



instruction for packing,
transportation, storage
and mounting



1- Preparation for Installation

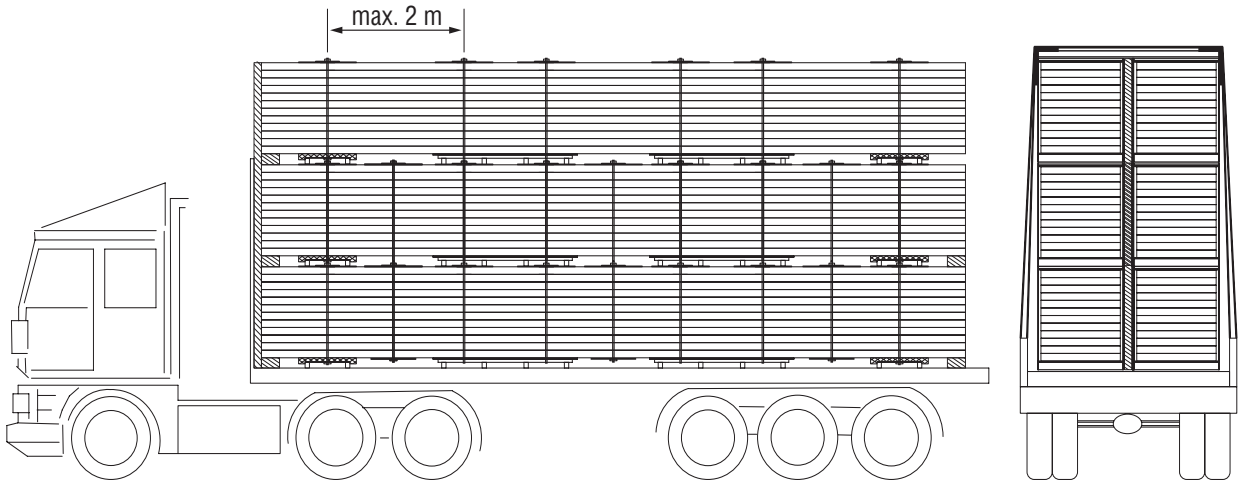
Before giving the orders of panel dimension and numbers, installation area should be controlled; vehicle access and crane settlement plan should be made; crane should be chosen appropriately for the height and dimensions of panel packages and height of the buildings and the construction on which the panel will be installed should be controlled according to technical rules.

It should be ensured that it is smooth in terms of the sizes of beam (lateral portion), level differences between the beams are considered and beams and rain grooves are on the same panel and construction in the facet is in its rope and triangle horizontally and plumb and scale vertically. Otherwise, there will be seat problems on the connection points of the panels. Before giving the orders, you should control them with on-site measurements.

Check the compliance of the quality of product ordered with the dispatch note. Check the product delivered via dispatch note (numbers / sizes). Check whether there is wrong shipment or there are any defects on the panels. If there is any problem mentioned above, it is necessary to determine the problem and note it down and sign the dispatch note mutually with the vehicle driver, to take the as delivery and return to sale representative immediately.

PANELSAN shall be never liable to products which are not notified within 24 hours. PANELSAN shall be never liable to inappropriate materials which are unloaded and installed.

2- Loading



The lengths of the panel packages should not exceed the length of the vehicle. Upon request, the panels exceeding the vehicle length are not considered under warranty

The vehicle intended for shipment must be suitable for loading from the sides. Side gusset panels of the vehicle chosen should be dismantled. Vehicle should be tentless and flatbed. Side and rear doors should be closed after loading. Vehicle whose bed ground should be smooth and clean should have appropriate bed length for the panel sizes and panels shouldn't exceed the bed. Not more than 3 packages should be stacked per line. At least 10 ratchet straps should be made available per vehicle. Gussets (plastic, wood and etc.) should be put at the width of 20-30 cm so that ratchet straps cannot give damage to edges and connection points of the panels. At least 2 ratchet straps should be used on the 2nd line for the packages with panel heights of 10 m or above (1 line after the beginning and 1 line before the last line). Protective materials should be placed among and on the fronts of the panel packages put side by side for the purposes of preventing the impact and friction (such as EPS wedge, wood wedge and etc.). Ratchet straps should be checked once per 100 km and it should be checked whether packages are removed or not. Width of vehicle should be at least 2.400 mm. Vehicle speed should never exceed 70 km per hour during driving.

