PUBLIC SUMMARY REPORT OF THE

EGOLF EN ISO 9239-1

ROUND ROBIN 2013-2014

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1. Purpose of the round-robin

Round robin exercises are important for the determination of the trueness and precision of fire test methods, and national accreditation bodies request that accredited fire laboratories participate in such exercises as part of the documentation.

A round robin exercise on the EN ISO 9239-1 test was performed in EGOLF during 2013 and 2014.

The aims of this round robin exercise were:

- to confirm that EGOLF laboratories are able to perform the EN ISO 9239-1 test in a proper way;
- to provide information about the reproducibility and repeatability for EN ISO 9239-1;
- to give an indication for each participating laboratory regarding its performance when performing tests according to EN ISO 9239-1;
- to provide an indication of the variability in equipment, procedures and tools.

2. Scope of the round-robin

3.1 Test method

The tests in the round robin are performed according to the procedure described in EN ISO 9239-1, the Flooring Radiant Panel test.

Some definitions from EN ISO 9239-1:

Critical heat flux at extinguishment, CHF:
incident heat flux, in kW/m^2, at the surface of a specimen at the point where the flame ceases to advance and may subsequently go out.

Heat flux at *X* min, HF-*X*:
heat flux, in kW/m^2, received by the specimen at the most distant spread of flame position observed during the first *X* min of the test

Critical heat flux:
heat flux at which the flames extinguishes (CHF) or the heat flux after the test period of 30 min (HF-30), whichever is the lower value (i.e. the flux corresponding to the furthest extent of spread of flame within 30 min)

Prior to testing the round robin samples, each participating laboratory ran a calibration according to the procedure described in EN ISO 9239-1, clause 8.1. Calibrations included:

- air flow rate;
- chamber temperature;
- burner black body temperature;
- Heat flux levels on nine locations at the height of the specimen.

In addition, laboratories could participate to an extra voluntary calibration exercise making use of an experimental calibration board developed for use in this round robin exercise.

3. Test specimens

Each participating laboratory tested 3 specimens of untreated particle board. The nominal thickness of the specimens was 22 mm and the nominal density 650 kg/m^3. According to Commission Decision of 15 May 2007, this product can be classified as D_{fl}-s1 without testing.

4. Time frame

The tests were performed during the autumn 2013, and the analysis of test results was finished in October 2014.

5. Number of participants and tests

23 laboratories participated in the round robin exercise, while one of them did not complete the results on time, and was not included in the analysis.

Below is a list of the 23 participating laboratories. The laboratories are listed by the countries in alphabetical order The order given below does not correspond to the laboratory identification numbering given in the full report.

Austria	IBS Linz
Belgium	Exova Wfrgent
Denmark	DBI
France	CSTB
	LNE
Germany	MPA NRW
	MPA Stuttgart
	Prüfinstitut HOCH
Hungary	EMI
Israel	SII
Italy	Istituto Girodano
	LAPI
Latvia	MeKA
Lithuania	GTC
The Netherlands	Efectis NL
Poland	ITB
Slovenia	ZAG
Spain	APPLUS LGAI
	Gaiker
	LEITAT
	TECNALIA
Sweden	SP
UK	Exova

6. Test results

The following test results were reported:

- The time at which the flames reach each 50 mm mark (s)
- final maximum flame-spread distance (mm)
- flame-spread distance after 10 min (mm)
- flame-spread distance after 20 min (mm)
- flame-spread distance after 30 min (mm)
- time of flame extinguishment (min:s)
- duration of the test (s)
- CHF (Critical Heat Flux) (kW/m^2)
- smoke development (% · min)

The critical heat flux is either the critical heat flux at extinguishment (CHF), or the heat flux at 30 minutes (HF-30), whichever is the lowest value.

Before the testing of the particle boards took place, all laboratories performed a calibration of their apparatuses according to clause 8.1 in EN ISO 9239-1. The results from these tests showed that all laboratories fulfilled the criteria given in Table 1 in the standard. Results from the calibrations are not presented in this report.

The test results were analysed according to ISO 5725-2. Accuracy (trueness and precision) of measurement methods and results – Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method. The data was analysed for consistency and outliers, using both graphical and numerical techniques. The general mean values, the repeatability standard deviation s_r and the reproducibility standard deviation s_R were calculated for each of the measured variables after removal of outliers among the data.

7. Assessment of the outcome of the round robin

The round robin exercise has shown that most of the participants perform testing according to EN ISO 9239-1 with results within acceptable limits of repeatability and reproducibility.

The repeatability and reproducibility for the test results on critical heat flux are at the same level as the values for particle board from an earlier round robin exercise reported in the standard EN ISO 9239-1:2010, and should be considered as good.

The repeatability for smoke production is not very high, but may be regarded as acceptable. Smoke production is in general a property with relatively low repeatability compared to other types of measurements. The

reproducibility of the smoke production results is, however, rather poor. The reason for the large spread in test results should be investigated further.

The results from the tests with the calibration boards show that the variation between the laboratories regarding the distribution of heat flux on the specimen is acceptable.

References

Commission Decision of 15 May 2007 amending Decision 2003/43/EC establishing the classes of reaction-to-fire performance for certain construction products as regards wood-based panels. (2007/348/EC). Official Journal of the European Union 23-5-2007.

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ISO 5725-1:1994. Accuracy (trueness and precision) of measurement methods and results – Part 1: General principles and definitions. International Organization for Standardization, Switzerland 1994.

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