MoT Fire Proof Panels Industry
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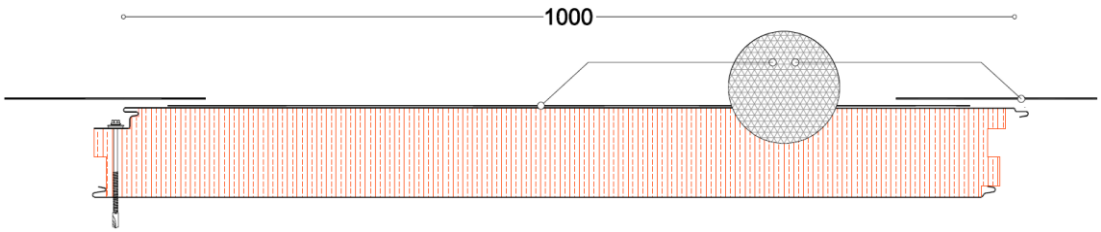
sigma RW® flat roof panels

Description | Areas of application

The sigma RW flat roof panels can satisfy the demands in terms of thermal & sound insulation and water tightness of roofs with minimum slope 1,20%. They are also ideal for curved and not rectangular designed roofs, providing to the architects unlimited design freedom.
They are self-supporting composite components, manufactured with non-combustible mineral wool core, that combines both excellent mechanical properties and high thermal insulation, enclosed by two steel shaped sheets.
PVC membrane is laminated to the external steel sheet and at the point of the panels' fixation a PVC membrane strip of 225mm width, is applied. The strip is hot air welded on the site from specialized staff, using the adequate welding machine.

The flat roofs constructed by sigma RW flat roof panels are not-walkable & ONLY occasional access is permitted. Wherever repeated foot traffic is expected e.g. entrance point, a walking resistant layer, of an extra 50mm mineral wool layer with min. compression strength 70kPa, has to be installed.



Technical specifications

12.1. technical specifications

nominal thickness (mm)	**50**	**60**	**80**	**100**	**120**	**150**	**200**	**240**	**300**
weighted sound insulation index - R_w (C,C_{tr}) acc. to EN ISO 10140-2:2010	32dB(-1;-3)			33dB(-2;-5)					
heat transfer coefficient - U_{value} (W/m^2K)	0,78	0,65	0,78	0,65	0,78	0,65	0,78	0,65	0,78
effective width (mm)	1000								
panel length (mm)	2.000 - 15.000								
max. recommended length (mm) 0,60/0,60mm	8.000	8.000	10.000	12.000	13.000	15.000	15.000	15.000	15.000
weight (Kgr/m²) 0,60/0,60mm	17,40	18,60	17,40	18,60	17,40	18,60	17,40	18,60	17,40

CAUTION: (1) The mineral wool core of panels with nominal thickness 50mm is without notch in the joint. **(2)** Despite MoT' s capability to handle long panels during their stacking, packing and loading, maximum recommended lengths written above, should be taken under serious consideration regarding the safe unloading and installation at site.

Product Benefits

Watertightness for low slope roofs | design freedom | thermal & sound insulation

Certification

ISO 9001 | ISO 14001 | CE

Product Tolerances

thickness d≤100mm: ± 2,00mm | thickness d>100mm: ± 2,00% | cover width: ±2,00 mm | trapezium height: ± 1,00mm
flatness (deviation in the longitudinal direction / measured length): 0,60 /L 200 - 1,0 /L 400 - 1,5 /L 700 (mm)
length L ≤ 3,00m: ± 5,00 mm | length L >3,00m: ± 10,00 mm | squareness: 0,006 x effective width

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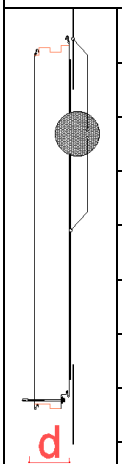
Maximum recommended span distances