Additional loads should not be loaded into the vehicle without the Panelsan authorized personnel's knowledge. Otherwise, since the products may get damage, they will be considered out of the warranty.

Vehicle Loading Table

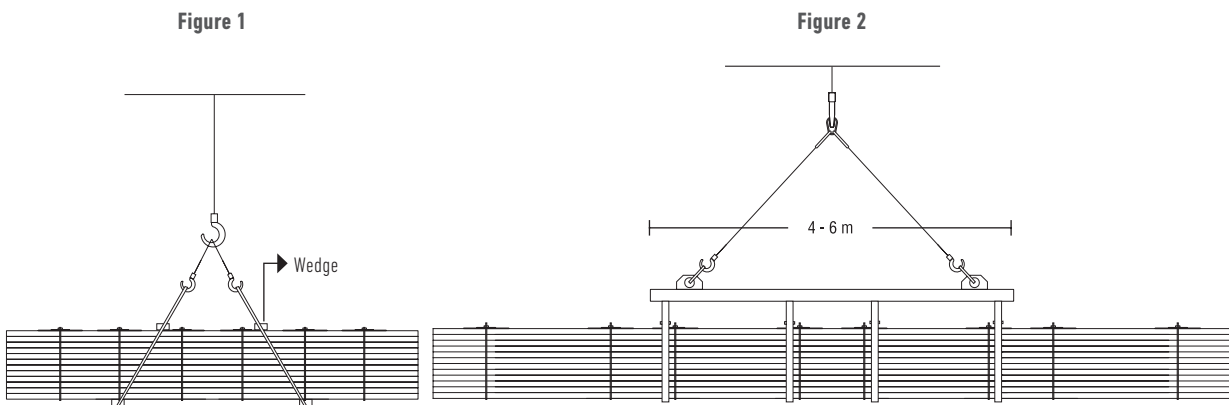
Metal Thickness	Insulation Thickness	Insulation Thickness (mm)	Due to Lengths Unit/Package			
			Domestic Transportation (6 Package/Vehicle)		Container (4 Package/ Container)	Closed Vehicle (6 Package/Vehicle)
3 and 5 Ribbed Roof Panel	Polyurethane (PUR) Polyisocyanurate (PIR) Expandable Polystyrene (EPS)		2,80 - 9,00 m	9,00 - 13,60 m	2,80 - 11,9 m	2,50 - 13,60 m
		40	14	14	18	12
		50	12	12	16	10
		60	10	10	14	9
		70	8	8	12	8
		75	8	8	12	6
		80	8	8	10	6
		100	6	6	8	6
		120	6	6	8	4
		150	5	5	6	4
5 Ribbed Roof Panel	Rockwool / Glasswool	50	12	12	(max. 16)	10
		60	10	10	(max. 14)	8
		80	8	8	(max. 10)	6
		100	6	6	(max. 8)	4
		120	5	5	(max. 8)	5
		125	5	5	(max. 6)	4
Wall Panels	Polyurethane (PUR) Polyisocyanurate (PIR) Expandable Polystyrene (EPS)	40	20	20	27	16
		50	16	16	22	14
		60	13	13	18	12
		70	11	11	15	10
		75	10	10	14	10
		80	10	10	13	9
		100	8	8	11	7
		120	7	7	9	6
		150	6	6	7	4
	Rockwool / Glasswool	50	12	12	(max. 22)	10
		60	12	12	(max. 18)	10
		80	9	9	(max. 13)	9
		100	8	7	(max. 11)	7
		120	6	5	(max. 9)	6
		125	4	4	(max. 7)	4
Cold Room Panels	Polyurethane (PUR) Polyisocyanurate (PIR)	60	13	13	18	12
		80	10	10	13	8
		120	7	7	9	6
		150	6	6	7	4
		180	5	5	6	4
		200	4	4	5	3

3- Unloading

Panels on the trucks should be unloaded on the roof or construction site in the form of packages with a crane or forklift with special apparatus (panel packages with height over 7 meters should be unloaded with a crane having 4 blades).

Piling for the roof packages should be done with singular gap and one top of another. Packages should be distinguished over the roof with proper gaps.

