

## Solar Thermal Collectors

### Summary of proposed Triple E eligibility criteria changes.

To facilitate a refinement of the eligibility criteria for solar thermal collectors it is proposed to make the following amendment:

- An update to the test and measurement standard ISO 9806: 2017 (from the former EN 12975).

#### **New Eligibility and test standards:**

- BS EN ISO 9806:2017 Solar energy - Solar thermal collectors - Test methods.
- Specification of this test standard reflects the Solar Keymark Scheme, a voluntary third-party certification mark for solar thermal products.

The proposed eligibility criteria document is contained on the following pages.

**Please follow this [link](#) to view the currently published eligibility criteria.**

## Triple E Eligibility Criteria

### Category: Heating and Electricity Provision

### Technology: Solar Thermal Collectors

*Solar thermal collectors are defined as renewable energy equipment which transforms solar radiation directly into thermal energy.*

#### Solar thermal collectors are considered to include the following:

##### Flat Plate Collectors

Solar thermal collector which has its absorber laid in a box, insulated at the rear and sides, and with a transparent cover on top. The heat transfer media can be water (with or without antifreeze) or air.

##### Evacuated Tube Collectors

Solar thermal collector that constitutes a series of tubes that contain an absorber area and into which vacuum is created to provide insulation. The heat transfer media is typically water (with or without antifreeze).

### Solar Thermal Collectors Eligibility Criteria Overview

In order to be included on the Triple E Register, the specific solar thermal collector equipment must meet *all* of the relevant requirements set out below.

**Note:** Supporting documentation that clearly demonstrates Triple E compliance according to the conditions below will be required as part of the Triple E checking process. Detailed information on the types of documents accepted can be found in the Supporting Documentation guidelines later in this document.

### Solar thermal collectors - Eligibility Criteria

(Applicable to all solar thermal collector equipment)

No.	Condition
1.	All equipment must be CE Marked where appropriate.
2.	The solar thermal collector must be tested to the appropriate European Standards.
3.	The thermal collector performance parameters, as detailed in the standards (described in Condition 1), should contain the performance parameters n0, a1 and a2 to be submitted in calculating the Annual Power (q).

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| 4. | Appropriate operating & maintenance manuals must be available to the end user in order to optimise the achievement of any potential energy efficiency gains. |
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----- End of Triple E eligibility criteria -----

Please see next section for technical detail submission and supporting documentation guidance

***The following information is not part of the official criteria document published within the relevant statutory Instrument; it has been added here for guidance purposes only in order to provide assistance with the submission of product details and the provision of the required supporting documentation.***

**Note:** All information contained within this guidance document is subject to change without notice.

## Technical information required in product submission.

The following are the specific technical values required as part of the product submission for this technology:

### Certified collector performance parameters:

The collector performance is described by the equation for the power output  $q$ :

- $q = A \cdot (n_0 \cdot G - a_1 \cdot dT - a_2 \cdot dT^2)$  [W] with the operation conditions:
- $G$  : Solar irradiance on collector plane [ $W/m^2$ ]
- $dT$ : Temperature difference between collector mean fluid temperature and ambient air temperature [K] (Kelvin)

and the collector performance parameters:

- $n_0$ , optical efficiency (combined efficiency of the transparent cover and the absorber) [-]
- $a_1$ , 1st order heat loss coefficient (heat loss coefficient at collector fluid temperature equal to ambient temperature [ $W/K$ ])
- $a_2$ , 2nd order heat loss coefficient (temperature dependent term of heat loss coefficient) [ $W/K^2$ ]

and the collector area:

- $A$ : Collector area corresponding to the performance parameters – in this case, the aperture area is used as the reference area.

Note: to facilitate comparisons with other eligible products the following standard values will be used:

- $G$ :  $900 W/m^2$
- $dT$ :  $50K$
- $A$ :  $1m^2$

## **Supporting documentation required**

Described below is the list of documents that are accepted as proof of compliance for the specific Solar Thermal Collector Equipment condition.

**Note: This information will only be requested AFTER you submit your product's basic details online**

### **Important Notes to Product Providers**

**Please ensure that you read the "Important Notes to Product Providers" section at the end of this document prior to submitting documentation.**

No.	Condition	Supporting Documentation Requirement
1.	All equipment must be CE Marked where appropriate.	<p>Official and published manufacturer’s technical data sheet or brochure that demonstrates CE marking compliance for all relevant equipment included in the submission. The CE marked equipment must correlate to the “Component list” referenced below.</p> <p>OR</p> <p>A copy of an official signed declaration on headed paper which confirms CE marking compliance for all relevant equipment included in the submission. The CE marked equipment must correlate to the “Component list” referenced below.</p> <p>Official declarations should explicitly state the product for which CE marking is being confirmed (i.e. do not provide a letter simply stating general compliance with the relevant Triple E Condition).</p> <p>Where a document is used to demonstrate conformance for a number of products or range of products it should clearly specify each individual product covered by that document.</p>

