

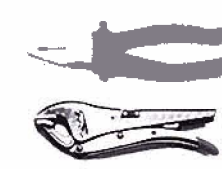
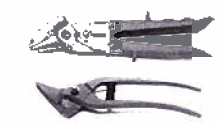

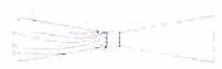



A5 FITTING THE PANELS

A5.1 EQUIPMENT NECESSARY

Below is a list of the equipment needed on site for fitting the panels.

- | | |
|---|---|
|  | 1) PORTABLE DRILL and drill-bits |
|  | 2) ELECTRIC SCREWDRIVER with direction reversing, and the necessary collets.
We recommend the use of a screwdriver equipped with a torque limiter. This means that the strain on the shank of the screws can be regulated so as not to damage the panel in the process of fitting. |
|  | 3) JIG SAW |
|  | 4) POP RIVETER and rivets |
|  | 5) Series of PLIERS (locking and universal) |
|  | 6) SHEARS for small manual adjustments to the panels |
|  | 7) CLUB HAMMER |
|  | 8) SCRAPER |
|  | 9) PLUMB LINE to check the verticality of wall panelling |

10) FASTENERS AS SPECIFIED IN THE DESIGN OR ORDER

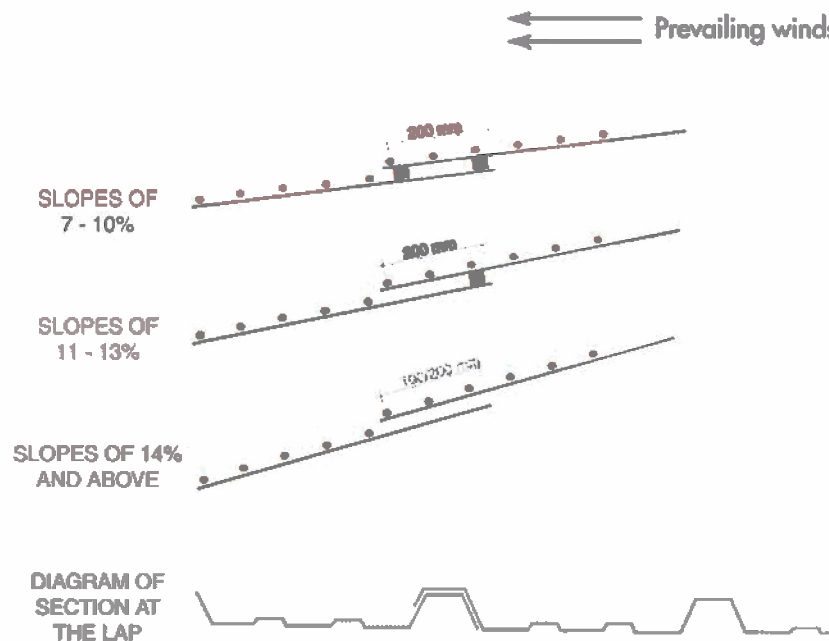
11) POSSIBLE LIFTING-BEAM WITH CLAMPS OR SUCKERS for moving large-sized panels

12) VACUUM CLEANER

A5.2 FITTING TO ROOF (EXCLUDING ISODOGA 1000):

In order to ensure that the water runs off correctly, and to avoid oxidation of the metal supports which can otherwise follow, roofing panels must be laid with a minimum slope of 7%. In the case of pitches constructed with more than one panel lengthways, a longitudinal overlap must be provided, sufficient (in relation to the slope) to avoid any ingress of water. In accordance with UNI 10372, ISOPAN recommends providing sufficient projection at the eaves to allow a suitable drip and prevent any ingress of water into the insulation or the inside of the building. After completing the fitting of the panels and the necessary flashings, check carefully that no extraneous materials or residues from the job are abandoned on the roofing panels which could give rise to corrosion or prevent rainwater running off correctly, or cause a buildup of undesirable and harmful substances. In the accompanying illustration we show examples of fitting roof panels in situations involving laps (overlapping longitudinal joints).

