



DECLARATION OF PERFORMANCE No. 1/MW/ALA

1. Unique identification code of product-type:

Sandwich panel SPA E, SPA E ENERGY, SPA E LIFE, SPA E LIFE ENERGY, SPA I, SPA S, SPA S ENERGY, SPA F, SPA F ENERGY with mineral wool core

SPA80E	SPA80I	SPA80F
SPA100E	SPA100I	SPA100F
SPA125E	SPA125I	SPA125F
SPA150E	SPA150I	SPA150F
SPA175E	SPA175I	SPA175F
SPA200E	SPA200I	SPA200F
SPA230E	SPA230I	SPA230F
SPA150E ENERGY	SPA80S	SPA150F ENERGY
SPA175E ENERGY	SPA100S	SPA200F ENERGY
SPA200E ENERGY	SPA125S	SPA230F ENERGY
SPA230E ENERGY	SPA150S	
SPA150E LIFE	SPA175S	
SPA200E LIFE	SPA200S	
SPA230E LIFE	SPA230S	
SPA150E LIFE ENERGY	SPA150S ENERGY	
SPA200E LIFE ENERGY	SPA200S ENERGY	
SPA230E LIFE ENERGY	SPA230S ENERGY	

2. Intended use: Self-supporting metal faced insulating panels for use in buildings; external walls, internal walls, roofs and ceilings
3. Manufacturer: Ruukki Construction Oy.
Mäkeläntie 9
FI-62900 Alajärvi
Finland
4. Authorized representative: Not applicable
5. AVCP level: reaction to fire: 1, fire resistance: 3, other properties: 4
- 6a. Harmonised standard: EN 14509:2013 "Self-supporting double skin metal faced insulating panels. Factory made products. Specifications"
- Notified body: VTT Expert Services Oy (0809)
Certificate of Conformity 0809-CPR-1137
7. Declared performances: Technical product characteristics of specified product configuration are available in attachments to this Declaration of Performance.

The performance of the product identified above is in conformity with the set of declared performances. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

This Declaration of Performance is available on Ruukki web page:

<http://www.ruukki.com/Products-and-solutions/Certificates-EC--and-environmental-declarations>

Signed for and on behalf of the manufacturer by:



Adam Korol
Senior Vice President
Strategic Management

Helsinki, 10.10.2016

Attachment 1 to Declaration of Performance 1/MW/ALA – SPA E sandwich panels

Panel type (s):	SPA100E, SPA125E, SPA150E, SPA175E, SPA200E, SPA230E								
Harmonized standard:	EN 14509:2013								
Year when CE-marking was affixed:	10								
Intended use:	External walls (single spans)								
Panel thickness class:	100	125	150	175	200	230		Reference	
Thickness of external facing:	0.50; 0.60; 0.70						mm	(EN 10143)	
External facing - steel grade:	S280GD+Z							(EN 10346)	
Coating of external facing:	Hiarc, Hiarc max, PURAL, POL25							(EN 10169)	
Thickness of internal facing:	0.50; 0.60; 0.70						mm	(EN 10143)	
Internal facing - steel grade:	S280GD+Z							(EN 10346)	
Coating of internal facing:	POL25, Hiarc, PURAL							(EN 10169)	
Core material:	MW								
Density of core material:	110						kg/m ³		
Core thickness (nominal thickness of panel):	97	125	152	174	198	232	mm		
Mass:	21,4	24,5	27,4	29,8	32,5	36,2	kg/m ²		
Mechanical resistance:									
Tensile strength:	0,086	0,086	0,086	0,086	0,086	0,086	MPa		
Shear strength:	0,045	0,045	0,045	0,045	0,045	0,045	MPa		
Reduced long term shear strength:	NPD (not applicable)						MPa		
Shear modulus (core):	3,7	3,7	3,7	3,7	3,7	3,7	MPa		
Compressive strength:	0,060	0,060	0,060	0,060	0,060	0,060	MPa		
Creep coefficient t=2000h:	NPD (not applicable)								
Creep coefficient t=100000h:	NPD (not applicable)								
Wrinkling strength (external face):									
- in span:	105	105	105	105	105	105	MPa		
- in span, elevated temperature:	105	105	105	105	105	105	MPa		
Wrinkling strength (internal face):									
- in span:	105	105	105	105	105	105	MPa		
- in span, elevated temperature:	105	105	105	105	105	105	MPa		
Resistance to point load:	NPD (not applicable)								
Repeated access load:	NPD (not applicable)								
Other properties:									
Thermal transmittance; U-value:	0,41	0,32	0,26	0,23	0,20	0,17	W/m ² K		
Thermal conductivity of the core; λ_{Design} :	0,041						W/mK		
Reaction to fire:	A2-s1,d0						Class	(EN 13501-1)	
Fire resistance (wall):	EI 90	EI 120	EI 120	EI 120	EI 120	EI 120		(EN 13501-2)	
Fire resistance (ceiling):	NPD (not applicable)								
Water permeability:	A						Class	(EN 12865)	
Air permeability:	C: 0.29, n: 0.0048							(EN 12114)	
Water vapour permeability:	Impermeable								
Airborne sound insulation; $R_w(C;C_{tr})$:	29 (-2;-4)	30 (-2;-4)	30 (-2;-4)	31 (-2;-4)	31 (-2;-3)	31 (-2;-3)	dB	(EN ISO 717-1)	
Sound absorption; α_w :	0,1	0,1	0,1	0,1	0,1	0,1		(EN ISO 11654)	
Durability; DUR2:	Pass								

