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TECHNICAL REPORT

DURAMAT LTD Unit 6, Causeway End Manningtree CO11 2LH United Kingdom	SATRA reference:	FLO4215P2B0	
		2340	1
	Report ID/Issue number:	33559/1	
	Your reference:		
	Date samples received:	04/09/2023	
	Date(s) work carried out:	04/09/2023 to 12/10/2023	
	Date of report:	07/11/2023	

Testing Requirements

Testing of one product described by the customer as "PVC Floor Tile" to EN ISO 9239-1:2010 (L/NCS).

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Report Signed by:

Reece Johnson


Report Signatory

**TESTING OF ONE PRODUCT, DESCRIBED BY THE CUSTOMER AS
'PVC FLOOR TILE' TO EN ISO 9239-1:2010 (L/NCS).**

As requested by Duramat Ltd, SATRA have assessed the floor covering submitted to determine the burning behaviour using a radiant heat source, as detailed below.

SUMMARY

With regard to the property assessed, the sample submitted under the reference 'PVC Floor Tile' has demonstrated a mean critical heat flux (CHF) of $\geq 10.6 \text{ kW/m}^2$, with a mean smoke development of 245.03 %.min, when the test was repeated in triplicate, in the worst performing direction (perpendicular to the direction of manufacture).

SAMPLE SUBMITTED

Sample reference: 'PVC Floor Tile' ⁽¹⁾
Appearance:



Date received: 04 September 2023 ⁽²⁾
Date conditioning commenced: 05 October 2023 ⁽³⁾
Testing conducted: 11 and 12 October 2023
Testing conducted by: Dusan Pekarovic

TESTS CARRIED OUT

- EN ISO 9239-1:2010. Reaction to fire tests for floorings. Determination of the burning behaviour using a radiant heat source. (L/NCS)⁽²⁾

Notes:

- (1) Information supplied by the customer. Not verified by SATRA.
- (2) The specimens were provided to SATRA by the customer. SATRA were not involved in the selection or sampling procedure.
- (3) Prior to testing, the specimens were conditioned at $(23 \pm 2) \text{ }^\circ\text{C}$, $(50 \pm 5) \text{ \% RH}$, until constant mass was achieved, or for a fixed period of time as defined in EN 13238:2010.

FULL DESCRIPTION OF TEST SPECIMENS ⁽¹⁾

The description of the specimen given below has been prepared from information provided by the sponsor of the test. All values quoted are nominal, unless tolerances are given.

General description of flooring system		PVC interlocking floor tile	
Product reference of flooring system		PVC Floor Tile	
Colour reference		Black / Grey	
Name of Manufacturer		Big mats ltd	
Overall weight per unit area		2.2kg per tile	
Overall Thickness		7mm	
Product Configuration			
Floor covering	Layer 1	Product Reference	PVC FLOOR TILE
		Generic Type	FLOOR TILE
		Name of Manufacturer	BIG MATS LTD
		% Composition	100% RECYCLED PVC
		Weight per unit area	2.2KG
		Thickness	7MM
		Trade name of flame retardant	N/A
		Generic form of flame retardant	N/A
Amount of flame retardant		N/A	
Brief Description of the manufacturing process		Note 1	

LABORATORY SUPPLIED SUBSTRATE;

Adhesive	Product Reference	N/A
	Generic Type	N/A
	Name of Manufacturer	N/A
	Density (20°C)	N/A
	Colour	N/A
Substrate	Product reference	'Cembrit HD'
	Generic type	Fibre cement board
	Name of supplier	Clarkes of Walsham Ltd
	Thickness	(8 ± 2) mm
	Density	(1800 ± 200) kg/m ³

Note 1: The sponsor of the test has failed to provide the information

Note 2: The sponsor has provided the required information but at the request of the sponsor it has been omitted from the final report.

Note 3: The sponsor was unwilling to provide the required information.

RESULTS

Sample reference	Test method	Property	Mean results
'PVC Floor Tile'	EN ISO 9239-1: 2010	Maximum flame front distance	150 mm
		Critical radiant flux (CHF) or heat flux at 30 minutes (HF-30)	≥ 10.6 kW/m²
		Smoke development (% light obscuration over the test time)	245.03 %.min
		Maximum light attenuation	34.32 %

The test results relate only to the behaviour of the test specimens of the product under the particular conditions of test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

The test results relate only to the specimens of the product in the form in which they were tested. Small differences in the composition or thickness of the product may significantly affect the performance during the test and may therefore invalidate the test results. Care should be taken to ensure that any product which is supplied or used is fully represented by the specimens which were tested. Test results using a standard substrate complying with EN 13238:2010 Clause 5.2.2 or Clause 5.2.3 are applicable if the density of the end use substrate is at least 75% of the nominal density of the standard substrate.

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over five years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

TEST DETAILS**Purpose of test**

To determine the performance of specimens of a product when they are subjected to the conditions of the test procedure defined in the document EN ISO 9239-1:2010. This report should be read in conjunction with that standard.

Scope of test

EN ISO 9239-1:2010 describes a European test procedure for assessing the burning behaviour, spread of flame and smoke development of horizontally mounted floorcovering systems exposed to a radiant heat gradient in a test chamber, when ignited with a pilot flame.

