

DECLARATION OF PERFORMANCE

No MW-W-ST/2024/1

1. **Unique identification code of the product-type:** MW-W-ST < d_N > < t_{Ne}/t_{Ni} >
2. **Intended use/es:** external walls and wall cladding, walls (including partitions) and ceilings within the building envelope
3. **Manufacturer:** BALEX METAL Sp. z o.o., ul. Wejherowska 12C, 84-239 Bolszewo
4. **System of Assessment and Verification of Constancy of Performance:** 3
5. **Norma zharmonizowana:** EN 14509:2013
6. **Harmonised standard:** Instytut Techniki Budowlanej (No 1488), GRYFITLAB Sp. z o.o. (No 2253), CERTBUD Sp. z o.o. (No 2310), Fire-Lab Sp. z o.o. (No 2904)
7. **Declared performances:** Tables 1÷11 (mineral wool 110 kg/m³, Inox, S250GD + SP15, SP25, SP35, Cesar55, PVC(F) 120, Aluzinc + Easyfilm)

Steel facing profiling designations:

M – micro-profile; L – lined; R – grooving; G – plain; 1L – clearline; 2L – double clearline;

Other designations:

d_N – nominal thickness of the sandwich panel [mm]

t_{Ne} – nominal external facing thickness [mm]

t_{Ni} – nominal internal facing thickness [mm]

NPD – No Performance Determined

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

Signed for and on behalf of the manufacturer by:

Chief Executive Officer



Marek Dzikiewicz

Bolszewo, 15.01.2024


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P-191112216 2

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Table 1. Performances – Mechanical resistance ($t_{Ne}/t_{Ni} = 0,5/0,5$)

Nominal thickness d_N [mm]		80	100	120	150	175	200	240	
Essential characteristics		Performances							
Mechanical resistance	Compressive strength σ_m [MPa]	0,100	0,100	0,100	0,100	0,100	0,092	0,092	
	Tensile strength f_{ct} [MPa]	0,100	0,100	0,100	0,100	0,100	0,100	0,100	
	Shear strength f_{cv} [MPa]	0,062	0,062	0,062	0,062	0,062	0,062	0,062	
	Shear modulus G_C [MPa]	3,2	3,2	3,5	3,5	3,5	3,5	3,5	
	Creep coefficient φ_t (ceilings)	4,0 for $t = 100\ 000$ h							
	Shear strength f_{cv} long-term [MPa] (ceilings)	0,024	0,024	0,024	0,024	0,024	0,024	0,024	
	Wrinkling stress σ_w [MPa] positive	M	146	142	139	134	123	112	94
		L	122	124	127	130	130	130	101
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress σ_w [MPa] positive elevated temperature	M	146	142	139	134	123	112	94
		L	122	124	127	130	130	130	101
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress σ_w [MPa] negative	L	159	150	141	128	120	112	98
		G	119	115	111	106	104	102	98
	Wrinkling stress σ_w over support [MPa] negative	M	144	136	128	116	109	103	93
		L	100	104	108	114	108	103	93
G, R, 1L, 2L		105	100	96	89	86	84	80	
Wrinkling stress σ_w over support [MPa] negative elevated temperature	M	144	136	128	116	109	103	93	
	L	100	104	108	114	108	103	93	
	G, R, 1L, 2L	105	100	96	89	86	84	80	
Wrinkling stress σ_w over support [MPa] positive	L	131	128	124	120	114	108	98	
	G	116	110	103	94	97	101	98	

Table 2. Performances – Mechanical resistance ($t_{Ne}/t_{Ni} = 0,5/0,6$)