Detailed product/material specification is given on order confirmation or delivery documentation.

Attachment 2 to Declaration of Performance 1/MW/ALA – SPA E ENERGY sandwich panels

Panel type (s):	SPA150E ENERGY, SPA175E ENERGY, SPA200E ENERGY, SPA230E ENERGY					
Harmonized standard:	EN 14509:2013					
Year when CE-marking was affixed:	10					
Intended use:	External walls (single spans)					
Panel thickness class:	150	175	200	230	Reference	
Thickness of external facing:	0.50; 0.60; 0.70				mm	(EN 10143)
External facing - steel grade:	S280GD+Z					(EN 10346)
Coating of external facing:	Hiarc, Hiarc max, PURAL, POL25					(EN 10169)
Thickness of internal facing:	0.50; 0.60; 0.70				mm	(EN 10143)
Internal facing - steel grade:	S280GD+Z					(EN 10346)
Coating of internal facing:	POL25, Hiarc, PURAL					(EN 10169)
Core material:	MW					
Density of core material:	110				kg/m ³	
Core thickness (nominal thickness of panel):	152	174	198	232	mm	
Mass:	27,4	29,8	32,5	36,2	kg/m ²	
Mechanical resistance:						
Tensile strength:	0,086	0,086	0,086	0,086	MPa	
Shear strength:	0,045	0,045	0,045	0,045	MPa	
Reduced long term shear strength:	NPD (not applicable)				MPa	
Shear modulus (core):	3,7	3,7	3,7	3,7	MPa	
Compressive strength:	0,060	0,060	0,060	0,060	MPa	
Creep coefficient t=2000h:	NPD (not applicable)					
Creep coefficient t=100000h:	NPD (not applicable)					
Wrinkling strength (external face):						
- in span:	105	105	105	105	MPa	
- in span, elevated temperature:	105	105	105	105	MPa	
Wrinkling strength (internal face):						
- in span:	105	105	105	105	MPa	
- in span, elevated temperature:	105	105	105	105	MPa	
Resistance to point load:	NPD (not applicable)					
Repeated access load:	NPD (not applicable)					
Other properties:						
Thermal transmittance; U-value:	0,26	0,23	0,20	0,17	W/m ² K	
Thermal conductivity of the core; λ_{Design} :	0,040				W/mK	
Reaction to fire:	A2-s1,d0				Class	(EN 13501-1)
Fire resistance (wall):	EI 120	EI 120	EI 120	EI 120		(EN 13501-2)
Fire resistance (ceiling):	NPD (not applicable)					
Water permeability:	A				Class	(EN 12865)
Air permeability:	C: 0.0232, n: 0.6115					(EN 12114)
Water vapour permeability:	Impermeable					
Airborne sound insulation; $R_w(C;C_{tr})$:	30 (-2;-4)	31 (-2;-4)	31 (-2;-3)	31 (-2;-3)	dB	(EN ISO 717-1)
Sound absorption; α_w :	0,1	0,1	0,1	0,1		(EN ISO 11654)
Durability; DUR2:	Pass					

Detailed product/material specification is given on order confirmation or delivery documentation.