12.2. maximum recommended span distances L (m) | steel thickness 0,60mm

support		L (m) L (m)							L (m)						
load (daN/m²)		40	60	80	100	120	150	200	40	60	80	100	120	150	200
 d (mm)	50	2,09	1,72	1,30	1,06	_	_	_	2,18	1,82	1,53	1,22	1,03	_	_
	60	2,65	2,20	1,81	1,45	1,24	_	_	2,76	2,28	2,47	1,63	1,41	1,17	_
	80	3,43	2,85	2,63	2,14	1,80	1,45	_	3,61	2,95	2,56	2,29	2,07	1,68	_
	100	4,28	3,43	3,18	3,03	2,50	2,03	1,51	4,60	3,76	3,25	2,91	2,65	2,37	1,66
	120	5,40	4,37	3,82	3,64	3,29	2,62	1,91	5,67	4,60	3,99	3,57	3,26	2,92	2,14
	150	6,40	5,18	4,62	4,13	3,73	3,02	2,20	6,77	5,53	4,79	4,28	3,91	3,48	2,47
	200	10,04	8,13	7,24	6,48	5,85	4,74	3,45	10,62	8,68	7,52	6,72	6,13	5,47	3,86
	240	10,94	8,86	8,04	7,19	6,73	5,45	3,97	11,58	9,46	8,35	7,46	7,05	6,28	4,44
	300	11,92	9,66	8,77	7,84	7,34	5,94	4,33	12,62	10,31	9,10	8,13	7,68	6,85	4,84

external / internal steel thickness: 0,50mm /0,50mm.

calculation of the safe spans was executed using specialized software developed for MoT.

safe span satisfies both max. deflection l≤200 and working stress ≤4% of the limit moment & 40% of the limit shear.

Feedstocks

External steel

Substrate: Dx51D acc. to EN 10346
Zn 200 - 275 acc. to EN 10169

Thickness: 0,60mm

Επίστρωση: polyvinyl chloride (PVC) membrane, 1200μm thickness **(1)**, RAL 7047

(1) total thickness 1,80mm (0,60mm steel + 1,20mm membrane)

Internal steel

Substrate: S280 - 320GD acc. to EN 10346
Zn 140 - 275 acc. to EN 10169 **(1)**

Thickness: 0,50mm – 1,00 mm

Coating (2): organic 20-25 μm /Pvdf 20-50μm/ PU Duro50-55μm/ PVC film120μm **(3)**.
Color palette of the commercial organic coated steel available at **color palette** **(4)**

(1) upon request stainless steel AISI 304, Mat surface (2B).

(2) upon request substrate without coating

(3) steel coated with PVC film120 μm should not be exposed to external environment or internal with UV radiation.

(4) contact our sales department to receive the confirmation of the colors availability.

All steel surfaces are delivered with protective film, in order to avoid scratches, dirt or any other damage.
It has to be removed from all panels' surfaces during their installation and in any case, in maximum 60 days from their production date, which is written on the packages' labels.

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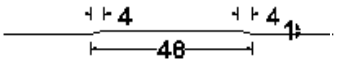
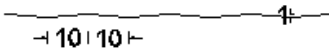
Internal steel modulations

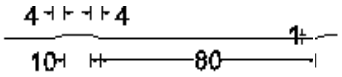
s-rib



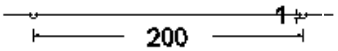
micro -rib



linear



4-rib
(1)



flat
(1)

(1) The minimum allowed steel thickness for Flat & 4-Rib modulations is 0.6mm.
(2) All the modulations above can be applied in both steel surfaces.

Photos of the steel modulations available at **steel modulations**

Core

The mineral wool is applied in the form of lamellae, in a vertical orientation relative to the steel surface.
Lamella's characteristics as following:

Reaction to Fire:	Class A1 acc. to EN 13501.
Thermal conductivity:	λD=0,042W/Mk acc. to EN 12667
Compression Strength:	≥ 75KPa acc. to EN 826.
Tensile Strength:	≥ 110KPa acc. to EN 1607.
Shear Strength:	≥ 70KPa acc. to EN 12090.

Accompanying products

PVC membrane strip of 225mm width, 1200μm thickness, RAL 7047.
Flat head self-drilling, double thread screws for sandwich panels.
Galvanized or coated steel flashings, potentially manufactured by the same steel as panels' surfaces.
Fire proof sealant Sikacryl 621 FIRE, to be applied as strip into the panels' joint.

Packaging – Transportation

Panels are automatically stacked, in packages with maximum height 1,00 m for road transport and 1,30 m for sea transport. At the bottom of the package an EPS sheet is applied through its entire surface, along with EPS blocks, in order to avoid any damage, during loading and unloading procedure. All of them are tightly wrapped with stretch film.

Each package bears its unique ID label, declaring its dimension and weight, the order' s number and production date, as well as the full information about the panels contented.