As regards flat roofs, Isopan's recommendation is the Isodeck 1000 panel, which must be laid with the ribs facing downwards and the side faced with bituminised paper facing upwards. This in its turn is completed with a finishing covering in bituminous membrane which completely waterproofs the building.

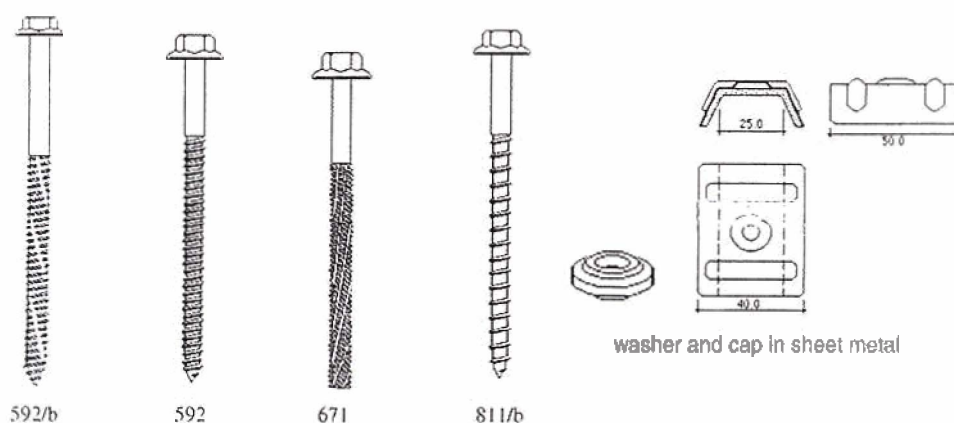


■ Strips of silicone material or gaskets

A5.3 FASTENERS AND PRINCIPLES OF FIXING

The type of fixing depends on the type of support used. Normally, self-tapping screws are used (also called 'thread-forming screws'). Standard fixing is by means of 6.3 mm diameter self-tapping screws in galvanised carbon steel with hexagon heads, of the type "Kovervit BS 592", or "592" and washer in galvanised steel incorporating a gasket in EPDM rubber to maintain the seal. If specifically requested, as

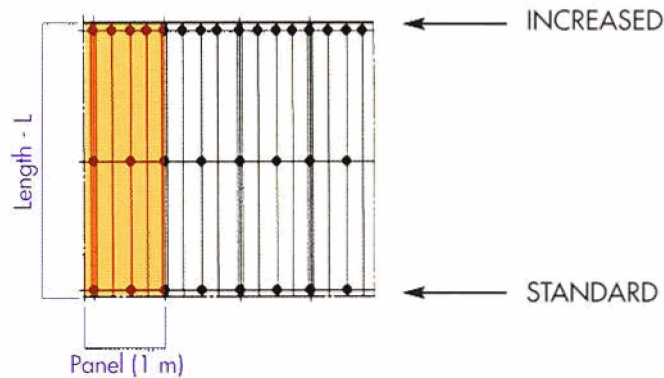
an alternative to the self-tapping screws described above, ISOPAN can supply another two series of screw designated 'self-drilling' of type "Kovervit 671", which have the advantage of reducing fitting time, as the hole is drilled and the panel directly anchored all in one operation. These screws, which are ideal for fixing to heavy steel sections, require specialised skills for their use, and correct torque adjustment on the power screwdriver used on site.