Attachment 3 to Declaration of Performance 1/MW/ALA – SPA E LIFE sandwich panels

Panel type (s):	SPA150E LIFE, SPA200E LIFE, SPA230E LIFE				
Harmonized standard:	EN 14509:2013				
Year when CE-marking was affixed:	12				
Intended use:	External walls (single spans)				
Panel thickness class:	150	200	230	Reference	
Thickness of external facing:	0.50; 0.60; 0.70			mm	(EN 10143)
External facing - steel grade:	S280GD+Z				(EN 10346)
Coating of external facing:	Hiarc, Hiarc max, PURAL, POL25				(EN 10169)
Thickness of internal facing:	0.50; 0.60; 0.70			mm	(EN 10143)
Internal facing - steel grade:	S280GD+Z				(EN 10346)
Coating of internal facing:	POL25, Hiarc, PURAL				(EN 10169)
Core material:	MW				
Density of core material:	58			kg/m ³	
Core thickness (nominal thickness of panel):	152	198	232	mm	
Mass:	19,5	22,2	24,2	kg/m ²	
Mechanical resistance:					
Tensile strength:	0,100	0,100	0,095	MPa	
Shear strength:	0.045	0,040	0,036	MPa	
Reduced long term shear strength:	NPD (not applicable)			MPa	
Shear modulus (core):	2,5	2,5	2,5	MPa	
Compressive strength:	0,056	0,054	0,056	MPa	
Creep coefficient t=2000h:	NPD (not applicable)				
Creep coefficient t=100000h:	NPD (not applicable)				
Wrinkling strength (external face):					
- in span:	105	105	105	MPa	
- in span, elevated temperature:	105	105	105	MPa	
Wrinkling strength (internal face):					
- in span:	105	105	105	MPa	
- in span, elevated temperature:	105	105	105	MPa	
Resistance to point load:	NPD (not applicable)				
Repeated access load:	NPD (not applicable)				
Other properties:					
Thermal transmittance; U-value:	0,25	0,19	0,16	W/m ² K	
Thermal conductivity of the core; λ_{Design} :	0,039			W/mK	
Reaction to fire:	A2-s1,d0			Luokka	(EN 13501-1)
Fire resistance (wall):	EI 60	EI 60	EI 60		(EN 13501-2)
Fire resistance (ceiling):	NPD (not applicable)				
Water permeability:	A			Luokka	(EN 12865)
Air permeability:	C: 0.29, n: 0.0048				(EN 12114)
Water vapour permeability:	Impermeable				
Airborne sound insulation; $R_w(C;C_{tr})$:	29 (-2;-3)	29 (-2;-4)	29 (-2;-4)	dB	(EN ISO 717-1)
Sound absorption; α_w :	0,1	0,1	0,1		(EN ISO 11654)
Durability; DUR2:	Pass				

Detailed product/material specification is given on order confirmation or delivery documentation.

Attachment 4 to Declaration of Performance 1/MW/ALA – SPA E LIFE sandwich panels

Panel type (s):	SPA150E LIFE ENERGY, SPA200E LIFE ENERGY, SPA230E LIFE ENERGY				
Harmonized standard:	EN 14509:2013				
Year when CE-marking was affixed:	12				
Intended use:	External walls (single spans)				
Panel thickness class:	150	200	230	Reference	
Thickness of external facing:	0.50; 0.60; 0.70			mm	(EN 10143)
External facing - steel grade:	S280GD+Z				(EN 10346)
Coating of external facing:	Hiarc, Hiarc max, PURAL, POL25				(EN 10169)
Thickness of internal facing:	0.50; 0.60; 0.70			mm	(EN 10143)
Internal facing - steel grade:	S280GD+Z				(EN 10346)
Coating of internal facing:	POL25, Hiarc, PURAL				(EN 10169)
Core material:	MW				
Density of core material:	58			kg/m ³	
Core thickness (nominal thickness of panel):	152	198	232	mm	
Mass:	19,5	22,2	24,2	kg/m ²	
Mechanical resistance:					
Tensile strength:	0,100	0,100	0,095	MPa	
Shear strength:	0.045	0,040	0,036	MPa	
Reduced long term shear strength:	NPD (not applicable)			MPa	
Shear modulus (core):	2,5	2,5	2,5	MPa	
Compressive strength:	0,056	0,054	0,056	MPa	
Creep coefficient t=2000h:	NPD (not applicable)				
Creep coefficient t=100000h:	NPD (not applicable)				
Wrinkling strength (external face):					
- in span:	105	105	105	MPa	
- in span, elevated temperature:	105	105	105	MPa	
Wrinkling strength (internal face):					
- in span:	105	105	105	MPa	
- in span, elevated temperature:	105	105	105	MPa	
Resistance to point load:	NPD (not applicable)				
Repeated access load:	NPD (not applicable)				
Other properties:					
Thermal transmittance; U-value:	0,25	0,19	0,16	W/m ² K	
Thermal conductivity of the core; λ_{Design} :	0,039			W/mK	
Reaction to fire:	A2-s1,d0			Class	(EN 13501-1)
Fire resistance (wall):	EI 60	EI 60	EI 60		(EN 13501-2)
Fire resistance (ceiling):	NPD (not applicable)				
Water permeability:	A			Class	(EN 12865)
Air permeability:	C: 0.0232, n: 0.6115				(EN 12114)
Water vapour permeability:	Impermeable				
Airborne sound insulation; $R_w(C;C_{tr})$:	29 (-2;-3)	29 (-2;-4)	29 (-2;-4)	dB	(EN ISO 717-1)
Sound absorption; α_w :	0,1	0,1	0,1		(EN ISO 11654)
Durability; DUR2:	Pass				

