

BRE Global Classification Report

Classification report for roofs/roof coverings exposed to external fire in accordance with EN 13501-5: 2005 + A1:2009 on SolFit Top loader.

Prepared for: SolFiT Ltd
Date: 19 November 2016
Report Number: P105772-1002 Issue 1

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Authorised by

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Date 19/11/16

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BRE Global

EXTERNAL EXPOSURE TO FIRE CLASSIFICATION REPORT OF SolFit Top loader.

Classification report No.:	P105772-1002
Issue number:	1
Sponsor:	SolFiT Ltd, Noon Howe, Melkinthorpe, Penrith, CA10 2DR
Product name:	SolFit Top loader.
Prepared by:	BRE Global Ltd., Bucknalls Lane, Garston, Watford, WD25 9XX, England.
Notified Body Number	0832
Date of issue:	

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1 Introduction

This classification report defines the classification assigned to roof/roof covering SolFit Top loader. in accordance with the procedures given in EN 13501-5: 2005 + A1: 2009¹.

2 Sample

2.1 Traceability

The test samples were supplied by the client. BRE Global were not involved in the sample selection process and therefore cannot comment upon the relationship between samples supplied for test and the product supplied to market.

2.2 Description of sample and test format.

The roof / roof covering comprises:

The SolFit framing system is a solar panel frame made from powder coated aluminium extruded profiles that encapsulates the PV laminate on its 4 edges.

The profiles interlock with each other to form a waterproof seal.

The Solfit flashings are made from folded coated 0.5mm steel. The metal flashings interlock with the aluminium framing profiles to form a water proof seal

No further details of the specimen have been given.



3 Reports in support of classification

Name of Laboratory	Name of sponsor	Test report ref. no.	Test method
BRE Global	SolFit Ltd	P105772-1001	CEN/TS 1187: 2012 Test 4

4 Test results in support of classification

4.1 Test conditions:

Test pitch: Sloping
Deck: As product description, Section 2
Supporting structure: As product description, Section 2



4.2 Preliminary test (stage 1)

Parameter	Criteria				Test result	Compliance			
	Class B _{ROOF(t4)}	Class C _{ROOF(t4)}	Class D _{ROOF(t4)}	Class E _{ROOF(t4)}		Class B _{ROOF(t4)}	Class C _{ROOF(t4)}	Class D _{ROOF(t4)}	Class E _{ROOF(t4)}
Burn time	< 5 min	< 5 min	< 5 min	≥5 min	0 sec	Y	-	-	-
Flame spread distance	< 0,38m	< 0,38m	< 0,38m	No limit	0 mm	Y	-	-	-
Penetration	None	None	None	None	None	Y	-	-	-

4.3 Penetration test (stage 2)

Parameter	Criteria				Test results				Compliance			
	Class B _{ROOF(t4)}	Class C _{ROOF(t4)}	Class D _{ROOF(t4)}	Class E _{ROOF(t4)}	Specimen 1	Specimen 2	Specimen 3	Mean*	Class B _{ROOF(t4)}	Class C _{ROOF(t4)}	Class D _{ROOF(t4)}	Class E _{ROOF(t4)}
Penetration time	≥ 60 min	< 60 min ≥ 30 min	<30 min	< 30 min	60 min	60 min	60 min	60 min	Y	-	-	-

* If one or two of the specimens have not failed at one hour, a time of 60 min shall be used in calculating the mean time of penetration



5 Classification and field of application

5.1 Reference of classification

This classification has been carried out in accordance with Table 1 of EN 13501-5: 2005 + A1: 2009¹..

5.2 Classification

The roof / roof covering, SolFit Top loader in relation to its external fire performance is classified:

B_{ROOF}(t4)

5.3 Field of application

This classification is valid for the following conditions:

Range of pitches

$$10^{\circ} < \text{pitch} \leq 70^{\circ}$$

Deck and supporting structure

The classification is valid only for the deck and supporting structure tested.

6 Limitations

This classification document does not represent type approval or certification of the product.

