CRESTABOND®

Primerless MMA Structural Adhesives

20 year adhesive guarantee*

Flexible solar panel installation guide

Bonding flexible solar PV roof panels using Crestabond adhesive.

SCOTT BADER

Making a positive difference

SCOTT BADER

*Making a **positive** difference*

Scott Bader is a global adhesives expert with over 40 years experience in designing and manufacturing high quality structural adhesives.

***20 year adhesive guarantee**

Scott Bader warrants that the Crestabond, when used in accordance with Scott Bader's installation instructions and normal standards of good workmanship, will meet the properties as defined in the relevant technical datasheet, Certificate of Conformity and Certificate of Analysis provided with the Crestabond product(s) for not less than twenty years from the date of purchase. This is a guarantee between Scott Bader and the installer. It is a guarantee of materials only, not a guarantee of the installer's workmanship.

Contents

Compatible roof types

Crestabond is an impressive structural adhesive, specifically designed for demanding applications thanks to its high strength. Using it to bond your flexible solar PV panel gives you environmental resistance against peeling, shearing, impact, and fatigue.

Check the table below to see if Crestabond is suitable for your intended roof application:

Roof type	Flexible solar PV manufacturer			
	Solarbond	Verditek*	BiPvco*	Heliatek*
Aluminium	✓	✓	✓	✓
Copper	✓	✓	✓	✓
Steel	✓	✓	✓	✓
Galvanised steel	✓	✓	✓	✓
PVC plastisol coated	✓	✓	✓	✓
Polyester powder or paint coated	✓	✓	✓	✓
PVC single ply membrane (Protan, Bauder, Sarnafil)	✓	✓	✓	✓
Polyester gelcoat/grp laminates	✓	✓	✓	✓
Concrete**	✓	✓	✓	✓
Bitumen/asphalt	✗	✗	✗	✗
TPO	✗	✗	✗	✗
EPDM	✗	✗	✗	✗

Advice:

All information is given in good faith but without warranty and is intended for guidance only. It is recommended that tests are conducted by the customer to validate the suitability and performance of Crestabond adhesive for the intended application. We cannot accept responsibility or liability for any damage, loss or patent infringements resulting from the use of this information.

*OXECO SEMPRABOND primer required to achieve a high strength and durable bond to the solar PV backsheet; please contact Scott Bader for more information.

**Concrete/stone should be primed with a suitable PU or epoxy primer; please contact Scott Bader for more information.

Equipment

Achieving the best results and working safely relies on using the right equipment. Here's what you'll need:

Adhesive dispense guns

Manual dispense gun

Pneumatic dispense gun

Battery powered dispense gun

Mix heads

Screw on mixer

Lock ring mixer

Elcometer 106 (Scale 3) coating tester

Infrared thermometer

Battery powered screwdriver

Getting ready

Roof inspection and surface preparation

Step 1 Clean the roof using warm soapy water. For areas with a lot of dirt contamination use a jet washer.

Step 2 Visually inspect the roof to assess the quality of the roof coating. If there are signs of the coating flaking, blistering, or delaminating, grind the coating off in areas with a flapper disc or non-woven preparation wheel where the flexible solar panels will be bonded (see Figure 1).

Testing the coating on steel roofs

If your roof is over a year old, we recommended testing the roof as detailed below, to check the adhesion of the coating to the steel roof. A quantitative measure of the quality of the roof coating can be obtained by using your Elcometer 106 Adhesion Tester, as follows:

Test procedure

Step 1 Clean application area where the aluminium dolly will be bonded, with a dry rag wipe or solvent wipe (IPA).

Step 2 Bond the aluminium dolly to the coated steel using Crestabond adhesive. Mix and apply according to the Scott Bader 400ml cartridge user guide.

Step 3 Allow the Crestabond adhesive to cure as per the table:

Roof temperature °C	Cure time (hours)
5°C to 15°C	2
15°C to 25°C	1.5
>25°C	1

Step 4 Conduct the test according to the Elcometer user guide. Dolly pull off value should be a minimum of 5MPa.

Step 5 Test in random places on the coated steel roof to assess the quality of the coating prior to bonding the flexible panels.

Step 6 If the pull off values are greater than 5MPa proceed to the next section called Installation procedure titled 'Bonding the flexible solar PV panels to the roof'.

Step 7 If the dolly pull off values are lower than 5MPa the coating should be removed back to the bare metal, using a grinder, in the areas where the flexible panels will be bonded to the roof (see Figure 1).

Tip

We recommended you perform the tests in areas where flexible panels will be bonded to avoid the need to repair the roof after.

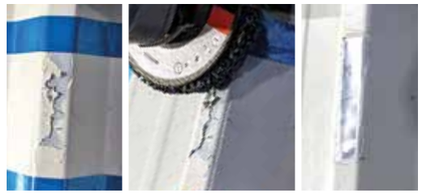

Figure 1
Grind/clean area for bonding.

Installation

Bonding the flexible solar PV panels to the roof

Step 1 Use a marker to mark out the areas where the flexible panels will be bonded.

Step 2 For metal trapezoidal roofing remove the stitching screws connecting the roof panels.