Detailed product/material specification is given on order confirmation or delivery documentation.

Attachment 5 to Declaration of Performance 1/MW/ALA – SPA I sandwich panels

Panel type (s):	SPA100I, SPA125I, SPA150I, SPA175I, SPA200I, SPA230I								
Harmonized standard:	EN 14509:2013								
Year when CE-marking was affixed:	10								
Intended use:	Internal walls (single spans)								
Panel thickness class:	100	125	150	175	200	230	Reference		
Thickness of external facing:	0.50; 0.60; 0.70						mm	(EN 10143)	
External facing - steel grade:	S280GD+Z							(EN 10346)	
Coating of external facing:	Hiarc, Hiarc max, PURAL, POL25							(EN 10169)	
Thickness of internal facing:	0.50; 0.60; 0.70						mm	(EN 10143)	
Internal facing - steel grade:	S280GD+Z							(EN 10346)	
Coating of internal facing:	POL25, Hiarc, PURAL							(EN 10169)	
Core material:	MW								
Density of core material:	110						kg/m ³		
Core thickness (nominal thickness of panel):	97	125	152	174	198	232	mm		
Mass:	21,4	24,5	27,4	29,8	32,5	36,2	kg/m ²		
Mechanical resistance:									
Tensile strength:	0,086	0,086	0,086	0,086	0,086	0,086	MPa		
Shear strength:	0,045	0,045	0,045	0,045	0,045	0,045	MPa		
Reduced long term shear strength:	NPD (not applicable)						MPa		
Shear modulus (core):	3,7	3,7	3,7	3,7	3,7	3,7	MPa		
Compressive strength:	0,060	0,060	0,060	0,060	0,060	0,060	MPa		
Creep coefficient t=2000h:	NPD (not applicable)								
Creep coefficient t=100000h:	NPD (not applicable)								
Wrinkling strength (external face):									
- in span:	105	105	105	105	105	105	MPa		
- in span, elevated temperature:	105	105	105	105	105	105	MPa		
Wrinkling strength (internal face):									
- in span:	105	105	105	105	105	105	MPa		
- in span, elevated temperature:	105	105	105	105	105	105	MPa		
Resistance to point load:	NPD (not applicable)								
Repeated access load:	NPD (not applicable)								
Other properties:									
Thermal transmittance; U-value:	0,41	0,32	0,26	0,23	0,20	0,17	W/m ² K		
Thermal conductivity of the core; λ_{Design} :	0,041						W/mK		
Reaction to fire:	A2-s1,d0						Class	(EN 13501-1)	
Fire resistance (wall):	EI 90	EI 120	EI 120	EI 120	EI 120	EI 120		(EN 13501-2)	
Fire resistance (ceiling):	NPD (not applicable)								
Water permeability:	A						Class	(EN 12865)	
Air permeability:	C: 0.29, n: 0.0048							(EN 12114)	
Water vapour permeability:	Impermeable								
Airborne sound insulation; $R_w(C;C_{tr})$:	29 (-2;-4)	30 (-2;-4)	30 (-2;-4)	31 (-2;-4)	31 (-2;-3)	31 (-2;-3)	dB	(EN ISO 717-1)	
Sound absorption; α_w :	0,1	0,1	0,1	0,1	0,1	0,1		(EN ISO 11654)	
Durability; DUR2:	Pass								

Detailed product/material specification is given on order confirmation or delivery documentation.