ISOPAN will be happy to deal with any query from customers about the various fixing systems described, their mechanical performance and their methods of use. The principles of fixing are set out below:

A5.3.1 Fixing for roofing panels

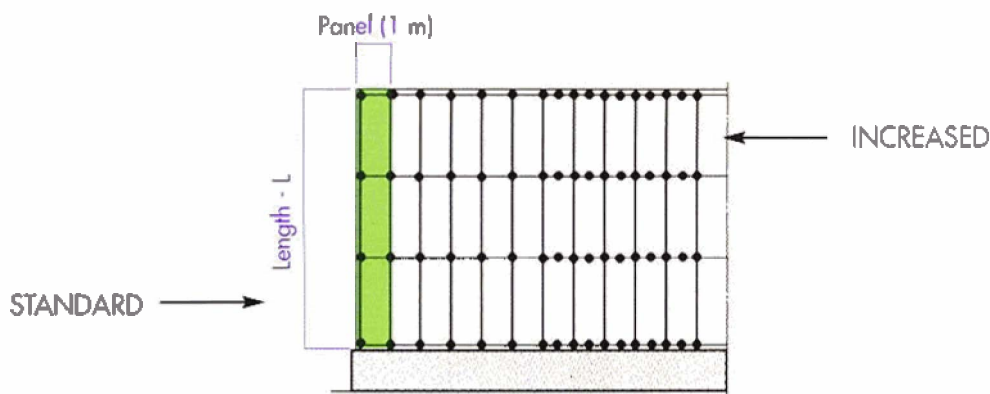
The panels should be installed with the direction of laying opposite to that of the prevailing winds, checking frequently that they are parallel and correctly aligned. They should be fixed to the supporting structure by means of the devices specified by the system, both for timber and for metal roof frameworks. The holes must have a diameter smaller than that of the fixing device; these must not be fully tightened, to allow the panel to expand and contract as a result of temperature and moisture changes. The number of fixings required varies with the local climate situation. In the course of static deflection tests with positive and negative loads, we have defined the "normal density" for fixings as: one bolt on alternate ribs on the central purlins and one on every rib on the end purlins. This density has been assumed as standard in determining the positive and negative overload threshold. The minimum fixing density is therefore one fixing on alternate ribs in the continuous part of the roof and one fixing on every rib round the perimeter of the sheets, and in particularly windy areas, in the central part as well.



Layout for normal and increased density of fixings

A5.3.2 Fixing for wall panels

The panels must be anchored to continuous metal sections running at right angles to the direction of the panels themselves, and these members in their turn must be adequately secured to the loadbearing structure of the building in accordance with the conditions specified in the design as regards stability. The width of the support in contact with the panel must be not less than 50 mm. In the case of an end-to-end joint between two panels, the contact width must be 80 - 100 mm. The minimum width of the support area at the end of each panel must be an effective 30 mm in contact with the supporting frame members. The panels should be fixed to the loadbearing structure by means of the fasteners specified by the system. The number of fixings varies in accordance the different climatic situations in which the building may be located. Normally, every panel requires the use of one fixing opposite each supporting member. In areas which are particularly exposed to the action of the wind, the density of the fixings must be determined by the designer case by case, appropriately increasing the number of fixings from the standard specification.



Layout for normal and increased density of fixings

A5.4 INSTRUCTIONS FOR HANDLING, STORAGE AND TRANSPORT

The panels are supplied packaged and with an overall wrapping of stretch polythene film. On request they can be supplied in packaging with metal protective strips or in cardboard, with a view to preventing possible damage to the outer panels from contact with the arms of forklift trucks used to unload the products.

The standard composition of the pack is as indicated below.

Contents of one pack of sandwich or single-skin roofing panels:

Panel thickness (mm)	30	40	50	60	80	100	120
No. of panels per pack:	14	12	10	8	6	6	5

Contents of one pack of sandwich or single-skin wall panels:

Panel thickness (mm)	30	40	50	60	80	100	120	150	200
No. of panels per pack:	17	18	14	12	9	7	6	6	4

If packs with different composition from standard are required, this must be explicitly requested at the time of ordering.