2	<p>The solar thermal collector must be tested to the appropriate European Standards</p>	<p>Where a document is used to demonstrate conformance for a number of products or range of products it should clearly specify each individual product covered by that document.</p> <p>Accredited certification demonstrating that the product meets the appropriate European Standards and showing certified solar thermal collector performance parameters.</p> <p>Test reports should be in the format described in the 'Important Notes to Product Providers' section of this document and be produced or endorsed by an accredited body.</p> <p><u>Acceptable Standards</u>          solar collectors          BS EN ISO 9806:2017, solar energy - solar thermal collectors - test methods          for models introduced to the market before 2017, compliance with BS EN 12975- 2:2006 solar energy - solar thermal collectors - test methods will be accepted.</p> <p>or</p> <p>factory made systems          EN 12976-1 thermal solar systems and components - factory made systems - part 1: general requirements          and          EN 12976-2 thermal solar systems and components - factory made systems - part 2: test methods</p>
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<p><b>3</b></p>	<p>Annual power output per m<sup>2</sup> is defined by <math>q=(n_0 \cdot G - a_1 \cdot dT - a_2 \cdot dT^2)</math>[W]</p>	<p>Accredited certification demonstrating that the product meets the appropriate European Standards and showing certified solar thermal collector performance parameters, as described for Condition 1, should contain the following parameters:</p> <p>Performance parameters of collector on the basis of aperture area:</p> <ul style="list-style-type: none"> <li>• n<sub>0</sub>, optical efficiency</li> <li>• a<sub>1</sub>, 1st order efficiency coefficient [W/m<sup>2</sup>K]</li> <li>• a<sub>2</sub>, 2nd order heat loss coefficient [W/m<sup>2</sup>K<sup>2</sup>]</li> </ul> <p>Note standard values of G:900W/m<sup>2</sup> and dT:50K to be used</p> <p>The online product submission process requires performance parameters n<sub>0</sub>, a<sub>1</sub> and a<sub>2</sub> to be submitted. The value for Annual Power (q) is automatically calculated by the online system</p>
<p><b>4</b></p>	<p>Appropriate operating and maintenance manuals must be available to the end user in order to optimise the achievement of any potential energy efficiency gains</p>	<p>A copy of an official signed declaration on headed paper which confirms that the appropriate operating and maintenance manuals are provided. Where applicable, information on the availability of technical documentation to download online should be given.</p> <p><b>NB:</b> A signed declaration is required to comply with this condition in all cases. Submitting copies of user manuals is not sufficient and not required by this condition.</p>



## Important Notes to Product Providers

### General

There should be a clear link between all supporting documentation supplied and the product being submitted. This will typically take the form of a product code or product name that can be cross referenced between the submitted product and relevant supporting documentation. If product codes / names have been changed since publication of the supporting documentation, then official evidence of this must be provided with the supporting documentation supplied.

Any deviation from these requirements will result in the supporting documentation not being considered adequate for the purposes of demonstrating compliance with the criteria conditions. This will in turn delay the submission and/or result in the product not being considered eligible.

Where the Triple E criteria or help documentation references compliance to appropriate rather than specific standards, the onus is on the product provider to ensure that supporting documentation supplied references recognised standards that apply to the submitted product, i.e. the product must be covered under the scope of a recognised standard.

If any product submitted is later found not to meet the performance or specification criteria, then this product will cease to be considered eligible for the Triple E.

**Note:** When supplying the supporting documentation through the online process you must ensure that the correct page number(s) of the document is referenced when demonstrating compliance with the relevant condition. An explanatory note should also be given where more than one page number is referenced.

## **Test Report**

A test report must include an outline of the complete test, including:

- √ Introduction
- √ Details on test conditions
- √ The specific model details of the product tested
- √ The steps taken in the test
- √ The results
- √ Graphical representations
- √ Conclusion

All documents should be on headed paper and the document should be officially signed off.

**All documentation must be in English** or include adequate translation.

## **Certification**

Where certificates are provided, all tests must be carried out by an organisation that is accredited by a national accreditation body recognised via the European Cooperation for Accreditation (preferred) or the International Accreditation Forum. **All documentation must be in English** or include adequate translation.

## **Scientific Equivalence**

Some Triple E criteria conditions allow for scientifically equivalent tests and/or standards to be used. In the event that a product has not been designed, manufactured or tested to the specific standard named, then documentation relating to an equivalent internationally recognised standard may be used (where the phrase 'Or scientific equivalent' is included in the Triple E condition or help documentation). In such applications, the onus will be on the product submitter to demonstrate satisfactory equivalence of the standards. However, submissions which reference such supporting documentation may take longer to process, and if the product provider does not provide satisfactory evidence of equivalence, then the product will not be considered eligible for the Triple E register.

**All documentation must be in English** or include adequate translation.

**Note:** Where specific standards are cited in a condition or in the Triple E help documentation, then documentation demonstrating that the relevant products have been designed, manufactured or tested to these specific standards is preferred. Scientific equivalence is considered the exception rather than the norm.