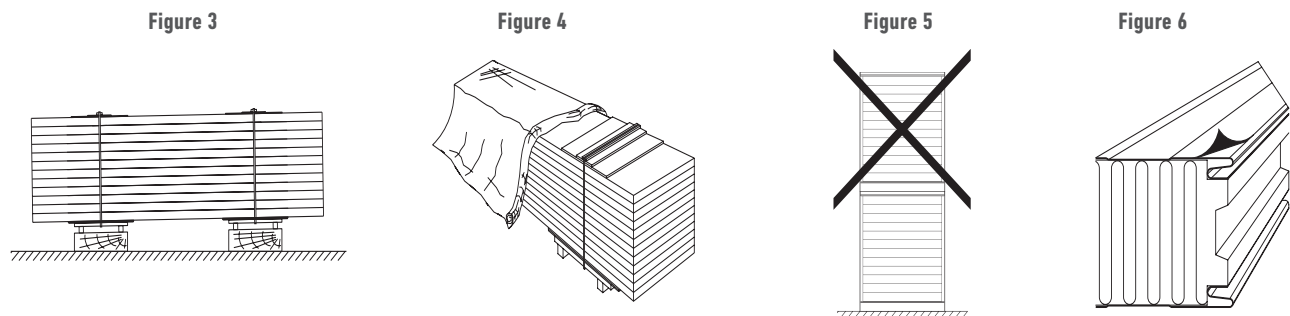
Appropriate crane should be chosen because there will be differences in terms of sizes and weights of the packages. While lifting with a crane, steel cable or chain ropes shouldn't be used. Flat ropes should be used and they should be made of nylon, silk or hemp. The width should be minimally 20 cm. Wood wedges or a material to protect the edges of the panel should be placed on the places of incoming ropes. Wedges should be 3,5 cm longer than the package with from both the sides. Similarly, wedge having the same dimension as the bottom wedge should be placed on the points where the rope contacts on the upper side of the package. Ropes should be of necessary lengths. Otherwise, panel connections will become subject to damages (Figure 1). Packages with length more than 6 m should be lifted with special apparatus. (Figure 2). The apparatus to be used should be half the length of the shortest panel length.



4- Storing

If the panel packages are intended to be stored without opening, they should be kept in a closed area protected against water, if possible. Panel packages should be kept on the surface with lower slope (2-3%) in order to protect against water vapor. Contact of the panels with soil, clay, plaster, fertilization, acid, salt, alkali and similar kinds of materials which may cause corrosion should be avoided before and during the installation. Applications which may cause scratches on the materials should be avoided. If they are intended to be kept in an open environment, they should be covered with a nylon canvas in a way to create UV resistance in order to protect against sunlight and in a way to create vapor - pond and not to stop air flow in order to protect against water. They should be elevated to a distance which is at least 20 cm above the floor (Figures 3 - 4). They should be avoided being kept in the open environment more than 1 week and each package stored should be kept subject to humidity checks everyday despite the precautions.

Protective films are just a precaution for scratchings and tarnishings that may happen during transportation and installation. This film should be removed from each panel after the installation is completed without any delay. Otherwise the film will stick to the painted surface with the effects of heat and sun, it will make it harder to remove, and will damage the paint (figure 6). The Panelsan protective films should be removed within 3 months after the delivery date. Otherwise, the complaints about the protective films will be ignored, and they will not be considered under warranty. Opened panel package should be repacked in the end of the work day, the packaging should be renewed, and be stored with precautions in a place for not to be affected with weather conditions.



5- Handling

After panel packages are opened, never take the upper panel through pulling. Handle all the panels through lifting them one by one by avoiding the friction on the lower panel. Handling should be made with vertical lifters (vacuum – fairlead, special apparatus) and use of sufficient human labor (Figures 7 - 8 - 9).

Avoid holding panels to be handled from the connection parts or sheet coatings. Otherwise, the sheet may be removed from insulation material.