Nominal thickness d_N [mm]		80	100	120	150	175	200	240	
Essential characteristics		Performances							
Mechanical resistance	Compressive strength σ_m [MPa]	0,100	0,100	0,100	0,100	0,100	0,092	0,092	
	Tensile strength f_{ct} [MPa]	0,100	0,100	0,100	0,100	0,100	0,100	0,100	
	Shear strength f_{cv} [MPa]	0,062	0,062	0,062	0,062	0,062	0,062	0,062	
	Shear modulus G_C [MPa]	3,2	3,2	3,5	3,5	3,5	3,5	3,5	
	Creep coefficient φ_t (ceilings)	4,0 for $t = 100\ 000$ h							
	Shear strength f_{cv} long-term [MPa] (ceilings)	0,024	0,024	0,024	0,024	0,024	0,024	0,024	
	Wrinkling stress σ_w [MPa] positive	M	146	142	139	134	123	112	94
		L	122	124	127	130	130	130	101
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress σ_w [MPa] positive elevated temperature	M	146	142	139	134	123	112	94
		L	122	124	127	130	130	130	101
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress σ_w [MPa] negative	L	138	130	122	111	104	97	85
		G	119	115	111	106	104	102	98
	Wrinkling stress σ_w over support [MPa] negative	M	144	136	128	116	109	103	93
		L	100	104	108	114	108	103	93
G, R, 1L, 2L		105	100	96	89	86	84	80	
Wrinkling stress σ_w over support [MPa] negative elevated temperature	M	144	136	128	116	109	103	93	
	L	100	104	108	114	108	103	93	
	G, R, 1L, 2L	105	100	96	89	86	84	80	
Wrinkling stress σ_w over support [MPa] positive	L	113	111	107	104	99	93	85	
	G	116	110	103	94	97	101	98	

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Table 3. Performances – Mechanical resistance ($t_{Ne}/t_{Ni} = 0,5/0,7$)

Nominal thickness d_N [mm]		80	100	120	150	175	200	240	
Mechanical resistance	Essential characteristics	Performances							
	Compressive strength σ_m [MPa]	0,100	0,100	0,100	0,100	0,100	0,092	0,092	
	Tensile strength f_{ct} [MPa]	0,100	0,100	0,100	0,100	0,100	0,100	0,100	
	Shear strength f_{cv} [MPa]	0,062	0,062	0,062	0,062	0,062	0,062	0,062	
	Shear modulus G_c [MPa]	3,2	3,2	3,5	3,5	3,5	3,5	3,5	
	Creep coefficient φ_t (ceilings)	4,0 for $t = 100\ 000$ h							
	Shear strength f_{cv} long-term [MPa] (ceilings)	0,024	0,024	0,024	0,024	0,024	0,024	0,024	
	Wrinkling stress σ_w [MPa] positive	M	146	142	139	134	123	112	94
		L	122	124	127	130	130	130	101
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress σ_w [MPa] positive elevated temperature	M	146	142	139	134	123	112	94
		L	122	124	127	130	130	130	101
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress σ_w [MPa] negative	L	123	116	109	99	93	87	76
		G	119	115	111	106	104	102	98
	Wrinkling stress σ_w over support [MPa] negative	M	144	136	128	116	109	103	93
		L	100	104	108	114	108	103	93
		G, R, 1L, 2L	105	100	96	89	86	84	80
	Wrinkling stress σ_w over support [MPa] negative elevated temperature	M	144	136	128	116	109	103	93
		L	100	104	108	114	108	103	93
G, R, 1L, 2L		105	100	96	89	86	84	80	
Wrinkling stress σ_w over support [MPa] positive	L	101	99	96	93	88	83	76	
	G	116	110	103	94	97	101	98	

Table 4. Performances – Mechanical resistance ($t_{Ne}/t_{Ni} = 0,6/0,5$)

Nominal thickness d_N [mm]		80	100	120	150	175	200	240	
Mechanical resistance	Essential characteristics	Performances							
	Compressive strength σ_m [MPa]	0,100	0,100	0,100	0,100	0,100	0,092	0,092	
	Tensile strength f_{ct} [MPa]	0,100	0,100	0,100	0,100	0,100	0,100	0,100	
	Shear strength f_{cv} [MPa]	0,062	0,062	0,062	0,062	0,062	0,062	0,062	
	Shear modulus G_c [MPa]	3,2	3,2	3,5	3,5	3,5	3,5	3,5	
	Creep coefficient φ_t (ceilings)	4,0 for $t = 100\ 000$ h							
	Shear strength f_{cv} long-term [MPa] (ceilings)	0,024	0,024	0,024	0,024	0,024	0,024	0,024	
	Wrinkling stress σ_w [MPa] positive	M	126	123	120	116	106	97	81
		L	105	107	110	112	112	112	87
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress σ_w [MPa] positive elevated temperature	M	126	123	120	116	106	97	81
		L	105	107	110	112	112	112	87
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress σ_w [MPa] negative	L	159	150	141	128	120	112	98
		G	119	115	111	106	104	102	98
	Wrinkling stress σ_w over support [MPa] negative	M	125	118	111	100	94	89	80
		L	86	90	93	99	93	89	80
		G, R, 1L, 2L	105	100	96	89	86	84	80
	Wrinkling stress σ_w over support [MPa] negative elevated temperature	M	125	118	111	100	94	89	80
		L	86	90	93	99	93	89	80
G, R, 1L, 2L		105	100	96	89	86	84	80	
Wrinkling stress σ_w over support [MPa] positive	L	131	128	124	120	114	108	98	
	G	116	110	103	94	97	101	98	

