

CLASSIFICATION OF REACTION TO FIRE PERFORMANCE IN ACCORDANCE WITH BS EN 13501-1:2018

Test Sponsor:

Mitrex Inc.
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Test Material / Assembly:

'Mitrex A' Solar Panel



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Memberships

Members of European Group of Organization for Fire Testing, Inspection and Certification

www.egolf.org.uk

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www.asfp.org.uk

Member of Centre for Window and Cladding Technology

www.cwct.co.uk



The work which is the subject of this report falls under the accreditations of **ISO 17025 UKAS**.



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6. REPORT & TEST RESULTS IN SUPPORT OF THIS CLASSIFICATION

6.1. Reports

Name of Laboratory	Test Sponsor	Test Report No.	Test Method/Field of Application Rules
Thomas Bell-Wright International Consultants (TBWIC)	Mitrex Inc.	WE022-1	BS EN 13823:2020
		WE022-2	BS EN ISO-1716:2018

6.2. Results

Test Method	TEST PARAMETERS	No. of tests	TEST RESULTS	
			Continuous parameter-mean (m)	Compliance parameters
BS EN 13823:2020	FIGRA _{0,2} MJ G 120 W/s	3	3	Compliant
	THR _{600s} G 7.5 MJ	3	0.1	Compliant
	Lateral Flame Spread < Edge of Specimen	3	< Edge of Specimen	Compliant
	CRITERIA for subclass "s1"			
	SMOGR _A G 30 m ² /s ² <i>Note 1</i>	3	0	Compliant
	TSP _{600s} G 50 m ² <i>Note 1</i>	3	2	Compliant
	CRITERIA for subclass "d0"			
	Flaming droplets/particles within 600s	3	Nil	Compliant

Note 1: Corrected value as per Annex A, Clause A.6.1.2 of BS EN 13823:2020.

Test Method	TEST PARAMETERS	No. of tests	TEST RESULTS		
			Continuous parameter-mean (m)	Compliance parameters	
BS EN ISO 1716:2018	Component 1: Top Glass Q _{PCS} GKD:IIP (WPS) •	3	0.0	Compliant	
	Component 2: (Internal non-substantial layers): Q _{PCS} GKD:IIP (WPS) •	Adhesive	3	2.1	Compliant
		Solar Cell	3		
	Component 1: Bottom Glass Q _{PCS} GKD:IIP (WPS) •	3	0.0	Compliant	
	Q _{PCS} GKD:IIP (WPS) •	3	0.1	Compliant	



**Note: Below components are discrete components and were not included in the calculation of Q_{PCS} for the product as they are used in the perimeter of the panel.*

Layer	Component	Area density (kg/m ²)	Gross Heat of Combustion Q _{PCS} (MJ/kg)	Gross Heat of Combustion Q _{PCS} (MJ/m ²)
1	Silicone sealant	0.025*	9.8	0.2
2	PIB	0.070*	14.6	1.0

**Note: Silicone sealant and PIB were applied on the periphery of the Solar cell panels while fitting them on the metal frame.*

7. CLASSIFICATION & FIELD OF APPLICATION

7.1. Reference of classification

This classification has been carried out in accordance with clause 8 of EN 13501-1:2018.

7.2. Classification

The product, 'Mitrex A' Solar, Panel in relation to its reaction to fire behavior are classified;

Fire behavior		Smoke production				Flaming droplets	
A2	-	s	1	,	d	0	

Reaction to fire classification: A2 – s1, d0

7.3. Field of application

This classification is valid for the following end use applications:

- i. Construction applications

This classification is also valid for the following product parameters:

Product Thickness	No variation allowed
Product Density	No variation allowed
Product Composition	No variation allowed
Product Construction	No variation allowed
Mass per unit area of Silicone sealant and PIB	No variation allowed
Q _{PCS} values of Silicon sealant and PIB	Better or equal ^{*Note 1}
Air Gap	Ventilated air gap not less than 40mm
Joints	Results valid for panels with or without vertical and horizontal joints ≤ 15 mm