Attachment 6 to Declaration of Performance 1/MW/ALA – SPA S sandwich panels

Panel type (s):		SPA80S, SPA100S, SPA125S, SPA150S, SPA175S, SPA200S, SPA230S							
Harmonized standard:	EN 14509:2013								
Year when CE-marking was affixed:	10								
Intended use:	External walls, Ceilings (single spans)								
Panel thickness class:	80	100	125	150	175	200	230	Reference	
Thickness of external facing:	0.50; 0.60; 0.70							mm	(EN 10143)
External facing - steel grade:	S280GD+Z								(EN 10346)
Coating of external facing:	Hiarc, Hiarc max, PURAL, POL25								(EN 10169)
Thickness of internal facing:	0.50; 0.60; 0.70							mm	(EN 10143)
Internal facing - steel grade:	S280GD+Z								(EN 10346)
Coating of internal facing:	POL25, Hiarc, PURAL								(EN 10169)
Core material:	MW								
Density of core material:	120							kg/m ³	
Core thickness (nominal thickness of panel):	80	97	125	152	174	198	232	mm	
Mass:	20,1	22,3	25,7	28,9	31,6	34,5	38,5	kg/m ²	
Mechanical resistance:									
Tensile strength:	0,150	0,150	0,150	0,150	0,150	0,150	0,150	MPa	
Shear strength:	0,100	0,100	0,100	0,085	0,081	0,076	0,071	MPa	
Reduced long term shear strength:	0,070	0,070	0,070	0,059	0,056	0,053	0,049	MPa	
Shear modulus (core):	6,8	6,8	6,8	6,8	6,8	6,8	6,8	MPa	
Compressive strength:	0,115	0,115	0,115	0,115	0,115	0,115	0,115	MPa	
Creep coefficient t=2000h:	0,40								
Creep coefficient t=100000h:	0,45								
Wrinkling strength (external face):									
- in span:	165	165	165	165	165	165	165	MPa	
- in span, elevated temperature:	165	165	165	165	165	165	165	MPa	
Wrinkling strength (internal face):									
- in span:	165	165	165	165	165	165	165	MPa	
- in span, elevated temperature:	165	165	165	165	165	165	165	MPa	
Resistance to point load:	1.2 kN 5,7 m								
Repeated access load:	Unsuitable for repeated loads without additional protection								
Other properties:									
Thermal transmittance; U-value:	0,54	0,45	0,35	0,29	0,25	0,22	0,19	W/m ² K	
Thermal conductivity of the core; λ _{Design} :	0,045							W/mK	
Reaction to fire:	A2-s1,d0							Class	(EN 13501-1)
Fire resistance (wall):	EI 60	EI 120	EI 180	EI 180	EI 240	EI 240	EI 240	(EN 13501-2)	
Fire resistance (ceiling):	NPD	EI 120	EI 120	EI 120	EI 120	EI 120	EI 120		
Water permeability:	A							Class	(EN 12865)
Air permeability:	C: 0.29, n: 0.0048								(EN 12114)
Water vapour permeability:	Impermeable								
Airborne sound insulation; R _w (C:C _w):	29 (-2;-4)	30 (-3;-3)	31 (-2;-3)	31 (-2;-4)	31 (-2;-4)	31 (-2;-4)	31 (-2;-4)	dB	(EN ISO 717-1)
Sound absorption; α _w :	0,1	0,1	0,1	0,1	0,1	0,1	0,1		(EN ISO 11654)
Durability; DUR2:	Pass								

Detailed product/material specification is given on order confirmation or delivery documentation.