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Table 5. Performances – Mechanical resistance ($t_{Ne}/t_{Ni} = 0,6/0,6$)

Nominal thickness d_N [mm]		80	100	120	150	175	200	240	
Essential characteristics		Performances							
Mechanical resistance	Compressive strength σ_m [MPa]	0,100	0,100	0,100	0,100	0,100	0,092	0,092	
	Tensile strength f_{ct} [MPa]	0,100	0,100	0,100	0,100	0,100	0,100	0,100	
	Shear strength f_{cv} [MPa]	0,062	0,062	0,062	0,062	0,062	0,062	0,062	
	Shear modulus G_c [MPa]	3,2	3,2	3,5	3,5	3,5	3,5	3,5	
	Creep coefficient φ_t (ceilings)	4,0 for $t = 100\ 000$ h							
	Shear strength f_{cv} long-term [MPa] (ceilings)	0,024	0,024	0,024	0,024	0,024	0,024	0,024	
	Wrinkling stress σ_w [MPa] positive	M	126	123	120	116	106	97	81
		L	105	107	110	112	112	112	87
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress σ_w [MPa] positive elevated temperature	M	126	123	120	116	106	97	81
		L	105	107	110	112	112	112	87
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress σ_w [MPa] negative	L	138	130	122	111	104	97	85
		G	119	115	111	106	104	102	98
	Wrinkling stress σ_w over support [MPa] negative	M	125	118	111	100	94	89	80
		L	86	90	93	99	93	89	80
		G, R, 1L, 2L	105	100	96	89	86	84	80
	Wrinkling stress σ_w over support [MPa] negative elevated temperature	M	125	118	111	100	94	89	80
L		86	90	93	99	93	89	80	
G, R, 1L, 2L		105	100	96	89	86	84	80	
Wrinkling stress σ_w over support [MPa] positive	L	113	111	107	104	99	93	85	
	G	116	110	103	94	97	101	98	

Table 6. Performances – Mechanical resistance ($t_{Ne}/t_{Ni} = 0,6/0,7$)

Nominal thickness d_N [mm]		80	100	120	150	175	200	240	
Essential characteristics		Performances							
Mechanical resistance	Compressive strength σ_m [MPa]	0,100	0,100	0,100	0,100	0,100	0,092	0,092	
	Tensile strength f_{ct} [MPa]	0,100	0,100	0,100	0,100	0,100	0,100	0,100	
	Shear strength f_{cv} [MPa]	0,062	0,062	0,062	0,062	0,062	0,062	0,062	
	Shear modulus G_c [MPa]	3,2	3,2	3,5	3,5	3,5	3,5	3,5	
	Creep coefficient φ_t (ceilings)	4,0 for $t = 100\ 000$ h							
	Shear strength f_{cv} long-term [MPa] (ceilings)	0,024	0,024	0,024	0,024	0,024	0,024	0,024	
	Wrinkling stress σ_w [MPa] positive	M	126	123	120	116	106	97	81
		L	105	107	110	112	112	112	87
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress σ_w [MPa] positive elevated temperature	M	126	123	120	116	106	97	81
		L	105	107	110	112	112	112	87
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress σ_w [MPa] negative	L	123	116	109	99	93	87	76
		G	119	115	111	106	104	102	98
	Wrinkling stress σ_w over support [MPa] negative	M	125	118	111	100	94	89	80
		L	86	90	93	99	93	89	80
		G, R, 1L, 2L	105	100	96	89	86	84	80
	Wrinkling stress σ_w over support [MPa] negative elevated temperature	M	125	118	111	100	94	89	80
L		86	90	93	99	93	89	80	
G, R, 1L, 2L		105	100	96	89	86	84	80	
Wrinkling stress σ_w over support [MPa] positive	L	101	99	96	93	88	83	76	
	G	116	110	103	94	97	101	98	

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Table 7. Performances – Mechanical resistance ($t_{Ne}/t_{Ni} = 0,7/0,5$)