**Note 1: In accordance with EGOLF recommendation 038-2019*



9. ANNEXURE A

Classes of reaction to fire performance for construction products excluding floorings and linear pipe thermal insulation products

Class	Test method(s)	Classification criteria	Additional classification
A1	EN ISO 1182 ^a and	$\Delta T \leq 30$ °C; and $\Delta m \leq 50$ %; and $t_f = 0$ (i.e. no sustained flaming)	-
	EN ISO 1716	$PCS \leq 2,0$ MJ/kg ^a and $PCS \leq 2,0$ MJ/kg ^{b,c} and $PCS \leq 1,4$ MJ/m ^{2,d} and $PCS \leq 2,0$ MJ/kg ^e	-
A2	EN ISO 1182 ^a or	$\Delta T \leq 50$ °C; and $\Delta m \leq 50$ %; and $t_f \leq 20$ s	-
	EN ISO 1716 and	$PCS \leq 3,0$ MJ/kg ^a and $PCS \leq 4,0$ MJ/m ^{2,b} and $PCS \leq 4,0$ MJ/m ^{2,d} and $PCS \leq 3,0$ MJ/kg ^e	-
	EN 13823	FIGRA ≤ 120 W/s and LFS < edge of specimen and THR _{600s} $\leq 7,5$ MJ	Smoke production ^f and Flaming droplets/particles ^g
B	EN 13823 and	FIGRA ≤ 120 W/s and LFS < edge of specimen and THR _{600s} $\leq 7,5$ MJ	Smoke production ^f and Flaming droplets/particles ^g
	EN ISO 11925-2 ⁱ : Exposure = 30 s	Fs ≤ 150 mm within 60 s	
C	EN 13823 and	FIGRA ≤ 250 W/s and LFS < edge of specimen and THR _{600s} ≤ 15 MJ	Smoke production ^f and Flaming droplets/particles ^g
	EN ISO 11925-2 ⁱ : Exposure = 30 s	Fs ≤ 150 mm within 60 s	
D	EN 13823 and	FIGRA ≤ 750 W/s	Smoke production ^f and Flaming droplets/particles ^g
	EN ISO 11925-2 ⁱ : Exposure = 30 s	Fs ≤ 150 mm within 60 s	
E	EN ISO 11925-2 ⁱ : Exposure = 15 s	Fs ≤ 150 mm within 20 s	Flaming droplets/particles ^h
F	No performance determined		

^a For homogeneous products and substantial components of non-homogeneous products.

^b For any external non-substantial component of non-homogeneous products.

^c Alternatively, any external non-substantial component having a $PCS \leq 2,0$ MJ/m², provided that the product satisfies the following criteria of EN 13823: FIGRA ≤ 20 W/s, and LFS < edge of specimen, and THR_{600s} $\leq 4,0$ MJ, and s1, and d0.

^d For any internal non-substantial component of non-homogeneous products.



^e For the product as a whole.

^f In the last phase of the development of the test procedure, modifications of the smoke measurement system have been introduced, the effect of which needs further investigation. This may result in a modification of the limit values and/or parameters for the evaluation of the smoke production.

s1 = SMOGRA $\leq 30\text{m}^2/\text{s}^2$ and TSP_{600s} $\leq 50\text{m}^2$; **s2** = SMOGRA $\leq 180\text{m}^2/\text{s}^2$ and TSP_{600s} $\leq 200\text{m}^2$; **s3** = not s1 or s2

^g **d0** = No flaming droplets/ particles in EN 13823 within 600 s;

d1 = no flaming droplets/ particles persisting longer than 10 s in EN 13823 within 600 s;

d2 = not d0 or d1.

Ignition of the paper in EN ISO 11925-2 results in a d2 classification.

^h Pass = no ignition of the paper (no classification);

Fail = ignition of the paper (d2 classification).

ⁱ Under conditions of surface flame attack and, if appropriate to the end-use application of the product, edge flame attack.

---- End of Classification Report ----