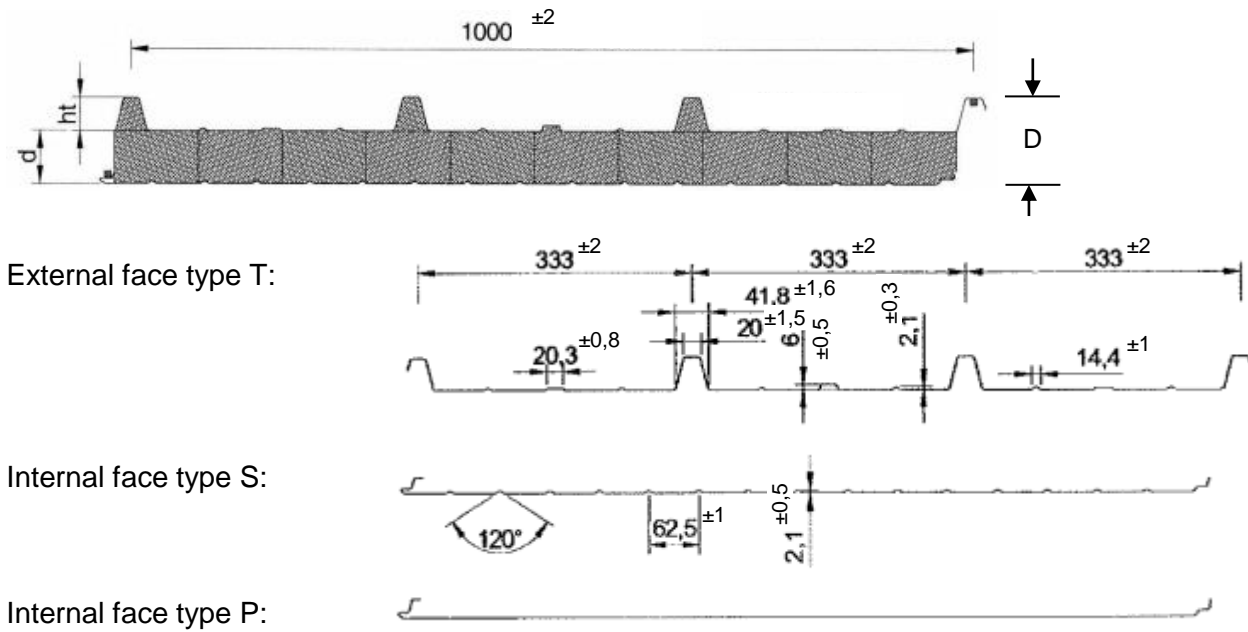


Figure 3: Cross-section of panel type HIPERTEC Roof / SISCOTEK Roof 4G 1000

Table 4: Requirements for the production control of the core material acc. to 2.2.2 with faces (mechanical values)¹

Characteristic	Unit	Requirements for panels with thickness ³ [mm] of:	
		50 to 100 ±2 and 120 ±2%	150 to 200 ±3
Density of the MW core	kg/m ³	115 ±15	115 ±15
Shear modulus: G _c			
mean value	MPa	4,4	6,0
5% fractile value	MPa	2,4	3,7
Shear strength: f _{cv}	MPa	0,04	0,04
Compressive modulus: E _{cc}			
5% fractile value	MPa	1,9	6,8
Cross panel tensile modulus: E _{ct}			
5% fractile value	MPa	5,0	6,1
E-modulus: E _c			
mean value	MPa	6,7 ²	11,4 ²
Compressive strength: f _{cc}	MPa	0,07	0,07
Cross panel tensile strength: f _{ct}	MPa	0,04	0,03

¹ Values for intermediate panel thicknesses can be obtained by interpolation.