This classification document has been written with reference to a test carried out to CEN/TS 1187: 2012, which supersedes ENV 1187: 2002 and is expected to be recognised in any update to EN 13501-5: 2005 + A1: 2009. There is no change to the test procedure in CEN/TS 1187: 2012 Test 4. Therefore, this test is also compliant with the ENV 1187: 2002, which is the method specified in this classification standard, EN 13501-1: 2005 + A1: 2009.

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons, it is recommended that the relevance of test and classification reports over five years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test or classification to ensure that they are consistent with current practices, and if required may endorse the report.



7 Reference

- 1 EN 13501-5: 2005 + A1: 2009 Fire classification of construction products and building elements – Part 5: Classification using data from external fire exposure to roofs tests. CEN, Avenue Marnix 17, B-1000, Brussels, Belgium. 2009.
- 2 CEN/TS 1187: 2012 Test methods for external fire exposure to roofs. Test 4 – Two stage method incorporating burning brands, wind and supplementary radiant heat. CEN, Avenue Marnix 17, B-1000, Brussels, Belgium. 2012.
- 3 ENV 1187: 2002 + A1: 2005. Test methods for external fire exposure to roofs. Test 4 – Two stage method incorporating burning brands, wind and supplementary radiant heat. CEN, Avenue Marnix 17, B-1000, Brussels, Belgium. 2002

BRE Global Test Report

CEN/TS 1187: 2012 Test 4 External fire exposure to roofs test on SolFit Top loader.

Prepared for: SolFiT Ltd
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Authorised by

Name R Jones

Position Associate Director

Date 19/11/16

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1 Objective

To determine the capacity to resist penetration by fire of the sample described in Section 2 using the external fire exposure to roofs test specified in CEN/TS 1187: 2012 Test 4¹.

2 Sample

2.1 Traceability

The test samples were supplied by the client. BRE Global were not involved in the sample selection process and therefore cannot comment upon the relationship between samples supplied for test and the product supplied to market.

2.2 Description of sample and test format.

Unless otherwise stated all measurements are nominal.

Test Sponsor	SolFiT Ltd Noon Howe Melkinthorpe Penrith CA10 2DR
Manufacturer of sample	Manufacturer of aluminium frames; Smart Aluminium extrusions Arnolds Way, Yatton, Bristol, North Somerset, BS49 4QN, UK DDI +44 (0) 1934 875308 Manufacturer of folded steel flashings ; Barrass Hull, 23 Alfred St Hull, HU3 2DD No further manufacturer's details have been provided.
Sample name/reference	SolFit Top Loader (No ID number or reference).
Sample description (as provided by test sponsor/manufacturer)	The SolFit framing system is a solar panel frame made from powder coated aluminium extruded profiles that encapsulates the PV laminate on its 4 edges. The profiles interlock with each other to form a waterproof seal. The Solfit flashings are made from folded coated 0.5mm steel. The metal flashings interlock with the aluminium framing profiles to form a water proof seal No further product description details or diagrams have been provided by the test sponsor.
Description of sample (as received)	The test specimens comprised pv panels mounted on a timber frame and surrounded by metal flashings and concrete tiles. See photos in Appendix A for examples of the test layouts used. The pv panels had an overall size of 720mm x 500mm with an exposed glass area of 440mm x 650mm.



	<p>The surrounding flashings were of 0.96mm thick metal having a black coating.</p> <p>The tiles used were marked "LAGAN TILE" and were flat tiles, 400mm x 320mm including overlaps.</p> <p>The specimens tested on 30 August 2016 were assembled by Mr E Estill of SolFit Ltd as required throughout that day's tests, the specimens tested on 09 November 2016 were supplied pre-assembled.</p>
Sample receipt date	<p>Specimens for test runs 1 and 2- 24 August 2016- supplied as unassembled panels, flashings, and tiles.</p> <p>Specimens for test run 3- 24 October 2016, supplied pre-assembled.</p>
Test face	Upper face
Test format	The tests were carried out in the sloping position
Date of test	30 August and 09 November 2016

3 Conditioning

The specimens were conditioned as required by the standard.

4 Results

Results given in table 4.1, and the first two results given in table 4.2 were obtained on 30 August 2016. The remaining result in table 4.2 was obtained on 09 November 2016.

