



**Flexi-Orb**  
consumer safety and protection



# **SOLAR PHOTOVOLTAIC PRODUCT STANDARD POLICY**

V.1.3 – February 2020

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## Foreword

The Flexible Energy Oversight Registration Body (Flexi-Orb) oversees the safe and controlled sale, installation, decommissioning and recycling of energy saving, generating and storing products (such as solar PV, boilers, energy storage, heat pumps, electric vehicle energy storage, EV charging points etc).

Alongside this, Flexi-Orb is delivering oversight data (through its Flexible Energy Register) and regulatory support to ensure consumers are protected and also to enable true interoperability, working towards achieving a decentralised, flexible, zero carbon, low-cost energy network.

Our vision is to see all consumers safe and protected to enable net zero-carbon homes and enhance a circular economy.

This document, Solar PV Product Standard Policy, constitutes normative or informative provisions and should be read in conjunction with the Standards and Tests specified. The latest editions of the standards and tests should be applied.

The Policy occasionally refers to the Installer of the PV module. This is for context or information only, and for further details can be found in the Flexi-Orb Solar PV and Electrical Energy Storage System Installation Scheme, specifically the IET Code of Practice for Grid Connected Solar PV.

## 1. Solar PV Module Manufacture Safety and Consumer Protection

- 1.1 Flexi-Orb's primary commitment is to the safety and protection of consumers. However, it also wishes to facilitate the UK Renewable Energy industry and avoid duplicate certification application and testing where it is clear that there is no benefit to either the consumer or the manufacturer. As such, Flexi-Orb mandates that its PV Module Manufacturer Members must have attained the certification standards detailed in the **Minimum Standards Criteria** section of this document, and that its PV Installer Members must only use in their design, installation, set-to-work, commissioning and handover PV Modules of approved PV Module Manufacturers.

## 2. Certificate Content

- 2.1 Certificates used by the manufacturer to evidence compliance with the standards detailed in this document shall contain the name and address of the manufacturer or manufacturer approved supplier. The model and reference number of the component must also be stated, along with a unique reference number, issue number and date.

## 3. Minimum Standards Criteria

- 3.1 **Solar PV Module Manufactures** must be currently certified to the following Standards:

- ISO 9001:2015 Quality Management
- ISO 45001:2018 Occupational Health and Safety Management (or OHSAS 18001:2007 – three year transition period to ISO 45001:2018)
- ISO 14001:2015 Environmental Management

- 3.2 **Solar PV Modules**, as a minimum, must be currently certified to the following Standards:

### i) Crystalline silicon terrestrial flat plate modules

#### Mandatory Standards for the UK Market

- IEC 61215-1:2016 Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 1: Test requirements
- IEC 61215-2:2016 Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 2: Test procedures
- IEC 61730-1:2016 Photovoltaic (PV) module safety qualification - Part 1: Requirements for construction

- IEC 61730-2:2016 Photovoltaic (PV) module safety qualification - Part 2: Requirements for testing
- IEC 61701:2011 Salt mist corrosion testing of photovoltaic (PV) modules
- IEC 60364-4-41 Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock
- IEC TS 62804-1:2015 Photovoltaic (PV) modules - Test methods for the detection of potential-induced degradation - Part 1: Crystalline silicon
- IEC 62716:2013 Photovoltaic (PV) modules - Ammonia corrosion testing

#### Desirable Standards

- IEC 60068-2-68 Ed. 1.0 b:1994 Environmental Testing - Part 2: Tests - Test L: Dust And Sand

#### **ii) Thin-film modules**

#### Mandatory Standards for the UK Market

- IEC 61215-1-3:2016 Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 1-3: Special requirements for testing of thin-film amorphous silicon based photovoltaic (PV) modules
- IEC 61730-1:2016 Photovoltaic (PV) module safety qualification - Part 1: Requirements for construction
- IEC 61730-2:2016 Photovoltaic (PV) module safety qualification - Part 2: Requirements for testing
- IEC 60364-4-41 Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock
- IEC 61701:2011 Salt mist corrosion testing of photovoltaic (PV) modules

#### Desirable Standards

- IEC 60068-2-68 Ed. 1.0 b:1994 Environmental Testing - Part 2: Tests - Test L: Dust And Sand

### 3.3 Roof Integrated Solar (RIS)

Roof Integrated Solar (RIS) modules should hold the above standards for the relevant technology.

Whilst integration into the roof fabric is covered under building regulations, manufacturers shall ensure that the roof installation system is tested for weathertightness, wind-resistance and fire, as detailed below. The installer is required to calculate the design wind uplift pressure for the installation taking into account the building location, roof height and shape, and panel location on the roof. Flexi-Orb mandates the IET Code of Practice for Grid Connected Solar Photovoltaic Systems for methodology in achieving appropriate outcomes, and the Guide also deals with fire considerations and weather tightness in RIS. The installer must then select and design a system which accommodates the requirements of the Guide.

On-roof systems do not need to be tested for weathertightness or external spread of flame, providing that they can demonstrate that the roof covering is not affected by the installation. Roof Integrated systems are required to be tested for the following:

#### 3.3.1 Weathertightness Performance Requirements

The extent to which RIS can resist water penetration from the combination of wind and rain, commonly referred to as wind driven rain.