² The stated values are mean values of the mean compressive and cross panel tensile moduli:

$$E_c = \frac{E_{cc} + E_{ct}}{2}$$

Table 5: Material safety factors γ_M for sandwich panels with core material acc. to 2.2.2 and adhesive acc. to 2.2.3

Property to which γ _M applies	Limit state	
	Ultimate limit state	Serviceability state
Yielding of a face	1,10	1,00
Wrinkling of a face in span and at an internal support	1,50	1,14
Shear of the core	1,50	1,14
Shear failure of a profiled face	1,10	1,00
Crushing of the core	1,33	1,10
Support reaction capacity of a profiled face	1,10	1,00

Table 6: Long term shear values for sandwich panels with core material acc. to 2.2.2 and adhesive acc. to 2.2.3

Panel thickness ³ [mm]	Long term shear strength: f _c [MPa]	Creep coefficient φ _t t = 2000 h	Creep coefficient φ _t t = 100000 h
50 to 150	0,04	1,2	2,0

³ For HIPERTEC Roof / SISCOTEK Roof 4G 1000: continuous depth of the core d; for the others: overall depth of the panel D

Table 7: Wrinkling stresses for external faces, $t_N \leq 0,60$ mm¹, for sandwich panels with core material acc. to 2.2.2 and adhesive acc. to 2.2.3

Geometry of the face	Panel thickness ² [mm]	Wrinkling stress [MPa]			
		in span	in span, elevated temperature	at internal support	at internal support, elevated temperature
Types P and SU1	50 to 120	92	83	64	58
	150 to 200	121	113	85	79
Type S	50	100	90	70	63
	60 to 120	120	108	96	86
	150 to 200	127	118	89	83
Type T	50 to 120	320	320	320	320
	150	273	273	273	273
	170 to 200	195	195	195	195

Table 8: Wrinkling stresses for internal faces $t_N \leq 0,60$ mm¹, for sandwich panels with core material acc. to 2.2.2 and adhesive acc. to 2.2.3

Geometry of the face	Panel thickness ² [mm]	Wrinkling stress [MPa]	
		in span	at internal support
Type P	50 to 120	92	83
	150 to 200	121	109
Type S	50	100	90
	60 to 120	120	108
	150 to 200	127	114

¹ Reduction factors for the wrinkling stresses for face thicknesses $t_N > 0,60$ mm:

Geometry of the face	0,75 mm	0,80 mm
Type S	0,86	0,81
Types P, SU1, T	1,0	1,0

² for HIPERTEC Roof / SISCOTEK Roof 4G 1000: continuous depth of the core d; for the others: overall depth of the panel D

Table 9: Mass of the panels, based on a standard combination of face thicknesses

Panel thickness class D [mm]	Mass of the panel [kg/m ²]		
	HIPERTEC Roof / SISCOTEK Roof 4G 1000	HIPERTEC Wall / SISCOTEK Wall FV 1000	Superwall HF
	0,6 mm / 0,45 mm	0,6 mm / 0,6 mm	0,6 mm / 0,6 mm
50	15,4	16,2	-
60	16,7	17,5	17,8
80	19,3	20,1	20,4
100	21,9	22,7	23,0
120	24,5	25,3	25,6
150	28,4	29,2	29,5
200	34,9	35,7	36,0

Liability

The "European Association for Panels and Profiles" (PPA-Europe) located in Krefeld/Germany certifies and monitors at the wish of the manufacturers the sandwich panels and profiled sheets produced by them and awards the "EPAQ Quality Label" after successful certification.

In doing this, PPA-Europe and its representatives take the statutory regulations and the trust of end users in the certified products very seriously and make use of external experts for the substantive and technical examination of the construction products whose test results are checked once more by PPA-Europe. The same applies for the subsequent monitoring by PPA-Europe.

Nevertheless, it is possible that individual products unintentionally do not fully comply with the high level of quality and may lead to damage to the construction. If, in such a case, a claim is made on the manufacturer due to faulty quality or faulty delivery of the construction products, claims of recourse for this reason on PPA-Europe or its representatives may only be invoked in cases of intentional or grossly negligent behaviour during the certification or monitoring.

The certification and subsequent monitoring executed by PPA-Europe and its representatives does not affect the obligation of the manufacturer for a proper and constant level of quality and standard of the products.

With the exemption of intentional or grossly negligent action on the part of PPA-Europe and its representatives, we are only liable for the direct damage to the construction caused by the faulty product; all further subsequent damages are excluded.



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Chairman of the Quality Committee for Panels