



**Installation of eArc PV Panels on
Concrete & PVC Roofs Mounted
Using Aluminum C-Channel Glued
By SikaSil®SG-20 & Tonsan 1527
Silicone Adhesives
Engineering Certificate**

For: Sunman Energy
Level 9, 153 Walker Street
North Sydney
NSW , 2060



Job No.: 12040
Date: 20/02/2023

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Report Title		Installation of eArc PV Panels on Concrete & PVC Roof Mounted Using Aluminum C-Channel Glued By SikaSil®SG-20 & Tonsan 1527 Silicone Adhesives Engineering Certificate				
Document ID		12040 C Rev2/HS	Job No.		12040	
File Path		G:\Shared drives\12000\12000 - 12999\12040\03 CERTIFICATION				
Client		Sunman Energy		Client Contact	Thomas Bell	
Rev	Date	Revision Details	Prepared By	Author	Verifier	Approver
0	16/01/23	Prelim. Issue	HS	HS		
1	02/02/23	Construction Issue	HS	HS	JG	LvS
2	20/02/23	Adding 6060-T5 Aluminum Alloy	HS	HS	LvS	LvS
Current Revision		2				

Approval			
Author Signature		Approver Signature	
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Our Ref: 12040 C Rev2/HS
20 February 2023

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Gamcorp (Melbourne) Pty Ltd, being Structural Engineers within the meaning of Australian Building Regulations, have carried out a structural design check of eArc PV System installation on Concrete & PVC roofs mounted using **aluminum c-channel glued by SikaSil®SG-20 & Tonsan 1527** silicone adhesives within Australia. The assessment has been completed based on system information and silicone adhesive test reports provided by Sunman Energy.

For building dimensions definition, please see **Figure 1**.
For recommended glue lines/aluminum channel pattern, please refer to **Figure 2a & 2b**.
For aluminum channel section details, please refer to **Figure 3**.

We find the installation of eArc PV Panels on Concrete & PVC Roofs to be structurally adequate and compliant with all relevant Australian standards listed below for the proposed solar installation, provided the conditions listed within this certificate are adhered to:

- Loading to:
 - AS/NZS1170.0:2002 – Structural design actions, Part 0: General principles;
 - AS/NZS1170.1:2002 (R2016) – Structural design actions, Part 1: Permanent, imposed and other actions;
 - AS/NZS1170.2:2021 – Structural design actions, Part 2: Wind actions;
- Site details:
 - Wind region **A(0-5), B(1-2), C & D**
 - Wind terrain category **2 & 3**
 - Wind average recurrence interval **200 years**
- Building details:
 - Maximum average building height **20 m**
 - Building aspect ratio **eArc panels attached to enclosed building with aspect ratios h/d ≤0.5 and h/b ≤0.5, see Figure 1**
 - Aerodynamic shape factor (Cfig) **-2.7, this is based on the worst case scenario (corner zone) obtained from Table 5.3(A) & Table 5.6 of AS/NZS1170.2:2021**
- Aluminum c-channel details:
 - Channel size **C20x20x1.6, see Figure 3**

- Alloy type

6063-T5/T6 or 6060-T5

- Fixing requirements between PV panel & aluminum channel:

Glue type	Glue width (mm)	Max. Glue lines spacing (mm)	Max. panels overhang (mm)	Min. number of glue lines per panel	Installation Condition
Tonsan 1527	12	500	50	3 lines for portrait 5 lines for landscape orientations see Figures 2a & 2b	Within whole roof area
SikaSil®SG-20	10				

- Fixing requirements between aluminum channel & Concrete & PVC roofs :

Roof type	Glue type	Glue width (mm)	Max. Glue lines spacing (mm)	Max. panels overhang (mm)	Min. number of glue lines per panel	Installation Condition
Concrete	SikaSil®S G-20	10	Same as above	Same as above	Same as above	Same as above
PVC						

- eArc PV panels to be installed flushed to roof sheeting
- SikaSil®SG-20 & Tonsan 1527 silicone adhesives to be applied in accordance with the adhesive technical data sheet
- Installation of eArc PV panels to be done in accordance with the Sunman's installation manual
- The certification **excludes** assessment of roof structure and PV panels

NOTES:

- **The installation eArc PV Panels is assessed based on the capacity of the adhesives and the aluminum channel but not the PVC membrane or concrete roof, connection between PVC and substructure, roof structure itself and PV panel.**
- **The tensile strength of SikaSil®SG-20 is obtained from SikaSil®SG-20 Technical Data Sheet.**
- **The tensile strength of Tonsan 1527 is obtained from ARL report no: MWMAL-101-004-LT draft, dated 16 June 2020 & Tonsan 1527 Technical Data Sheet, dated December 2013. The tests were carried out on the samples with a thickness of 0.5mm at room temperature. It is assumed that Tonsan 1527 will be applied with similar conditions on site.**
- **If any of the above conditions cannot be met, the structural engineer must be notified immediately.**

Construction is to be carried out strictly in accordance with the instruction manual. This work was designed by **Humam Sami** in accordance with the provisions of Australian Building Regulations and in accordance with sound, widely accepted engineering principles. Should you need to clarify anything please contact the designer. This certificate is only valid till 20/02/2025. Gamcorp should be contacted for future validation. Contact Gamcorp for customised system or if the site conditions are not covered by this certificate.