Figure 7

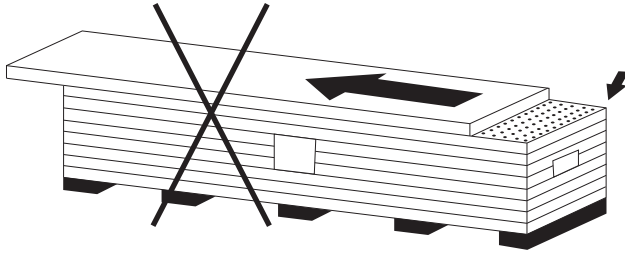


Figure 8

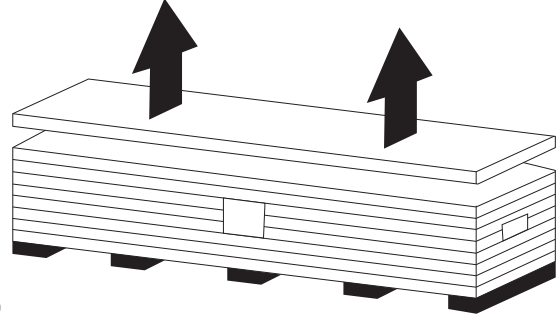


Figure 9

Figure 9 A - Vertical Lift

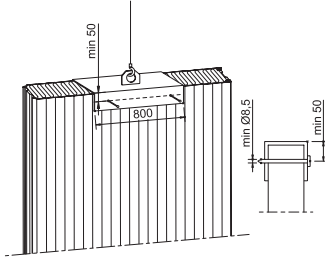


Figure 9 B - Manuel Transfer

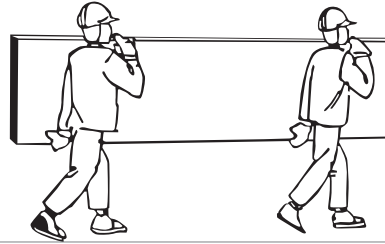


Figure 9 C - Lift

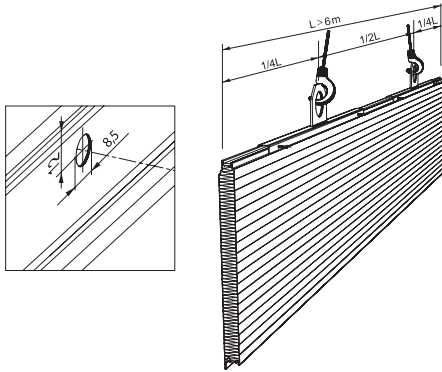


Figure 9 D - Vacuum Lift

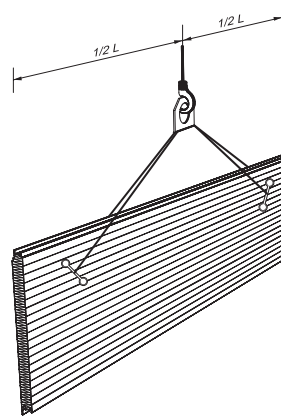


Figure 10

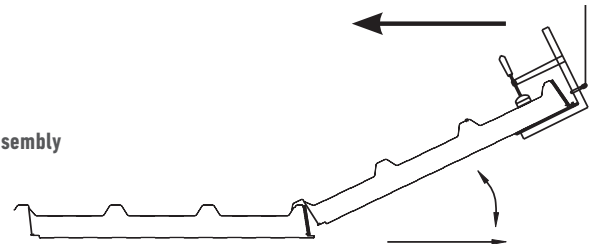
Prevailing Wind Direction

6- General Installation Rules

The panels are installed against the dominant wind direction, according to the joint detail of the roof and wall panels which will be installed vertically or diagonally. (Figure 10)

Adhesive sponge should be applied on the surfaces in contact with the carrier system and sandwich panel and the surfaces in contact with the sandwich panel and accessories (min. 2 / 10 mm). This application will prevent heat bridges created as a result of the contact between metals and corrosion.

Assembly

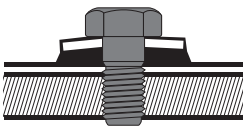


If possible, accessories of installed panels should be sealed immediately. If it is not possible, precautions should be taken against humidity and open areas of the panel should be closed with nylons.

Particularly, rockwool should be protected against humidity as long as installation of panels is continued in order to prevent the occurrence of the problems resulting from high water absorption capacity of the panel. While accessories are installed, 2 cm of mastic application should be internally made on the edges of the accessories for the purposes of preventing water and air penetration. 2 mm of mastic gap is left for panel connections in cold room panels. External and internal insulation of these areas with mastic shouldn't be forgotten. While choosing the screws as the fastening elements:

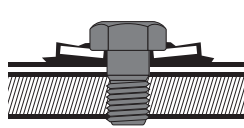
- Screws which is of high corrosion resistance, appropriate for panel thickness and type as well as the thickness and type of carrier to which connection shall be made; it should be checked whether the screw is appropriate for drilling capacity. In addition, correct screw should be chosen by estimating the load to be imposed by the panel on the screw.
- While panels are installed, screws shouldn't be fixed (excluding concrete screws excluded); they should be neither too tight nor loose via torque adjustment; they should be correctly screwed (Figure 11 A). Metal coating of the panel towards the inner side should be connected to carrying column tightly; however, they should be screwed without causing deformation of outer metal screwed (crush due to screwing) (Figure 11 B – C). Because mineral wool – insulated panels are fibrous and flexible, screwing should be made with metal connection plaques (Figure 12). Appropriate plaques should be chosen according to connection detail of the panel; screwing on the roof panels should be made with EMPDM seals and fixed chute profiles according to twisting measures. (You can demand appropriate fixed chutes for your roof from customer representative.