4.1 Preliminary ignition test

Specimen reference	Joint	Ambient	Flame spread mm	Flame duration min:s	Penetration min:s
Single panel	Glass face	22.2°C 56.6%RH	0	0:00	None
Flashing	Centre face	22.2°C 56.6%RH	0	0:00	None



4.2 Penetration test

Specimen reference	Joint	Ambient	Penetration min:s	Observations
Single panel, top left corner assembly.	Top left corner	22.3°C 56.4%RH	None	Black paint on flashing burnt sporadically under pilot flame only.
Four panels arranged in a 2 x 2 array	Centre vertical joint.	24.5°C 48.0%RH	None	Glass/metal frame jointing compound ignited with the pilot flame application. Flaming ceased at 6:15min:sec.
Single panel, complete assembly	Bottom right corner	18.3°C 44.8%RH	None	Glass/metal frame jointing compound ignited with the pilot flame application. Flaming ceased at 7:23min:sec.

4.3 Observations

No dripping of material occurred from the underside of any specimen tested, nor was any mechanical failure, or development of holes, observed.



5 Conclusion

CEN/TS 1187: 2012 does not contain acceptance criteria and therefore this test report does not indicate a pass or fail of the product.

6 Validity

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over 5 years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

7 Reference

- 1 CEN/TS 1187: 2012. Test methods for external fire exposure to roofs. Test 4 – Two stage method incorporating burning brands, wind and supplementary radiant heat. CEN, Avenue Marnix 17, B-1000, Brussels, Belgium.



Appendix A

Photographs of test samples as assemblies / supplied immediately prior to testing:-