The height of the packs (in millimetres) depends on the number of panels, as in the following tables:

Sandwich or single-skin roofing panels

ISOCOP-5 1000 - ISODUPLEX 1000 - ISOTEGO 1000 - ISOGRECATA 1000 - ISODECK 1000

Panel thickness (mm)	No. of panels per pack	Height of pack (mm)	Packs per load
30	14	700	6 x 14
40	12	720	6 x 12
50	10	700	6 x 10
60	8	640	4 x 8 + 2 x 10
70	8	720	6 x 8
80	6	600	4 x 6 + 2 x 8
100	6	720	6 x 6
120	5	700	6 x 5

Note: Each pack rests on strips of polystyrene with a thickness of 70 mm (not included in the stated height of the pack).

Sandwich or single-skin wall panels

ISORIGHE 1000 - ISOBOX 1000 - ISOPIANO 1000 - N. ISOPARETE 1000 - N. ISOPARETE PIANO 1000 - ISODOGA 1000

Panel thickness (mm)	No. of panels per pack	Height of pack (mm)	Packs per load
25	21	525	8 x 21
30	17	510	8 x 17
35	15	525	8 x 15
40	18	720	6 x 18
50	14	700	6 x 14
60	12	720	6 x 12
80	9	720	6 x 9
100	7	700	6 x 7
120	6	720	6 x 6

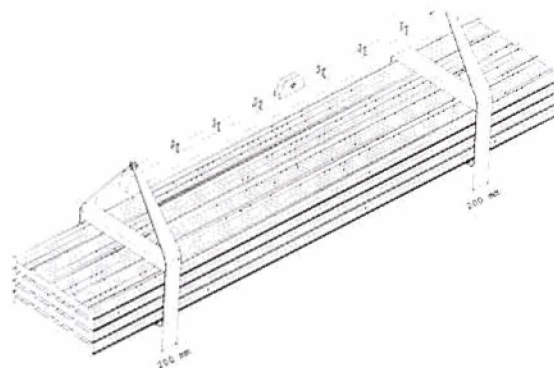
Note: Each pack rests on strips of polystyrene with a thickness of 70 mm (not included in the stated height of the pack).

The weight of the packs varies, not only with the thickness of the insulation, but also with the length at which the panels are supplied, as well as with the type and thickness of the metal supporting face.

A5.5 LIFTING AND HANDLING

a) LIFTING

The packs must always be lifted by means of slings positioned at a minimum of two points separated by a distance not less than half the length of the pack itself (§7.4 of Standard UNI 10372). The slings must be made of synthetic fibre (nylon or high-strength polyester), at least 200 mm wide, as shown in the drawing. We recommend using suitable spacers consisting of wooden boards or polystyrene packing above and below the pack, to avoid direct contact between the slings and the pack.



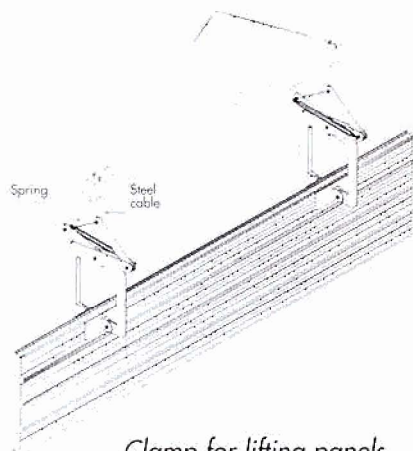
b) HANDLING

Manual moving of individual panels must be performed by at least two people, keeping the panel upright as illustrated. Suitable protective equipment must be used (gloves, safety shoes, overalls etc.) in compliance with current regulations.

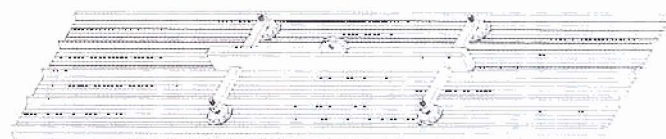


Panels over a certain size (4 metres in the case of a panel of thickness 80-100 mm) must be moved by means of a suitable hoist or crane, as the weight of the panel makes it impossible to move by hand. The panel is attached to the chosen mechanical lifting gear by a lifting-beam with two or more clamps connected to it by cables. The clamps grip the edge of the panel itself. A lifting-beam equipped with suckers is a satisfactory alternative.

