

INFORMATION DOCUMENT

BRUFMA ID/1/2009
(Supersedes ID/1/2001)

MECHANICAL FIXINGS FOR RIGID POLYISOCYANURATE (PIR) AND POLYURETHANE (PUR) ROOFBOARDS BENEATH SINGLE-PLY WATERPROOFING MEMBRANES

The purpose of this document is to define the positioning of mechanical fixings for securing rigid polyisocyanurate and polyurethane roofboards to a deck, when the roofboards are to be used in combination with single-ply waterproofing membranes.

The fixing patterns and density described in figure 1 should be considered as the minimum requirement to secure the board. They are not intended to override the requirements of BS 6399: Part 2: 1997^(Ref 1) or EN1991-1-4^(Ref 2) used with the UK National Annex which should be considered independently of these guidelines. The manufacturers of the single-ply membranes to be used in conjunction with the PIR or PUR roofboards will likewise have their own requirements for securing their membrane. These requirements will normally need to be met quite additionally to roofboard fixings. Fixings which act as securement for the weather proofing membrane may only be used to substitute the roofboard fixings when their pattern, size and locations coincide exactly.

The following recommendations are intended to assist designers and contractors to achieve uniform restraint of the roofboard over its full area. However, the number of fixings will vary with the geographical location of the building, the topographical data and the height and width of the roof concerned.

Fixing location

PIR and PUR roofboards are normally manufactured with a width of 1200 mm and a length varying from 600 mm to 3000 mm according to the intended application or manufacturer.

Fixings, a minimum of 50 mm diameter or 50 mm square, should comprise a suitable screw (to suit board thickness and deck type) and should incorporate a counter sunk washer / plate. All fixings and washers should be sited >50 mm and <150 mm from the edges and corners of the board and not overlap board joints.

If thermally broken fixings are not used, thicker insulation will be necessary in order to achieve the required U-value.

Where the minimum requirement to secure the boards is proposed wind load calculations should be undertaken in order to determine fastener requirements in corner, perimeter and field roof areas. These areas should be clearly defined, especially where different numbers of fasteners are required for each section.

The pitches / centres of the crown flats of metal decking sheets may influence the location of fixings along the long edges of the boards.

On profiled metal decks boards should be installed with the long edge at right angles to the troughs of the decking and with end joints staggered. All short edges must be fully supported on the crown of the flats of the deck profile.

Where alternative mechanical fixing systems that do not rely on large washers are considered, the system must provide similar restraint to the board as would be attained by the use of conventional washer and screw systems.

Minimum number of fixings per board size

Board Size (mm)	Number of Fixings	Rate /m ²
1200 x 600	4	5.55
1200 x 1200	4	2.77
1200 x 2400	6	2.08
1200 x 3000	8	2.22

NOTE: The number of fixings per board shown in this table is a minimum. Ensure that prevailing conditions, especially wind speed, are taken into account when calculating the actual number of fixings required using wind uplift calculation ^(Refs 1 and 2).

References

1. BS 6399-2:1997. Loading for buildings. Code of practice for wind loads
2. NA to BS EN 1991-1-4:2005 UK National Annex to Eurocode 1. Actions on structures. General actions. Wind actions

Whilst any advice given by BRUFMA is given in good faith, all liability therefore so far permitted by law is specifically excluded and the recipient must satisfy themselves as to its efficacy and suitability.

Figure 1. Mechanical fixing patterns

The number of fixings will vary with the geographical location of the building, topographical data and the height and width of the roof concerned. Wind load calculations ^(Refs 1 and 2) should be undertaken in order to determine project-specific fastener requirements.

