NSAI
Standards

Irish Standard
I.S. CLC/TR 50670:2016

External fire exposure to roofs in combination with photovoltaic (PV) arrays - Test method(s)

I.S. CLC/TR 50670:2016

Incorporating amendments/corrigenda/National Annexes issued since publication:

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NSAI	T +353 1 807 3800	Sales:
1 Swift Square,	F +353 1 807 3838	T +353 1 857 6730
Northwood, Santry	E standards@nsai.ie	F +353 1 857 6729
Dublin 9	W NSAI.ie	W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

National Foreword

I.S. CLC/TR 50670:2016 is the adopted Irish version of the European Document CLC/TR 50670:2016, External fire exposure to roofs in combination with photovoltaic (PV) arrays - Test method(s)

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In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

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TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

CLC/TR 50670

December 2016

ICS 13.220.50; 27.160; 91.060.20

English Version

External fire exposure to roofs in combination with photovoltaic (PV) arrays - Test method(s)

Exposition des toitures équipées de modules photovoltaïques (PV) à un feu extérieur - Méthode(s) d'essai

Externe Feuereinwirkung auf Dächer in Kombination mit Photovoltaik (PV)-Arrays - Testmethode (n)

This Technical Report was approved by CENELEC on 2016-09-05.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (CLC/TR 50670:2016) has been prepared by CLC/TC 82 “Solar Photovoltaic Energy Systems”.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Framing components of the PV modules that are made of polymeric materials are not covered within this document and will have to be addressed in a future revision.

Introduction

This CENELEC Technical Report (TR) defines test methods for the assessment of external fire exposure to photovoltaic (PV) arrays. The determination of such fire behaviour is important when photovoltaic systems are installed on roofs to evaluate if an intensification of a fire threat can be expected. With this regard, explicitly roof-integrated PV is not part of this TR.

The scenario of burning brands that are released from a neighbouring building is well defined for plain roofing assemblies through the classification standard of EN 13501-5 and the relevant test methods of CEN/TS 1187. Accordingly, the methods described herewith focus on PV modules and the influence to roof substructures in general and address tilted and flat-roof installations from burning droplets and radiant heat after ignited through a gas burner.

Roofing assemblies and substructures are exemplary replaced by calcium carbonate plates to allow free monitoring and characterization of the potential burning behaviour of PV modules.

This Technical Report also encounters potential burning brands that may reach spaces between the PV array and roof in a realistic installation.

This Technical Report does not contain information on the level of acceptable performance, but on observations and measurements.

This Technical Report enters new fields of expertise and displays accordingly the current state of best knowledge basing on available data in the industry. More technical data and test results will be generated to further develop the TR.

CAUTION — The attention of all persons concerned with managing and carrying out these tests is drawn to the fact that fire testing can be hazardous and that there is a possibility that toxic and/or harmful smoke and gases can be evolved during the test. An assessment of all potential hazards and risks to health should be made and safety precautions should be identified and provided. Written safety instructions should be issued. Appropriate training should be given to all relevant personnel. Laboratory personnel should ensure that they follow written safety instructions at all times.

1 Scope

This Technical Report provides test methods for the assessment of external fire exposure to roofs in combination with photovoltaic (PV) arrays which characterize potential impacts of PV arrays to an existing fire rating of roofs from an external fire exposure. The performance of roofs without PV to external fire exposure is defined in CEN/TS 1187.

The test methods of CLC/TR 50670 are only applicable to roof added installations. Building integrated PV is not covered by this standard.

The test method refers to PV modules as test specimens without a specific mounting system as well as combinations of PV modules with particular mounting systems on tilted roofs and flat roofs.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 13943:2010, *Fire safety — Vocabulary (ISO 13943:2008)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 13943:2010 and the following apply.

3.1
PV array
mechanically integrated assembly of modules or panels and its support structure

Note 1 to entry: An array does not include its foundation, tracking apparatus, thermal control, and other such components.

[SOURCE: IEC 61277, modified]

3.2
external fire
progression and extent of sustained flaming across the exposed surface of the specimen

[SOURCE: CEN/TS 1187:2012]

3.3
tilted roof
roof with an inclination angle of at least 15°

3.4
flat roof
roof with an inclination less than 15°

3.5
roof covering
uppermost layer of a roof

Note 1 to entry: This layer can comprise single layer or multiple layer coverings.

[SOURCE: CEN/TS 1187:2012]

3.6
fire penetration
appearance on the underside of the specimen of any sustained flaming or glowing due to combustion, including the occurrence of any flaming droplets falling from the underside