Note: In the case of any eventuality not covered above, the AIPPEG Recommendations (attached) apply.



Clamp for lifting panels



Schematic drawing of lifting-beam with suckers



A5.6 INSTRUCTIONS FOR FITTING

A5.6.1 Preliminary information

- 1) Check that the storage on site is in compliance with the procedures described in the AIPPEG recommendations.
- 2) Check that the framework corresponds to the working drawing.
- 3) Check that the entire site labour-force is equipped with safety footwear, gloves etc, and that the site has all the equipment necessary to ensure safety in accordance with current regulations.

A5.6.2 Preparation of the panels

Remove the polythene protective film from the panel before fitting it.
Check that the surface of the panel does not have traces of adhesive remaining from the protective film.
If necessary, use a solution of detergent in water to remove it.

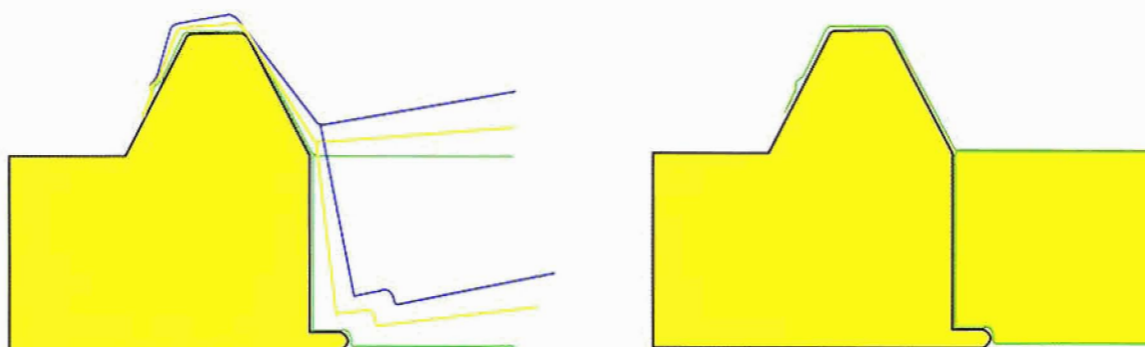
A5.6.3 Fitting sequences for Isopan panels – wall panels:

The correct sequence for fitting Isopan wall panels is as set out below.

- 1) Fix the base metalwork (where required) at the foot of the wall, and also the metalwork which has to be installed before the wall, such as drips, connectors for the roofing, corner connectors etc.
- 2) Remove the protective film from the panels, as mentioned in the preliminary information.
- 3) Fit the panels starting from the foot of the wall, taking care to execute joints correctly and to make sure the panels are upright.
- 4) Secure the panels only after checking that they are perfectly lined up. The fixing screws must always be inserted at right angles to the panel.
- 5) Fit the finishing components (corner strips, perimeter edging etc.).
- 6) Carry out a general inspection and cleaning of the wall, paying particular attention to the fixings and the joints with the door and window frames.

A5.6.4 Fitting sequences for Isopan panels – roofing panels:

- 1) Start at the bottom and work upwards, finishing at the ridge.
- 2) Fit gutters, sealing caps and rainwater flashings.
- 3) After fixing the first row of panels, working away from the direction of the prevailing winds, lay the succeeding panels, superimposing the hollow rib on the solid rib of the panel already laid, and gently rotating the panel (see diagram).



Manoeuvre for assembling the panels

A5.6.5 Cutting the panels

The operation of cutting the panels comprises the following stages:

- 1) Protect the area affected by the cut with adhesive tape.
- 2) Use a panel to mark the required cut on the tape.
- 3) Make the cut with a jig saw (equipped with dust extraction and filtration), following all the precautions and safety procedures specified by current regulations.
- 4) Remove the swarf produced by the cut because it can scratch the paintwork of the panel itself, and therefore impair its long-term durability.
- 5) Remove the protecting adhesive tape.