Nominal thickness d_N [mm]		80	100	120	150	175	200	240	
Mechanical resistance	Essential characteristics	Performances							
	Compressive strength $\bar{\sigma}_m$ [MPa]	0,100	0,100	0,100	0,100	0,100	0,092	0,092	
	Tensile strength f_{ct} [MPa]	0,100	0,100	0,100	0,100	0,100	0,100	0,100	
	Shear strength f_{cv} [MPa]	0,062	0,062	0,062	0,062	0,062	0,062	0,062	
	Shear modulus G_C [MPa]	3,2	3,2	3,5	3,5	3,5	3,5	3,5	
	Creep coefficient φ_t (ceilings)	4,0 for $t = 100\ 000$ h							
	Shear strength f_{cv} long-term [MPa] (ceilings)	0,024	0,024	0,024	0,024	0,024	0,024	0,024	
	Wrinkling stress $\bar{\sigma}_w$ [MPa] positive	M	113	110	108	104	95	87	73
		L	94	96	98	101	101	101	78
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress $\bar{\sigma}_w$ [MPa] positive elevated temperature	M	113	110	108	104	95	87	73
		L	94	96	98	101	101	101	78
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress $\bar{\sigma}_w$ [MPa] negative	L	159	150	141	128	120	112	98
		G	119	115	111	106	104	102	98
	Wrinkling stress $\bar{\sigma}_w$ over support [MPa] negative	M	111	105	99	90	84	80	72
		L	77	80	83	88	83	80	72
		G, R, 1L, 2L	105	100	96	89	86	84	80
	Wrinkling stress $\bar{\sigma}_w$ over support [MPa] negative elevated temperature	M	111	105	99	90	84	80	72
		L	77	80	83	88	83	80	72
G, R, 1L, 2L		105	100	96	89	86	84	80	
Wrinkling stress $\bar{\sigma}_w$ over support [MPa] positive	L	131	128	124	120	114	108	98	
	G	116	110	103	94	97	101	98	

Table 8. Performances – Mechanical resistance ($t_{Ne}/t_{Ni} = 0,7/0,6$)

Nominal thickness d_N [mm]		80	100	120	150	175	200	240	
Mechanical resistance	Essential characteristics	Performances							
	Compressive strength $\bar{\sigma}_m$ [MPa]	0,100	0,100	0,100	0,100	0,100	0,092	0,092	
	Tensile strength f_{ct} [MPa]	0,100	0,100	0,100	0,100	0,100	0,100	0,100	
	Shear strength f_{cv} [MPa]	0,062	0,062	0,062	0,062	0,062	0,062	0,062	
	Shear modulus G_C [MPa]	3,2	3,2	3,5	3,5	3,5	3,5	3,5	
	Creep coefficient φ_t (ceilings)	4,0 for $t = 100\ 000$ h							
	Shear strength f_{cv} long-term [MPa] (ceilings)	0,024	0,024	0,024	0,024	0,024	0,024	0,024	
	Wrinkling stress $\bar{\sigma}_w$ [MPa] positive	M	113	110	108	104	95	87	73
		L	94	96	98	101	101	101	78
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress $\bar{\sigma}_w$ [MPa] positive elevated temperature	M	113	110	108	104	95	87	73
		L	94	96	98	101	101	101	78
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress $\bar{\sigma}_w$ [MPa] negative	L	138	130	122	111	104	97	85
		G	119	115	111	106	104	102	98
	Wrinkling stress $\bar{\sigma}_w$ over support [MPa] negative	M	111	105	99	90	84	80	72
		L	77	80	83	88	83	80	72
		G, R, 1L, 2L	105	100	96	89	86	84	80
	Wrinkling stress $\bar{\sigma}_w$ over support [MPa] negative elevated temperature	M	111	105	99	90	84	80	72
		L	77	80	83	88	83	80	72
G, R, 1L, 2L		105	100	96	89	86	84	80	
Wrinkling stress $\bar{\sigma}_w$ over support [MPa] positive	L	113	111	107	104	99	93	85	
	G	116	110	103	94	97	101	98	

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Table 9. Performances – Mechanical resistance ($t_{Ne}/t_{Ni} = 0,7/0,7$)

