

**IEA/SHC**

**Task 57, Subtask B**

Draft proposals for new test procedures

B5: Final Report

**Brief survey report on  
What is going on in  
IEC/TC and IEA/ PVPS groups on  
“Extreme conditions”**

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## 1 Introduction

In the Work Plan for the Task 57 of IEA/SHC, a specific activity B5 “Defining / discussing environmental extreme conditions” was presented for the Subtask B. In order to make it co-ordinated with related international standards, a more concrete activity B5 “What is going on in IEC/TC and IEA/ PVPS groups on Extreme conditions” was further specified.

In past years, some information about IEC/TC and IEA/ PVPS groups on Extreme conditions has been searched. The search results are undoubtedly helpful for preparing definitions of environmental extreme conditions in solar thermal application in the future.

## 2 Current status

### 2.1 Status in IEC/TC104

At present, IEC/TC104 *Environmental conditions, classification and methods of test* has published a series of International Standards, titled as *IEC 60721 Classifications of environmental conditions*, as shown in Table 1.

**Table 1 IEC 60721 Classifications of environmental conditions** <sup>[1]</sup>

No	Reference	Part	Title
1	IEC 60721-1:1990	Part 1	Environmental parameters and their severities
2	IEC 60721-2-1:2013	Part 2-1	Environmental conditions appearing in nature - Temperature and humidity
3	IEC 60721-2-2:2012	Part 2-2	Environmental conditions appearing in nature - Precipitation and wind
4	IEC 60721-2-3:2013	Part 2-3	Environmental conditions appearing in nature - Air pressure
5	IEC 60721-2-4:1987	Part 2-4	Environmental conditions appearing in nature - Solar radiation and temperature
6	IEC 60721-2-5:1991	Part 2-5	Environmental conditions appearing in nature - Section 5: Dust, sand, salt mist
7	IEC 60721-2-6:1990	Part 2-6	Environmental conditions appearing in nature - Earthquake vibration and shock
8	IEC 60721-2-7:1987	Part 2-7	Environmental conditions appearing in nature - Fauna and flora
9	IEC 60721-2-9:2014	Part 2-9	Environmental conditions appearing in nature - Measured shock and vibration data - Storage, transportation and in-use

From Table 1, it can be seen that a variety of parameters should be involved in the environmental conditions appearing in nature, such as temperature and humidity, precipitation and wind, air pressure, solar radiation and temperature, dust, sand and salt mist, earthquake vibration and shock, fauna and flora, etc.

In addition, it also can be seen that some parts of the series standards were developed many years ago, e.g. Part 2-4 and Part 2-7 in 1987. Therefore, new editions of two standards are included in the Work program in 2018, as shown in Table 2.

**Table 2 IEC/TC 104 Work program (17) in 2018** <sup>[2]</sup>

Reference	Title	Initiate Date	Current Stage	Next Stage	Forecast Publ. date
IEC 60721-2-4 ED2	Classification of environmental conditions - Part 2-4: Environmental conditions appearing in nature - Solar radiation and temperature	2015-01	TFDIS 2018-01	DECFDIS 2018-02	2018-07
IEC 60721-2-7 ED2	Classification of environmental conditions - Part 2-7: Environmental conditions appearing in nature - Fauna and flora.	2016-09	PRVC 2017-11	2018-02	2018-08

## 2.2 Status in IEC/TC 82

In IEC/TC 82 *Solar photovoltaic energy systems*, up to now, no any published IEC standard related to environmental conditions in the IEC/TC 82 Publications was found <sup>[3]</sup>.

However, an IEC standard has been found to be under development in the IEC/TC 82 Work program. This standard is titled as *IEC 62994 Environmental health and safety (EH&S) risk assessment of the PV module through the life cycle – General principles and definitions of terms*, as shown in Table 3.

**Table 3 IEC/TC 82 Work program (73) in 2018** <sup>[4]</sup>

Reference	Title	Initiate Date	Current Stage	Next Stage	Forecast Publ. date
IEC TS 62994 ED1	Environmental health and safety (EH&S) risk assessment of the PV module through the life cycle – General principles and definitions of terms	2015-03	CDTS 2017-03	PRVDTS 2018-02	2018-10

## 2.3 Status in IEA/PVPS

In addition to IEC/TC 104 and IEC/TC 82, there is also a group which is working with the environmental aspects in IEA/PVPS, *Photovoltaic Power Systems*. After searching in the IEA/PVPS Annual Reports <sup>[5]</sup>, following Tasks have been found:

Task 7: PV Power systems in the built environment (concluded in 2001)

Task 12: PV Environmental health & safety activities (begun in late 2007)

Task 15: BIPV in the built environment (begun in late 2014)

However, the concept “environment” in the above-mentioned Tasks is a bit different from the concept “environment” in IEA/SHC Task 57.

## 3 Summary

Some information about IEC/TC 104, IEC/TC 82 and IEA/ PVPS groups on “Extreme conditions” has been searched.

Obviously, the activity B5 with regard to the definition of “Extreme conditions” shall mainly follow the progress in IEC/TC 104.

## 4 Reference

[1] IEC/TC104 Publications, [Online] Available:

[http://www.iec.ch/dyn/www/f?p=103:23:2676820538702:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:1308,25](http://www.iec.ch/dyn/www/f?p=103:23:2676820538702:::FSP_ORG_ID,FSP_LANG_ID:1308,25) (accessed 11 January 2018).

[2] IEC/TC104 Work Program, [Online] Available:

[http://www.iec.ch/dyn/www/f?p=103:22:0:::FSP\\_ORG\\_ID:1308](http://www.iec.ch/dyn/www/f?p=103:22:0:::FSP_ORG_ID:1308) (accessed 11 January 2018).

[3] IEC/TC 82 Publications, [Online] Available:

[http://www.iec.ch/dyn/www/f?p=103:22:2676820538702:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:1276,25](http://www.iec.ch/dyn/www/f?p=103:22:2676820538702:::FSP_ORG_ID,FSP_LANG_ID:1276,25) (accessed 17 January 2018).

[4] IEC/TC 82 Work Program, [Online] Available:

[http://www.iec.ch/dyn/www/f?p=103:23:0:::FSP\\_ORG\\_ID:1276](http://www.iec.ch/dyn/www/f?p=103:23:0:::FSP_ORG_ID:1276) (accessed 17 January 2018).

[5] IEA/PVPS Annual Reports, [Online] Available:

<http://www.iea-pvps.org/index.php?id=6>