Attachment 7 to Declaration of Performance 1/MW/ALA – SPA S ENERGY sandwich panels

Panel type (s):	SPA150S ENERGY, SPA200S ENERGY, SPA230S ENERGY				
Harmonized standard:	EN 14509:2013				
Year when CE-marking was affixed:	10				
Intended use:	External walls (single spans)				
Panel thickness class:	150	200	230	Reference	
Thickness of external facing:	0.50; 0.60; 0.70			mm	(EN 10143)
External facing - steel grade:	S280GD+Z				(EN 10346)
Coating of external facing:	Hiarc, Hiarc max, PURAL, POL25				(EN 10169)
Thickness of internal facing:	0.50; 0.60; 0.70			mm	(EN 10143)
Internal facing - steel grade:	S280GD+Z				(EN 10346)
Coating of internal facing:	POL25, Hiarc, PURAL				(EN 10169)
Core material:	MW				
Density of core material:	120	120	120	kg/m ³	
Core thickness (nominal thickness of panel):	152	198	232	mm	
Mass:	28,9	34,5	38,5	kg/m ²	
Mechanical resistance:					
Tensile strength:	0,150	0,150	0,150	MPa	
Shear strength:	0,085	0,076	0,071	MPa	
Reduced long term shear strength:	NPD (not applicable)			MPa	
Shear modulus (core):	6,8	6,8	6,8	MPa	
Compressive strength:	0,115	0,115	0,115	MPa	
Creep coefficient t=2000h:	NPD (not applicable)				
Creep coefficient t=10000h:	NPD (not applicable)				
Wrinkling strength (external face):					
- in span:	165	165	165	MPa	
- in span, elevated temperature:	165	165	165	MPa	
Wrinkling strength (internal face):					
- in span:	165	165	165	MPa	
- in span, elevated temperature:	165	165	165	MPa	
Resistance to point load:	NPD (not applicable)				
Repeated access load:	NPD (not applicable)				
Other properties:					
Thermal transmittance; U-value:	0,29	0,22	0,19	W/m ² K	
Thermal conductivity of the core; λ_{Design} :	0,045			W/mK	
Reaction to fire:	A2-s1,d0			Class	(EN 13501-1)
Fire resistance (wall):	EI 180	EI 240	EI 240		(EN 13501-2)
Fire resistance (ceiling):	NPD (not applicable)				
Water permeability:	A			Class	(EN 12865)
Air permeability:	C: 0.0232, n: 0.6115				(EN 12114)
Water vapour permeability:	Impermeable				
Airborne sound insulation; $R_w(C;C_{tr})$:	31 (-2;-4)	31 (-2;-4)	31 (-2;-4)	dB	(EN ISO 717-1)
Sound absorption; α_w :	0,1	0,1	0,1		(EN ISO 11654)
Durability; DUR2:	Pass				

Detailed product/material specification is given on order confirmation or delivery documentation.

Attachment 8 to Declaration of Performance 1/MW/ALA – SPA F sandwich panels

Panel type (s):	SPA80F, SPA100F, SPA125F, SPA150F, SPA175F, SPA200F, SPA230F								
Harmonized standard:	EN 14509:2013								
Year when CE-marking was affixed:	10								
Intended use:	External walls, Internal walls (single spans)								
Panel thickness class:	80	100	125	150	175	200	230	Reference	
Thickness of external facing:	0.50; 0.60; 0.70							mm	(EN 10143)
External facing - steel grade:	S280GD+Z								(EN 10346)
Coating of external facing:	Hiarc, Hiarc max, PURAL, POL25								(EN 10169)
Thickness of internal facing:	0.50; 0.60; 0.70							mm	(EN 10143)
Internal facing - steel grade:	S280GD+Z								(EN 10346)
Coating of internal facing:	POL25, Hiarc, PURAL								(EN 10169)
Core material:	MW								
Density of core material:	115	120	115	115	115	115	115	kg/m ³	
Core thickness (nominal thickness of panel):	80	97	125	152	174	198	232	mm	
Mass:	19,7	22,3	25,1	28,2	30,7	33,5	37,4	kg/m ²	
Mechanical resistance:									
Tensile strength:	0,150	0,150	0,150	0,150	0,150	0,150	0,150	MPa	
Shear strength:	0,054	0,054	0,054	0,054	0,054	0,054	0,054	MPa	
Reduced long term shear strength:	NPD (not applicable)							MPa	
Shear modulus (core):	2,5	2,5	2,5	2,5	2,5	2,5	2,5	MPa	
Compressive strength:	0,095	0,095	0,095	0,095	0,095	0,095	0,095	MPa	
Creep coefficient t=2000h:	NPD (not applicable)								
Creep coefficient t=100000h:	NPD (not applicable)								
Wrinkling strength (external face):									
- in span:	130	130	130	130	130	130	130	MPa	
- in span, elevated temperature:	130	130	130	130	130	130	130	MPa	
Wrinkling strength (internal face):									
- in span:	130	130	130	130	130	130	130	MPa	
- in span, elevated temperature:	130	130	130	130	130	130	130	MPa	
Resistance to point load:	NPD (not applicable)								
Repeated access load:	NPD (not applicable)								
Other properties:									
Thermal transmittance; U-value:	0,54	0,45	0,35	0,29	0,25	0,22	0,19	W/m ² K	
Thermal conductivity of the core; λ _{Design} :	0,045							W/mK	
Reaction to fire:	A2-s1,d0							Class	(EN 13501-1)
Fire resistance (wall):	EI 60	EI 120	EI 180	EI 180	EI 240	EI 240	EI 240		(EN 13501-2)
Fire resistance (ceiling):	NPD (not applicable)								
Water permeability:	A							Class	(EN 12865)
Air permeability:	C: 0.29, n: 0.0048								(EN 12114)
Water vapour permeability:	Impermeable								
Airborne sound insulation; R _w (C:C _w):	29 (-2;-4)	30 (-3;-3)	31 (-3;-3)	31 (-4;-4)	31 (-4;-4)	31 (-4;-4)	31 (-4;-4)	dB	(EN ISO 717-1)
Sound absorption; α _w :	0,1	0,1	0,1	0,1	0,1	0,1	0,1		(EN ISO 11654)
Durability; DUR2:	Pass								