Testing should be undertaken within the principles of PD CEN/TR 15601:2012 - Hygrothermal performance of buildings. Resistance to wind-driven rain of roof coverings with discontinuously laid small elements. Test methods.

Within this test, Wind-rain climate zones are separated into four zones, and the North European Coastal zone shall be used.

Each climate zone is separated into four wind-rain sub-tests. For solar panels, unless the installation of the system creates unprotected gaps larger than those that are pre-existing, in which Tests B and C must be completed, then only Test D is mandatory, with Tests A – C then becoming optional.

Test D simulates zero wind impact, and therefore a pressure chamber, suction device or fan system is not required for the test.

The sealing arrangement for underlay penetration should also be tested for weathertightness under Test D of PD CEN/TR 15601:2012.

#### 3.3.2 Resistance to wind uplift

A maximum wind uplift resistance shall be declared, following assessment under the following tests:

DD CEN/TS 15087:2005 Determination of the uplift resistance of installed clay and concrete interlocking tiles for roofing. Test method for mechanical fasteners.

BS EN 14437:2004 Determination of the uplift resistance of clay or concrete tiles for roofing. Roof system test method.

There is no minimum requirement for wind resistance, but the test results shall be declared. [Installer competence is required to confirm that the declared wind resistance is higher than the expected loads.]

### 3.3.3 Fire (external spread of flame)

A fire rating shall be declared when assessed in accordance with either of the following:

- i) Roof Integrated Systems shall be tested to BS 476 Part 3: Classification and method of test for external fire exposure to roofs as follows:

#### Scope

The tests given in this British Standard are designed to enable measurement of:

- a) Capacity of a representative section of a roof to resist penetration by fire when the external surface is exposed to radiation and flame; and
- b) Distance of the spread of flame on the outer surface of the roof covering under certain conditions.

Roofs are graded according to the angle at which they are tested, the time for which they resist penetration by fire, and the distance of superficial spread of flame on their external surface.

- ii) DD CEN/TS 1187:2012 (planned to become BS EN 1187) – test t4 for the UK resulting in a classification of '**B**ROOF - Unrestricted and can be used anywhere on the roof'.

There is no minimum fire rating requirement, but the test results shall be declared. Installer competence is required to ensure that limitations imposed by building regulations on the use of systems with lower fire ratings are observed.

Depending on the fire rating achieved by the product, limitations may be placed on the size of the solar system or its maximum distance from the property boundary under building regulations.

## 4. Certification Mark and Labelling

All products shall be traceable and carry the certification mark of the respective certification body, showing that it has been tested and certified in accordance with the requirements of the test standard described. The Mark(s) shall only be used in accordance with the Certification Body's instructions.

## 5. Installation Instructions

The manufacturer must provide installation guidance for Roof-Integrated Solar Systems. The instructions and guidance should be clear and detail how the system is to be installed with different roof types.

Specifically, the instructions must state the maximum wind load achieved by the system when assessed in accordance with the testing described in 3.3.2 above, using the standard procedure and installation details described in the manufacturer's instructions.



## 6. Accredited Certification Bodies

6.1 The above Standards must have been certified by a certification body accredited to ISO/IEC 17025. These include:

### **BRE Global**

Contact: [enquiries@bregroup.com](mailto:enquiries@bregroup.com)

Website: <https://www.bregroup.com/services/certification-and-listings/>

### **British Board of Agrément**

Contact: [clientservices@bbacerts.co.uk](mailto:clientservices@bbacerts.co.uk)

Website: [www.bbacerts.co.uk/pac](http://www.bbacerts.co.uk/pac)

### **British Standards Institute**

Contact: [product.certification@bsigroup.com](mailto:product.certification@bsigroup.com)

Website: [www.bsigroup.com/en-GB/our-services/certification](http://www.bsigroup.com/en-GB/our-services/certification)

### **Intertek**

Contact: [www.intertek.com/contact/inquiry](http://www.intertek.com/contact/inquiry)

Website: [www.intertek.com/solar](http://www.intertek.com/solar)

### **KIWA**

Contact: [uk.enquiries@kiwa.com](mailto:uk.enquiries@kiwa.com)

Website: [www.kiwa.com/gb/en/services/certification](http://www.kiwa.com/gb/en/services/certification)

### **SGS**

Contact: <https://www.sgs.co.uk/en-gb/contact?id=38f801e310f54bab9ffc80f366ed1771>

Website: [www.sgs.co.uk/en-gb/certification](http://www.sgs.co.uk/en-gb/certification)

### **TUV Rheinland**

Contact: <https://www.tuv.com/united-kingdom/en/solar-2.html?verbid=131>

Website: [www.tuv.com/united-kingdom/en](http://www.tuv.com/united-kingdom/en)

### **TUV Sud**

Contact: <https://www.tuvsud.com/en/contact-us>





Website: <https://www.tuvsud.com/en/industries/energy/solar-power/photovoltaic-module-testing-and-certification>

### **VDE**

Contact: [customer-service@vde.com](mailto:customer-service@vde.com)

Website: <https://www.vde.com/tic-en/marks-and-zertificates/certification-marks-and-attestations>

## Revision History and Approval

Rev.	Nature of Changes	Approval Signature	Date
1.0	Original Release		19.06.2017
1.1	Updated Regulatory References to current edition		14.11.2019
1.2	Updated to include Building-Integrated Systems		25.11.2019
1.3	Minor updates and revisions		20.02.2020