Nominal thickness d_N [mm]		80	100	120	150	175	200	240	
Mechanical resistance	Essential characteristics	Performances							
	Compressive strength $\bar{\sigma}_m$ [MPa]	0,100	0,100	0,100	0,100	0,100	0,092	0,092	
	Tensile strength f_{ct} [MPa]	0,100	0,100	0,100	0,100	0,100	0,100	0,100	
	Shear strength f_{cv} [MPa]	0,062	0,062	0,062	0,062	0,062	0,062	0,062	
	Shear modulus G_C [MPa]	3,2	3,2	3,5	3,5	3,5	3,5	3,5	
	Creep coefficient φ_t (ceilings)	4,0 for $t = 100\ 000$ h							
	Shear strength f_{cv} long-term [MPa] (ceilings)	0,024	0,024	0,024	0,024	0,024	0,024	0,024	
	Wrinkling stress $\bar{\sigma}_w$ [MPa] positive	M	113	110	108	104	95	87	73
		L	94	96	98	101	101	101	78
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress $\bar{\sigma}_w$ [MPa] positive elevated temperature	M	113	110	108	104	95	87	73
		L	94	96	98	101	101	101	78
		G, R, 1L, 2L	106	103	101	96	95	95	93
	Wrinkling stress $\bar{\sigma}_w$ [MPa] negative	L	123	116	109	99	93	87	76
		G	119	115	111	106	104	102	98
	Wrinkling stress $\bar{\sigma}_w$ over support [MPa] negative	M	111	105	99	90	84	80	72
		L	77	80	83	88	83	80	72
		G, R, 1L, 2L	105	100	96	89	86	84	80
	Wrinkling stress $\bar{\sigma}_w$ over support [MPa] negative elevated temperature	M	111	105	99	90	84	80	72
		L	77	80	83	88	83	80	72
G, R, 1L, 2L		105	100	96	89	86	84	80	
Wrinkling stress $\bar{\sigma}_w$ over support [MPa] positive	L	101	99	96	93	88	83	76	
	G	116	110	103	94	97	101	98	

Table 10. Performances – fire, valid under the conditions specified in the classification report

Essential characteristics		Performances								
Reaction to fire; classification		A2-s1,d0								
class		EI 15	EI 20	EI 30	EI 45*	EI 60	EI 90	EI 120	EI 180	EI 240
Fire resistance of walls Panels orientation - horizontal	$d_N = 80$ mm, span [m]	NPD								
	$d_N = 100$ mm, span [m]	7,5	7,5	7,5	3,0	NPD	NPD	NPD	NPD	NPD
	$d_N = 120$ mm, span [m]	7,5	7,5	7,5	7,5	6,0	NPD	NPD	NPD	NPD
	$d_N = 150$ mm, span [m]	7,5	7,5	7,5	7,5	7,5	4,0	NPD	NPD	NPD
	$d_N = 175$ mm, span [m]	7,5	7,5	7,5	7,5	7,5	7,5	6,0	NPD	NPD
	$d_N = 200$ mm, span [m]	7,5	7,5	7,5	7,5	7,5	7,5	7,5	NPD	NPD
	$d_N = 240$ mm, span [m]	7,5	7,5	7,5	7,5	7,5	7,5	7,5	7,5	4,0
Fire resistance of walls Panels orientation – vertical	$d_N = 80$ mm, span [m]	NPD								
	$d_N = 100$ mm, span [m]	7,5	7,5	7,5	7,5	7,5	6,0	NPD	NPD	NPD
	$d_N = 120$ mm, span [m]	7,5	7,5	7,5	7,5	6,0	NPD	NPD	NPD	NPD
	$d_N = 150$ mm, span [m]	7,5	7,5	7,5	7,5	7,5	6,0	NPD	NPD	NPD
	$d_N = 175$ mm, span [m]	7,5	7,5	7,5	7,5	7,5	7,5	4,0	NPD	NPD
	$d_N = 200$ mm, span [m]	7,5	7,5	7,5	7,5	7,5	7,5	7,5	NPD	NPD
	$d_N = 240$ mm, span [m]	7,5	7,5	7,5	7,5	7,5	7,5	7,5	7,5	4,0

*only for partitions

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Table 11. Performances – other

Nominal thickness d_N [mm]		80	100	120	150	175	200	240
Essential characteristics		Performances						
Thermal transmittance	Thermal transmittance coefficient $U_{d,s}$ [W/(m ² K)]	0,49	0,40	0,34	0,28	0,24	0,20	0,17
	Thermal conductivity coefficient λ_D [W/(mK)]	0,041						
Flexural tensile strength (ceilings)		NPD						
Water permeability; classification		A						
Air permeability; values n and C		NPD						
Water vapour permeability; coefficient μ		Pass						
Airborne sound insulation; ratings R_w (C , C_{tr}) [dB]		32 (-3, -4)						
Sound absorption; rating α_w		0,20						
Durability	DUR2	Pass						
	Resistance to point loads and access loads (ceilings)	NPD						
Dangerous substances		NPD						