The measurements provide a basis for estimating one aspect of the fire exposure behaviour of floor covering systems. The imposed radiant heat simulates the thermal radiation levels likely to impinge on the floors of a building whose upper surfaces are heated by flames or hot gases or both, from a fire in an adjacent room or compartment.

This method is applicable to all types of floor coverings such as textile carpet, cork, wood, rubber and plastic coverings as well as coatings. Results obtained by this method reflect the performance of the total floor covering system as tested. Modifications of the backing, bonding to a substrate, underlay, or other changes to the system may affect the test results. The test is intended for regulatory purposes, specification acceptance, design purposes, classification, or development and research.

Number of specimens tested

In accordance with EN ISO 9239-1:2010, a specimen in each direction was tested initially and the worst performing direction (perpendicular to the direction of manufacture) was then subjected to a further two tests. The average results are then calculated from the three tests conducted in the worst performing direction.

Exposed Face

The decorative face of the specimen was exposed to the radiant heat of the test when the specimens were mounted in the test position.

Adhesive

The specimen was tested loose-laid (L) over the substrate.

Substrate

Non-combustible substrate (NCS) - End use substrates of classes A1 and A2-s1,d0, are represented by fibre cement board (in accordance with ISO 390)

TABLE 1 – FULL TEST RESULTS - INDIVIDUAL SPECIMEN RESULTS FOR SPECIMEN REFERENCED 'PVC FLOOR TILE'

Specimen Number	1	2	3	4
Direction of test	Parallel	Perpendicular	Perpendicular	Perpendicular
Distance (cm)	Time to travel indicated distance (s)			
5	163	175	171	166
10	320	448	317	368
15	-	618	-	-
20	-	-	-	-
25	-	-	-	-
30	-	-	-	-
35	-	-	-	-
40	-	-	-	-
45	-	-	-	-
50	-	-	-	-
55	-	-	-	-
60	-	-	-	-
65	-	-	-	-
70	-	-	-	-
75	-	-	-	-
80	-	-	-	-
85	-	-	-	-
90	-	-	-	-
95	-	-	-	-
100	-	-	-	-
Max. flame front distance (cm)	14.0	19.0	13.0	13.0
Critical radiant flux (kW/m²)	10.8	9.8	≥ 11.0	≥ 11.0
Smoke development (%.min)	217.47	274.09	229.07	231.92
Max. light attenuation (%)	35.85	43.64	29.81	29.51
Flame front distance after 10 min. (cm)	14.0	15.0	13.0	13.0
Flame front distance after 20 min. (cm)	14.0	19.0	13.0	13.0
Flame front distance after 30 min. (cm)	14.0	19.0	13.0	13.0
Heat flux after 10 min. HF₁₀ (kW/m²)	10.8	10.6	≥ 11.0	≥ 11.0
Heat flux after 20 min. HF₂₀ (kW/m²)	10.8	9.8	≥ 11.0	≥ 11.0
Heat flux after 30 min. HF₃₀ (kW/m²)	10.8	9.8	≥ 11.0	≥ 11.0

OBSERVATIONS

The following observations of the burning characteristics of the specimens during the testing exposure were made:

Charring and blistering observed.
Specimens extinguished naturally.

Conditions of Use

Confidentiality and Dissemination

SATRA test reports may be forwarded to other parties provided that they are not changed in any way and are not marked as confidential. Test reports must not be published, for example by including it in advertisements, without the prior, written permission of SATRA.

Liability

Results given in this report refer only to the samples submitted for analysis and tested by SATRA. Comments are for guidance only.

A satisfactory test report in no way implies that the product tested is approved by SATRA and no warranty is given as to the performance of the product tested. SATRA shall not be liable for any subsequent loss or damage incurred by the client as a result of information supplied in the report.

Accreditation

Where the UKAS logo is included on the test report then tests marked ≠ fall outside the UKAS Accreditation Schedule for SATRA. Where no UKAS logo is included on the test report then none of the tests reported are covered by SATRA's UKAS Accreditation.

Tests marked ¥ are performed under SATRA's Flexible UKAS Schedule.

Uncertainty of Measurement and Decision Rules

Where values for uncertainty of measurement are included within the report then the uncertainty of the corresponding results are based on a standard uncertainty multiplied by a coverage factor $k=2$, which provides a coverage probability of approximately 95%.

When reporting results against a conformance statement (Pass/Fail or the allocation of a class or level) then uncertainty of measurement is taken into account based on a non-binary acceptance which itself is based on the guard band being equal to the expanded uncertainty.

Where the result corrected for uncertainty falls within the tolerance of the conformance statement then the risk of the conformance statement being a false accept or false reject is up to 2.5% and SATRA will in this instance quote a Pass/Fail, class, or level.

Where the result corrected for uncertainty falls outside of the tolerance of the conformance statement then the risk of the conformance statement being a false accept or false reject is up to 50%. In this instance SATRA will not provide a Pass/Fail statement or a class or level but will include information in the notes in relation to the result obtained.

Where a report contains SATRA guidelines values then uncertainty of measurement values have been taken into account when determining the guideline values and as such are not considered when determining pass/ fail criteria.