Plate 1 – Upper left corner prior to testing



Plate 2 – 2 x 2 panel array prior to testing

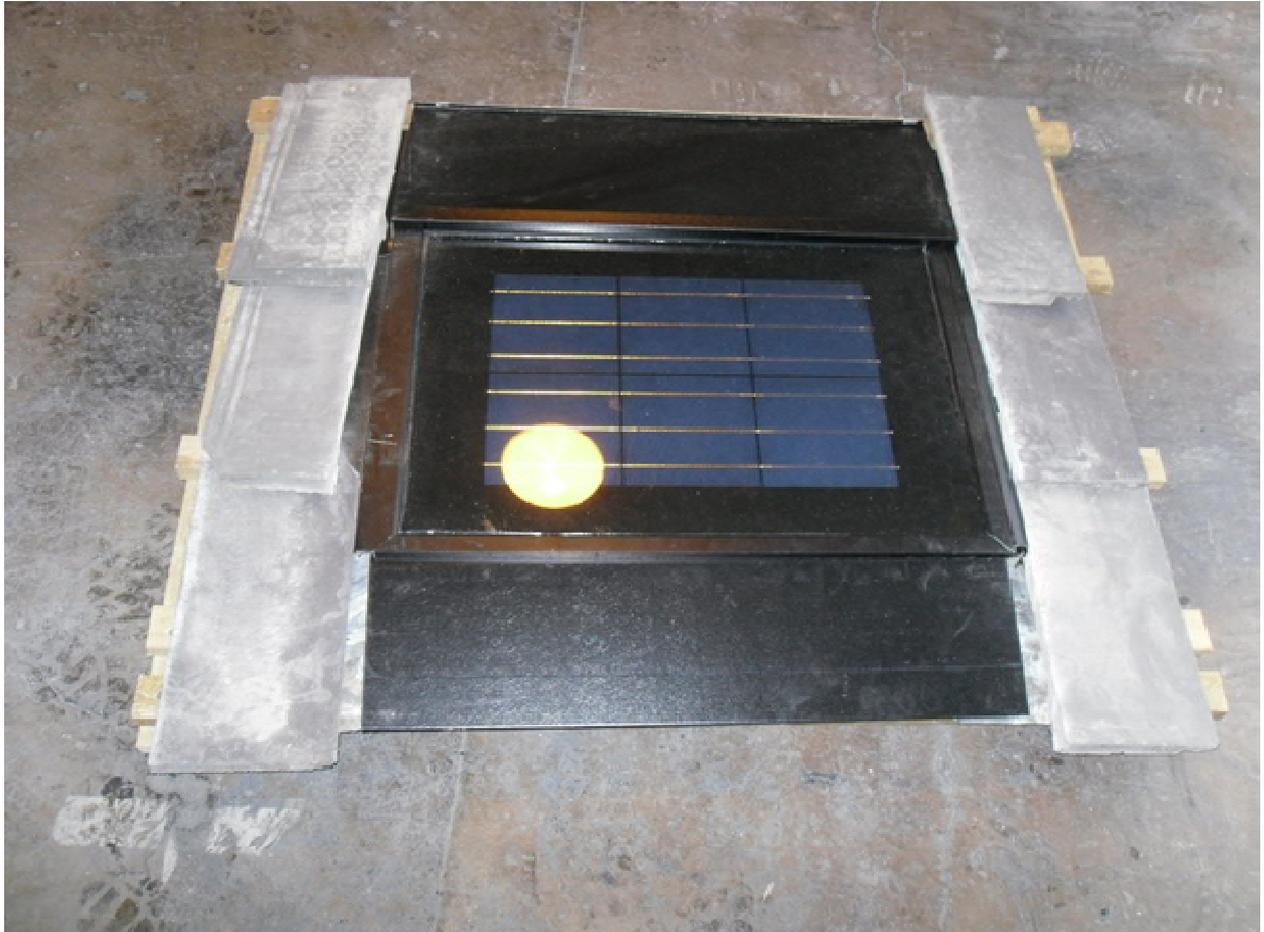


Plate 3- Lower right corner assembly prior to placing on test rig.

BRE Global Test Report

BS 476: Part 3: 2004 + A1: 2006 + A2: 2007 External fire exposure to roofs test on SolFit Top Loader.

Prepared for: SolFiT Ltd
Date: 19 November 2016
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Authorised by

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Date 19/11/16

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1 Objective

To classify the sample described in Section 2 according to its capacity to resist penetration by fire and its spread of flame characteristics, using the external fire exposure to roofs test and criteria specified in BS 476: Part 3: 2004 Incorporating Amendment 1: 2006 and Amendment 2: 2007¹.

2 Sample

2.1 Traceability

The test samples were supplied by the client. BRE Global were not involved in the sample selection process and therefore cannot comment upon the relationship between samples supplied for test and the product supplied to market.

2.2 Description of sample and test format.

Unless otherwise stated all measurements are nominal.

Test Sponsor	SolFiT Ltd Noon Howe Melkinthorpe Penrith CA10 2DR
Manufacturer(s) of sample	Manufacturer of aluminium frames; Smart Aluminium extrusions Arnolds Way, Yatton, Bristol, North Somerset, BS49 4QN, UK DDI +44 (0) 1934 875308 Manufacturer of folded steel flashings ; Barrass Hull, 23 Alfred St Hull, HU3 2DD No further manufacturer's details have been provided.
Sample name/reference	SolFit Top Loader (No ID number or reference).
Sample description (as provided by test sponsor/manufacturer)	The SolFit framing system is a solar panel frame made from powder coated aluminium extruded profiles that encapsulates the PV laminate on its 4 edges. The profiles interlock with each other to form a waterproof seal. The Solfit flashings are made from folded coated 0.5mm steel. The metal flashings interlock with the aluminium framing profiles to form a water proof seal No further product description details or diagrams have been provided by the test sponsor.
Description of sample (as received)	The test specimens comprised pv panels mounted on a timber frame and surrounded by metal flashings and concrete tiles. See photos in Appendix A for examples of the test layouts used. The pv panels had an overall size of 720mm x 500mm with an exposed glass area of 440mm x 650mm.



	<p>The surrounding flashings were of 0.96mm thick metal having a black coating.</p> <p>The tiles used were marked "LAGAN TILE" and were flat tiles, 400mm x 320mm including overlaps.</p> <p>The specimens tested on 30 August 2016 were assembled by Mr E Estill of SolFit Ltd as required throughout that day's tests, the specimens tested on 09 November 2016 were supplied pre-assembled.</p>
Sample receipt date	<p>Specimens for test runs 1 and 2- 24 August 2016- supplied as unassembled panels, flashings, and tiles.</p> <p>Specimens for test run 3- 24 October 2016, supplied pre-assembled.</p>
Test face	Upper face
Test format	The tests were carried out in the sloping position
Date of test	30 August and 09 November 2016

3 Conditioning

The specimens were conditioned as required by the standard.

