

2.4.1.3 INSTALLATION INFORMATION

2.4.1.3.1 HANDLING AND STORAGE

Dimond Natural Lighting sheets are delivered to the site in bundles which should remain strapped together and stored where damage will not occur. Ensure the product remains clean and dry. Edges of bundles must be protected during craning. Sheets must be lifted into place, not dragged.

Maxilite® sheets have a thin plastic film laminated to each surface. As these films are critical to the products' long term performance, it is highly important that damage to sheet surfaces is avoided during handling, installation and subsequent use. Durolite has a 100 micron integral gel coat top surface which is less likely to suffer damage during handling that will affect long term performance. The underside however does have a thin plastic film laminate and care must be taken to avoid damaging it.

2.4.1.3.2 SHEET LAYOUT AND FASTENERS

(a) Supporting Structure

Before installation is commenced, the supporting structure must be free of sharp protrusions, or abrasive surfaces that may come into contact with the sheets. Ensure the purlin spacing is not greater than the span limitations for the selected profile as detailed in Section 2.4.1.5. A pliable, non-abrasive separation layer must be placed between the sheet underside and the wire netting/purlin surface. Refer to Section 2.4.1.2.2.

(b) Mid Span Support

In instances where single Dimond Natural Lighting sheets are to be used as skylights and placed between adjacent metal sheets, they may be installed on purlin spacings that exceeds the maximum span limitation for the sheet thickness chosen provided a mid span support member is incorporated to enable extra fastening to reduce sheet flutter in high winds. See Fig 12 for typically installed view. Where two or more Dimond Natural Lighting sheets are laid side by side purlin spacings must be reduced to suit the maximum span of the Natural Lighting material. (For decking profile refer to paragraph (e) below.)

(c) Layout

Sidelaps are designed for both edges of the Natural Lighting sheets to overlap the adjoining metal sheets. All sidelaps must lap over the profile rib of the sheet. It is preferred that the sheets are run from ridges to eaves without end laps. Where end laps are necessary, they should be a minimum of 200mm and fully sealed at both edges of the lap with a neutral cure silicone sealant. Laps must be positioned on a purlin in such a manner that the overlapping sheet edge is firmly fastened against the underlapping sheet.

(d) Fastening

Dimond Natural Lighting sheets will undergo movement at the fastener position. To correctly allow for this, the sheets should be pre-drilled through the crest of the rib or corrugation with a hole diameter at least 2mm greater than the screw. Larger pre-drilled holes will be required if the sheet length is greater than 6m and allowance for thermal expansion is required – see Section 2.1.3.4.

Ensure the correct fixings and washers are used in accordance with Section 2.4.1.1.5.

Screw fasteners must be tightened sufficiently to prevent the sheet lifting from the framing but not overtight so as to cause rib deformation. To control sheet flutter in high winds side lap stitching through the rib top is required similar to the primary fasteners and should be completed at spacings that achieve the side lap fastening required in Table 2.4M. Use profiled washers with 36Ø EPDM seals into 8mmØ oversized holes in the natural lighting sheets.

Table 2.4M

Profile Rib Height	Max. Side Lap Fixing Centres mm
30mm or less	450
Greater than 30mm	600
Dimondek 630	900

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(e) DD400 Decking Profile

Where one sheet of Natural Lighting DD400 or decking profile is used in conjunction with the metal decking, the sheets are laid using the under/over method. The sheets are held in position by galvanised bolts, which are located through each rib. The bolts must also pass through the rib of the metal decking and the deck clip to ensure correct hold down is achieved. If purlin spacings are greater than 1200mm centres or in high wind areas additional bolts must be placed through the sheet edge laps at 600mm centres. Where two or more Natural Lighting sheets are laid side by side, deck clips are replaced by Dimond Tee Rails manufactured from .55mm G550 Z450 Galvanised Steel or AZ150 Zinalume. These are located at every side lap. Fixings are placed through ribs and Tee Rails at 600mm centres ensuring that a fastener is immediately adjacent to the purlin. The Tee Rail must be fixed to the purlin through both flanges.

(f) Dimondek 630 Profile

Where one sheet of Natural Lighting is fixed between metal Dimondek 630, the sheets are laid over using the following method. The centre support rib of the fixing clip is required to be removed. If the spans of the Natural Lighting are greater than 900mm, span breakers are required, up to a maximum of 900mm centre modules. Span breakers can only be installed one way around with the larger rib on the span breaker clipping and snapping up into the underside of the overlap rib of the metal Dimondek 630 when installed from above. The span breakers are then positioned in their correct positions and the sheets are placed over, before a 10mm clearance hole is drilled through the Natural Lighting. The position of the hole is in the horizontal area adjacent to the side lap at both the purlin and mid span supports, using the side lap clips as a template. On top of each metal rib, either side of the Natural Lighting a continuous side lap 6mm thick x 15mm wide EPDM foam seal is adhered to run the full length of the Natural Lighting sheet. Then the sheet is held in position by fixing a 12g x 65mm tek screw through the side lap clip and Natural Lighting sheet into the span breaker. This allows the Natural Lighting sheet to expand and contract without being connected to the metal roofing sheet.

A centre fixing using a 14g x 95mm long tek through a 10mm clearance hole and a Dimondek 630 profiled washer with 36 diameter EPDM seal is required on the purlin line only.

On the ends of Natural Lighting sheet 70x50x25mm thick foam blocks are pushed up between the metal and the Natural Lighting sheet to fill in the gap created. Refer Fig. 10 in Section 2.4.1.1.10.

With end lapped sheet that will form runs over 25m, we recommend overlapping 200mm, applying 4 beads of neutral curing silicone sealant approx. 10mm ø in size. Allow these to tack off for 20 mins before screwing down. This will allow the beads of silicone to roll and not shear under thermal expansion, and continue to provide a seal.

Refer 2.4.1.1.10, Fig. 10 for treatment of sheet ends.

2.4.1.3.3 FLASHINGS AND STOP ENDS

In addition to normal requirements (refer Sections 2.2.4 and 2.3.3) stop ends must be provided on all roof pitches, at the top end of all Natural Lighting sheet installations to provide a watertight seal under all over flashings, including immediately below any roof penetration. Sheet stop ends can be achieved by using either:

- a. Compressible Closed-Cell Foam Strip to match the profiles. Use if roof pitch is greater than 15 degrees.
- b. Metal angle folded to the height of the profile rib and fastened to the end of the sheet with rivets. Neutral curing sealant is then applied to the intersection of the sheet and metal angle. Refer Section 2.4.1.1.10, Fig. 5.

2.4.1.3.4 GENERAL WORKMANSHIP

In addition to normal requirements (refer Section 2.3.4) note the following:

1. Sheeting Cutting

Natural Lighting sheets can be supplied cut to custom lengths. Where onsite cutting is necessary a fine tooth handsaw or an electric saw fitted with a fibre disc must be used. Breathing protection must be worn to prevent inhalation of glass fibres and resin dust. To resist cracking, the sheets must be firmly supported during cutting operations.

2. Water Run-Off

Dimond Natural Lighting sheets, as with any other plastic or prepainted metal roofing materials, act as inert catchment areas for rainwater, and run-off from these areas onto unpainted galvanised surfaces may cause accelerated corrosion of the galvanised steel.