Step 3 Depending on the dolly pull off test results either clean the bond area with an IPA wipe (high pull off result) or grind the application area (low pull off result) to remove the coating and then clean with an IPA wipe. See Figure 1.

Step 4 Remove any caps and plugs from the adhesive cartridge and insert into the dispensing gun.

Step 5 Dispense a small amount of material to level the plungers and remove any air from the cartridge (see Figure 2). This process of levelling plungers must be performed on each new cartridge used.

Step 6 Attach static mix tip to cartridge (see Figure 3).

Step 7 Dispense enough adhesive on scrap material to ensure proper mix ratio and removal of air. Consistent colour of the adhesive bead indicates correct mixing. Again, this procedure must be repeated whenever a new mix head is attached to a cartridge.

Figure 1
Grind/clean area for bonding.

Figure 2
Dispense material to level plungers.

Figure 3
Attaching the mix head.

Application

Step 1 Crestabond M7-15 can be applied onto a roof with a surface temperature between 5°C and 30°C. Below this temperature range it is possible that there is condensation on the roof surface which will prevent good adhesion. Above this temperature range the adhesive may cure too quickly and not allow enough time for the parts to be joined together successfully. We strongly recommend that the surface temperature is measured at several points throughout the install day, using a handheld IR thermometer, to ensure that this condition is satisfied.

Step 2

Adhesive bead:

a. For metal trapezoidal roofs apply a 7mm bead of adhesive to each ridge (see Figure 4), between the ridges where the stitching screws were connecting the roofing panels and where the flexible panel will be bonded. Leave a slight gap between the flexible solar PV panels so that a cover strip (for example an anodised aluminium door threshold strip) can be installed and the roof panels stitched back together with tek screws (self-drilling screws).

b. For PVC single ply membranes a 7mm bead of Crestabond should be applied around the perimeter of the panel leaving gaps at the bottom for moisture and air release from behind the panel (see Figure 5).

In both cases the adhesive bead should extend slightly past the upper and lower edges of the flexible solar PV panel.

Tip **During hotter months it may be advisable to bond earlier or later in the day when it's cooler.**

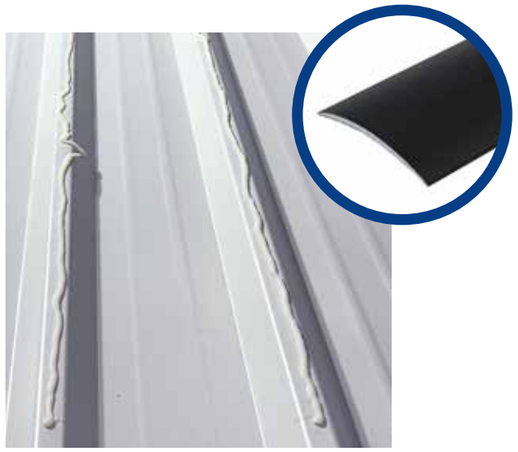

Figure 4
Application of Crestabond M7-15 adhesive to ridges on roof and anodised aluminium finishing strip.

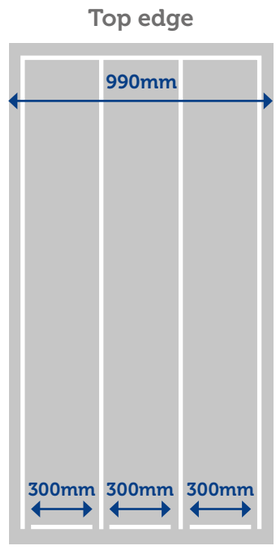

Figure 5
Recommended Crestabond M7-15 adhesive bead pattern when bonding flexible solar panels to PVC single ply membrane.

Application (continued)

Step 3 Starting at one end place the solar PV panel on the roof (see Figure 6).

Step 4 Use hand pressure to consolidate the panel on the roof ridges ensuring the lower and upper edges of the panel are bedded into the adhesive to avoid loose edges.

Step 5 Use tek screws to install a convex anodised aluminium cover strip between the flexible solar PV panels in the ridges where the original roof stitching screws were located, to cover the edges of the solar PV panels and stitch the roof panels together (see Figure 7).

Step 6 Please refer to the technical datasheet for Crestabond for the relevant working times and fixture times.

Step 7 Fixture time is defined using an ISO 4587 lap shear sample, 0.26mm bondline thickness with 23°C (73°F) ambient temperature achieving >1.4MPa.

Tip

Typically, every 10°C increase in ambient/roof temperature will halve the working time and fixture time based on the values stated in the relevant technical datasheet.

Figure 6
Place flexible solar PV panel on roof.

Figure 7
Installing the cover strips between the solar PV panels.

Crestabond storage

Crestabond adhesives should be stored and transported below 23°C where possible, prolonged storage above these temperatures could lead to a loss of reactivity and eventual pre-gelling of the material in the cartridge. Storing short term for a few days at 30°C is acceptable, to allow material to be transported to the installation site, however, it should be avoided as much as possible.

Tip

Storing the Crestabond cartridges in a fridge at 5°C will maximise the shelf life of the adhesive.

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