4 Results

Results given in table 4.1, and the first two results given in tables 4.2 and 4.3 were obtained on 30 August 2016. The remaining results in tables 4.2 and 4.3 were obtained on 09 November 2016.

4.1 Preliminary ignition test

Specimen format	Test flame position	Ambient	Flame spread mm	Flame duration min:s	Penetration min:s
Single panel	Glass face	22.2°C 56.6%RH	0	0:00	None
Flashing	Centre face	22.2°C 56.6%RH	0	0:00	None



4.2 Spread of flame test

Specimen format	Test flame position	Ambient	Flame spread mm	Flame duration min:s	Observations
Single panel, top left corner assembly.	Top left corner	22.2°C 56.6%RH	None (under pilot flame only)	<3:00 (flashing flaming only)	Black paint on metal flashings flamed sporadically under the pilot flame only. Visible flaming ceased before 3:00. Glass pane; shattered at 2:10 but remained in position.
Four panels arranged in a 2 x 2 array	Centre joint.	24.3°C 48.2%RH	None	0	No significant observations
Single panel, complete assembly	Bottom right corner	18.3°C 44.9%RH	None (under pilot flame only)	3:00	Black paint on flashing burnt sporadically under pilot flame only.

The mean flame spread was 0mm



4.3 Penetration test

Specimen format	Test centred on	Ambient	Penetration min:s	Observations
Single panel, top left corner assembly.	Top left corner	22.3°C 56.4%RH	None	Black paint on flashing burnt sporadically under pilot flame only.
Four panels arranged in a 2 x 2 array	Centre vertical joint.	24.5°C 48.0%RH	None	Glass/metal frame jointing compound ignited with the pilot flame application. Flaming ceased at 6:15min:sec.
Single panel, complete assembly	Bottom right corner	18.3°C 44.8%RH	None	Glass/metal frame jointing compound ignited with the pilot flame application. Flaming ceased at 7:23min:sec.

4.4 Observations

No dripping of material occurred from the underside of any specimen tested, nor was any mechanical failure, or development of holes, observed.



5 Designation of specimens

The designation of specimens subject to conditions of external fire shall be according to both the time of penetration and the distance of spread of flame along their external surface.

Each category designation shall consist of two letters, e.g. AA, AC, BB, these being determined as follows:

First letters:

- A. Those specimens which have not been penetrated within 1 hour.
- B. Those specimens which are penetrated in not less than ½ hour.
- C. Those specimens which are penetrated in less than ½ hour.
- D. Those specimens which are penetrated in the preliminary flame ignition test.

Second letters:

- A. Those specimens on which there is no spread of flame.
 - B. Those specimens on which there is not more than 533mm spread of flame.
 - C. Those specimens on which there is more than 533mm spread of flame.
 - D. Those specimens which continue to burn for 5 minutes after the withdrawal of the test flame or spread more than 381mm across the region of burning in the preliminary test.
- 5.3 Attention shall be drawn to dripping from the underside of the specimen, any mechanical failures, and any development of holes, by adding a suffix 'X' to the designation to denote that one or more of these took place during the test.
- 5.4 When it is required to indicate test results obtained on the sample by designation, the following method shall be used:

The designation letter for penetration shall be given followed by that for spread of flame and preceded by the letters EXT.F. or EXT.S. according to whether the flat or inclined test has been made and when necessary the suffix 'X' shall be added. Thus, for example:

EXT.F.AA; EXT.F.ACX;

EXT.S.BA; EXT.S.CCX.



6 Conclusion

The sample described in section 2 of this report, when tested in accordance with British Standard 476: Part 3: 2004 Incorporating Amendment 1: 2006 and Amendment 2: 2007, achieved the designation of EXT.S.AA.

7 Validity

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over 5 years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

8 Reference

- 1 British Standard 476-3: 2004 Incorporating Amendment 1: 2006 and Amendment 2: 2007. Fire tests on building materials and structures. Part 3. Classification and method of test for external fire exposure to roofs. British Standards Institution, London, 2007.