Yours faithfully,
Gamcorp (Melbourne) Pty Ltd



L. Van Spaandonk

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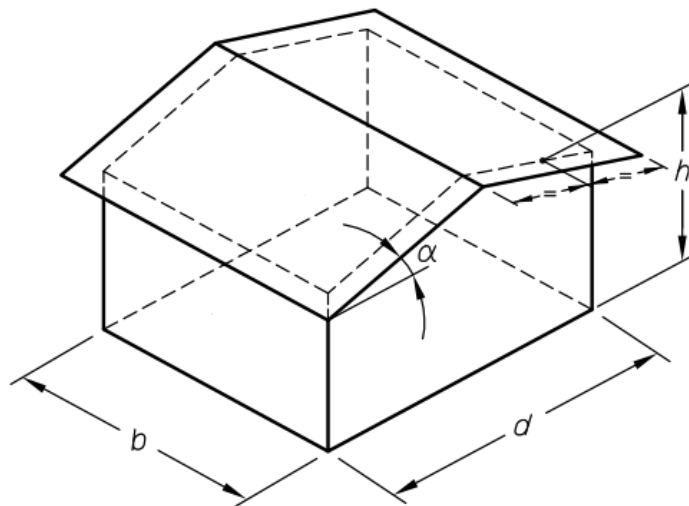


Figure 1 - Building Dimensions Definition

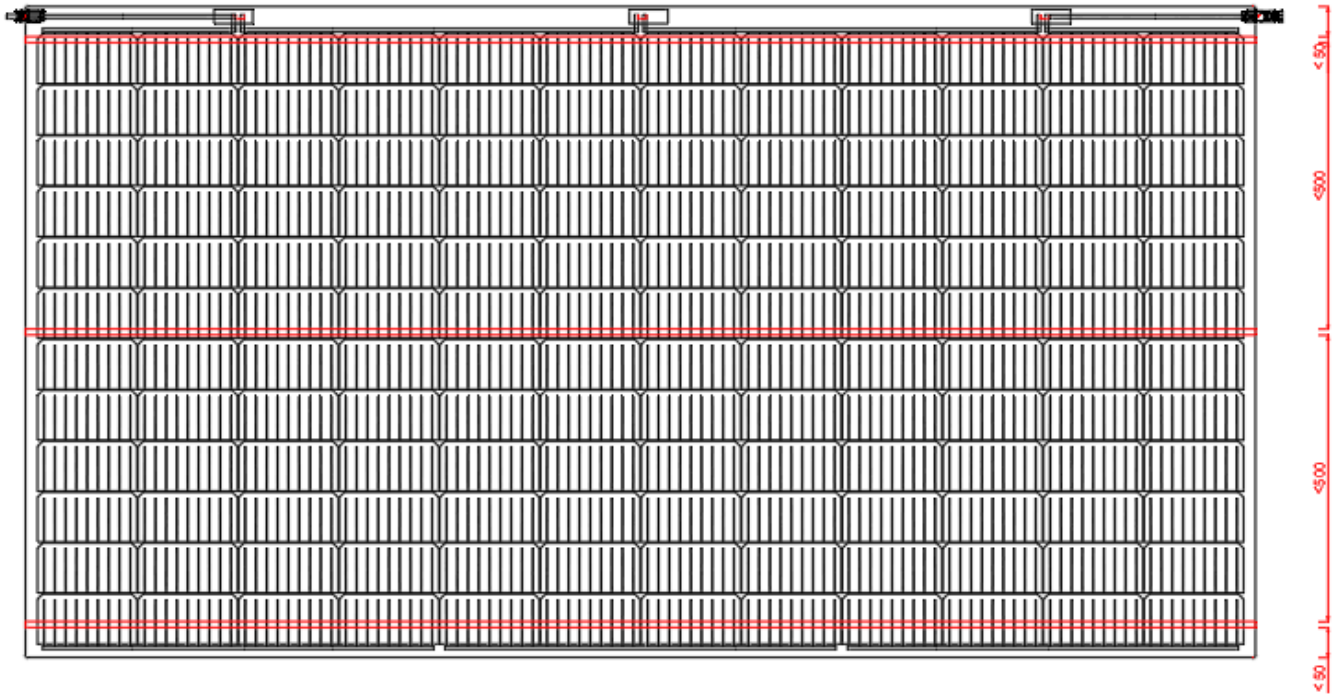


Figure 2a - Recommended Glue Lines/Aluminum Channel Pattern - Portrait Installation
Note: glue bonding lines shall be distributed as evenly as possible across the width of the panel