Detailed product/material specification is given on order confirmation or delivery documentation.

Attachment 9 to Declaration of Performance 1/MW/ALA – SPA F ENERGY sandwich panels

Panel type (s):	SPA150F ENERGY, SPA200F ENERGY, SPA230F ENERGY				
Harmonized standard:	EN 14509:2013				
Year when CE-marking was affixed:	10				
Intended use:	External walls (single spans)				
Panel thickness class:	150	200	230	Reference	
Thickness of external facing:	0.50; 0.60; 0.70			mm	(EN 10143)
External facing - steel grade:	S280GD+Z				(EN 10346)
Coating of external facing:	Hiarc, Hiarc max, PURAL, POL25				(EN 10169)
Thickness of internal facing:	0.50; 0.60; 0.70			mm	(EN 10143)
Internal facing - steel grade:	S280GD+Z				(EN 10346)
Coating of internal facing:	POL25, Hiarc, PURAL				(EN 10169)
Core material:	MW				
Density of core material:	115	115	115	kg/m ³	
Core thickness (nominal thickness of panel):	152	198	232	mm	
Mass:	28,2	33,5	37,4	kg/m ²	
Mechanical resistance:					
Tensile strength:	0,150	0,150	0,150	MPa	
Shear strength:	0,054	0,054	0,054	MPa	
Reduced long term shear strength:	NPD (not applicable)			MPa	
Shear modulus (core):	2,5	2,5	2,5	MPa	
Compressive strength:	0,095	0,095	0,095	MPa	
Creep coefficient t=2000h:	NPD (not applicable)				
Creep coefficient t=100000h:	NPD (not applicable)				
Wrinkling strength (external face):					
- in span:	130	130	130	MPa	
- in span, elevated temperature:	130	130	130	MPa	
Wrinkling strength (internal face):					
- in span:	130	130	130	MPa	
- in span, elevated temperature:	130	130	130	MPa	
Resistance to point load:	NPD (not applicable)				
Repeated access load:	NPD (not applicable)				
Other properties:					
Thermal transmittance; U-value:	0,29	0,22	0,19	W/m ² K	
Thermal conductivity of the core; λ_{Design} :	0,045			W/mK	
Reaction to fire:	A2-s1,d0			Class	(EN 13501-1)
Fire resistance (wall):	EI 180	EI 240	EI 240		(EN 13501-2)
Fire resistance (ceiling):	NPD (not applicable)				
Water permeability:	A			Class	(EN 12865)
Air permeability:	C: 0.0232, n: 0.6115				(EN 12114)
Water vapour permeability:	Impermeable				
Airborne sound insulation; $R_w(C;C_{tr})$:	31 (-4;-4)	31 (-4;-4)	31 (-4;-4)	dB	(EN ISO 717-1)
Sound absorption; α_w :	0,1	0,1	0,1		(EN ISO 11654)
Durability; DUR2:	Pass				

Detailed product/material specification is given on order confirmation or delivery documentation.