Appendix A

Photographs of test samples as assemblies / supplied immediately prior to testing:-



Plate 1 – Upper left corner prior to testing



Plate 2 – 2 x 2 panel array prior to testing

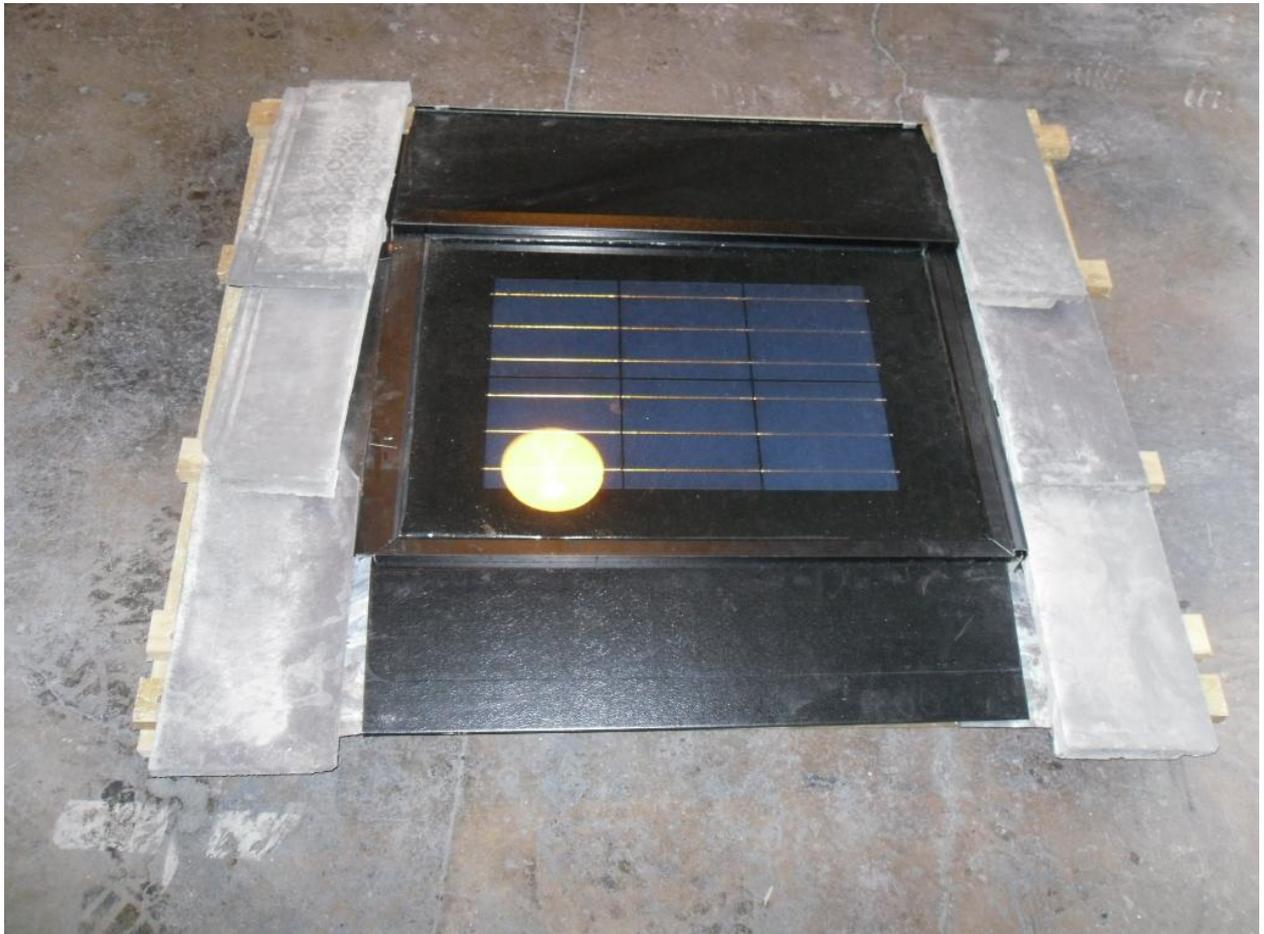


Plate 3- Lower right corner assembly prior to placing on test rig.