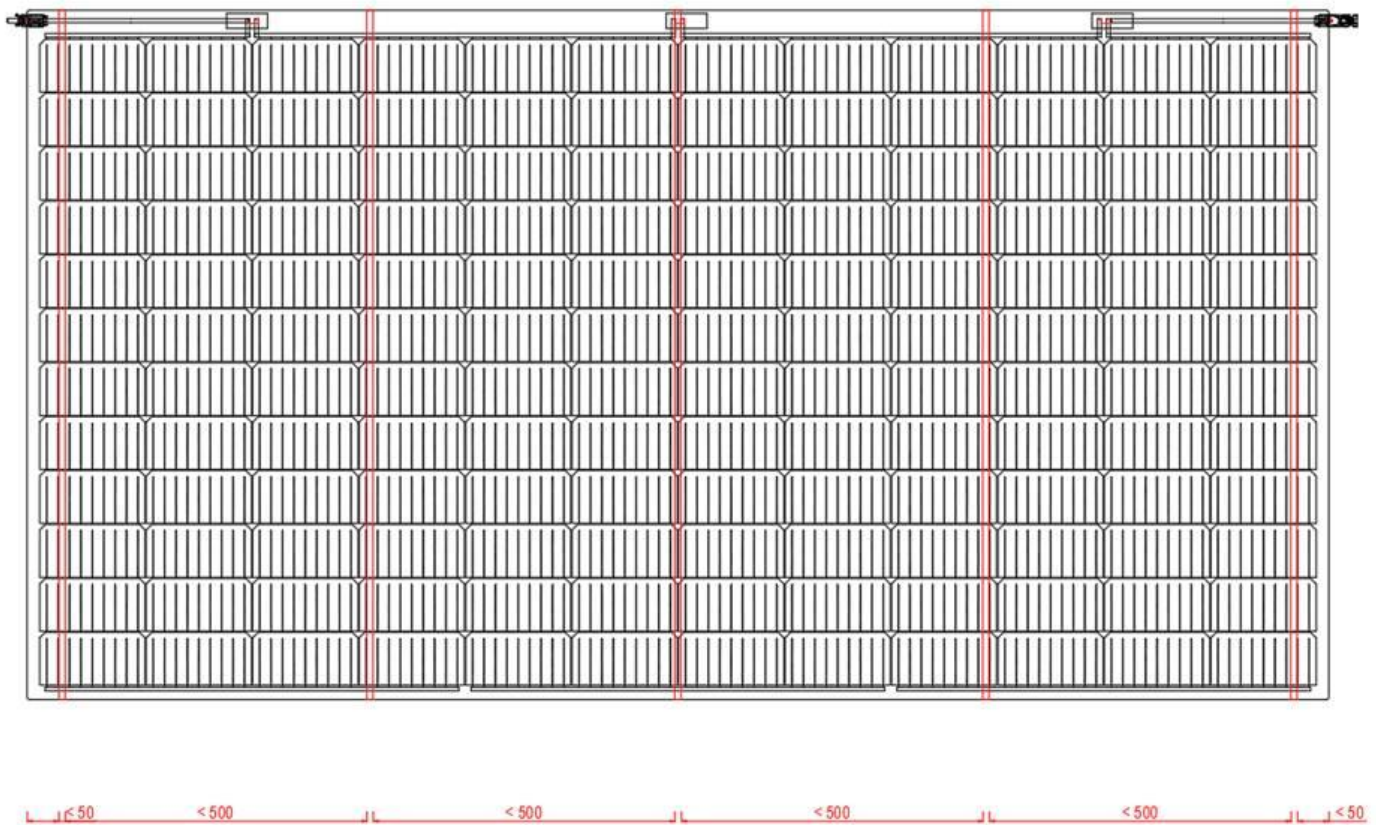


Figure 2b - Recommended Glue Lines/Aluminum Channel Pattern - Landscape Installation
Note: glue bonding lines shall be distributed as evenly as possible across the length of the panel

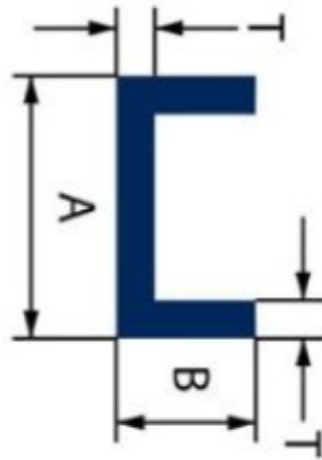


Figure 3 - Aluminum Channel Section Details

Note: A=20mm, B=20mm & T=1.6mm

Glue line should be applied on the flanges as closely as practically possible to the channel web