Figure 11 A



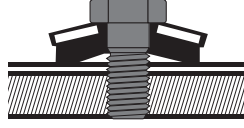
Correct Screwing

Figure 11 B



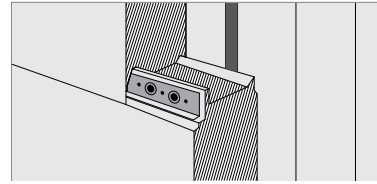
Over Screwed

Figure 11 C



Not fully Screwed

Figure 12



- After the protective films are removed, pay attention to have the installation surface is on the same wall.
- For the partially delivered panels, the installation of one party of panels should be installed on the same wall in terms of not having different color tone. Also pay attention to production date, special warnings during the installation.
- Pay attention while cutting or welding in the field, since they affect the panel surfaces and may cause burrings on the panel surfaces.

During Membran Panel installation;

- It's important for the application area to be clean and dry before the welding process.
- During the installation, it's required for the screws to be not visible from the outside while welding.
- Membran welding process should be done with correct welding machine at suitable heat.
- The joints should be straight, and they should not cause any bulge that leads water accumulation.
- The surface have to be cleaned when the membran panel installation is completed. There shouldn't be any material remaining on the surface that may cause scratches, puntring, etc.
- Panel surface should not be stepped on after the installing has been completed to prevent any deformation. In case of necessity they can be used as pathwalk.

If dark color is chosen for external surface of the panel, the following conditions should be considered in order to minimize the deformation:

- The construction where panel will be installed shall be free from errors in vertical and horizontal line.
- Team to perform panel installation will be required to be experienced and to act in line with the rules applicable to installation, lifting and lowering.
- Appropriate screws and equipment should be chosen for panels and construction and installation should be proceeded with an appropriate torque.
- Projects should be assessed well (appropriate carriage tables) and appropriate panels and metal thickness for static tables should be chosen.
- For the partially delivered panels, the installation of one party of panels should be installed on the same wall in terms of not having different color tone. Also pay attention to production date, special warnings during the installation
- Table of 'Panel Sizes According to Color Groups' shall be taken as basis for roof and wall panels

- Temperature of the day when installation will be made should be +10°C and above in order to minimize thermal stress
- Wall panels should be installed with a single opening system.

Sandwich panels are long-lasting products. Because of this, although the panels are fully straight when they are produced at the factory, they can be exposed to different effects over time (eg. load bearing, wind, pressure, internal/external temperature difference). These effects may result in deformation on flat surfaces, and losing of flatness on surfaces. Even if all these conditions are satisfied, PANELSAN never warrants the homogeneity smoothness on the dark color group for the external surfaces and never take liability for the same issues.

7- Maintenance and Repair

For the purposes of extending the life of sandwich panels, they should be checked at last once a year in line with the following questions; assistance should be required from PANELSAN against the charge.

- Are there screws which are dislocated, broken and loosened?
- Are there any ruptures and scratches on the surface of the panel?
- Are there any regions subject to water penetration?
- Is it necessary to replace the mastics?
- Are there any accessories which are deformed due to the effects of air conditions?

Panel surfaces should be washed with non-pressurized water at least once a year; in case of stains, they should be removed with water-based dish detergent and a sponge without pressing. (Consult the firm for stains which cannot be removed. Avoid applying chemical process.)

If there are tiny scratches not reaching to metal on the panels, these should be repaired with air-dried touchup painting and painting brush upon obtaining information from the firm. (Even if the paint is of the same type and color, you should be aware that there may be color tone differences. For this reason, it is suggested that it should be first tried in a small place.

If there are scratches penetrating into zinc (galvanized) layer and crushes with external force on the panels, these should be replaced with new ones immediately. As long as these rules are observed, life cycle of the panels will be longer.