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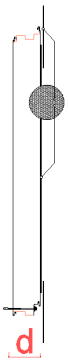
12.3. table of typical packaging

		sea transport | 40' HC Containers			road transport | 2,6m min. truck' s effect. height		
		Pieces / package 1st - 2nd row	Total height (mm)	Total panels' quantity of 11m cover (m²)	Pieces / package 1st - 2nd - 3rd row	Total height (mm)	Total panels' quantity of 12m cover (m²)
 d (mm)	50	22 - 23	2.490	990,00	14 - 14 - 14	2.460	1.008,00
	60	19 - 19	2.520	836,00	12 - 12 - 12	2.520	864,00
	80	14 - 14	2.480	616,00	9 - 9 - 9	2.520	648,00
	100	12 - 13	2.490	550,00	8 - 8 - 8	2.520	576,00
	120	11 - 11	2.440	484,00	7 - 7 - 7	2.460	504,00
	150	10 - 9	2.520	418,00	6 - 6 - 6	2.520	432,00
	200	8 - 7	2.490	330,00	6 - 4 - 4	2.460	336,00
	250	6 - 5	2.440	242,00	4 - 3 - 3	2.360	240,00
	300	5 - 4	2.400	198,00	3 - 3 - 3	2.520	216,00

CAUTION: Typical packaging may be modified depending on the special demands of each loading.

Unloading

The packages of **length<6,00m** should be unloaded, either with an overhead travelling crane, using a cross- beam, or with a single fork forklift.
The packages of **length>6,00m** should be unloaded by using metal frame in combination with hollow sections and lifting straps. The use of crane as described above, can ONLY be substituted by the use of double fork forklifts (four forks with the appropriate distance between them).

It is **NOT recommended**
– to use only lifting straps without using metal frame.
– to use metal strips, chains and wire ropes.
It is **HIGHLY recommended**
– to use only the appropriate lifting straps.
– to use the appropriate number of lifting straps and at the right position, in terms of avoiding the packages' bending.
– to protect the edges of the panels, by using hard plastic angles.

More information is available at **tips-documents | unloading**.

Storage

Panels shouldn't be stored on external areas, being exposed to weather conditions such as rain, snow, strong winds and intense sunlight. On the contrary, they should be stored on covered and sufficiently ventilated areas. In case such areas are not available and only during a short-term storage on the project site, packages should be stored in slightly inclined position, to ensure free drainage of rainwater which might otherwise penetrate into the package.
Provide to the panels intended for open-air-storage with adequate protection against rainwater, snow, wind, sunlight, dust and dirt, such as canvas covers. It is forbidden to use plastic film for their protection, since canvas covers ensure adequate ventilation and prompt evaporation of accumulated moisture. Absolutely avoid water collection between the panels, as in case of prolonged storage without adequate ventilation, this may damage them. To avoid indentations and prints on the panels, it is forbidden to store the panel packages one on top of the other at the construction site and the surface, where stored has to be hardened flat. Partially unpacked packages must be always protected against rainwater and strong wind.

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Due to the additional load exerted on the roof structure, for temporary on-roof storage and during assembly, the roof panels can only be placed on the load-bearing framework and always upon agreement with the chief supervisor. Panel packages must be based on the load-bearing framework on their bottom EPS slab and they should not be stored one on top on the roof structure.

Installation - Safety

All works related to the installation of sandwich panels, have to be carried out in keeping with the applicable occupational health and safety regulations, for the assembly and roofing works, following the local laws and regulations, under supervision of authorized staff. In any case, use of the following fall restraint equipment during panels assembly is recommended:
- rope barriers to secure the buildings in perimeter
- lifelines and safety belts of assembler
- anti-slip safety shoes

For more information about installation please contact our sales department.

Cleaning - Maintenance

It is highly recommended to clean and check carefully the panels and all the structural components connected with them, at least annually.
For more information about cleaning and maintenance please contact our sales department.

Environmental performance

Environmentally friendly and safe for public health.
100% recyclable material.
All the packaging materials & the protective film of the panels should be sent for recycling from the construction site, following the relevant legislation in each place, where the installation is executed.
For the waste code contact MoT

MoT reserves the right to modify the specifications of its products without notice and the information provided in this form is valid at the time of its publication. Users of the products should always consult the current version of the Product Data Sheet, copies of which are available upon request.