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Forbo Flooring
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The Netherlands

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7511 JL ENSCHEDE
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Report

Sponsor : Contractor, manufacturer : **Forbo Flooring**
Product name : MARMOLEUM CLICK.
Lot. No. : 66869/3877.

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Notified Body : No. 336.

Description and

Composition : Marmoleum Click is produced by laminating linoleum produced in accordance with EN 548 consisting of two-layer homogeneous mixture of linoleum cement, wood flour, limestone and pigments, applied on a fibrous backing, onto a HDF board with a cork sheet backing. Linoleum cement consists of a mixture of linseed oil and/or other vegetable drying oils and rosin.

The construction is given by manufacturer:
Nominal Thickness, mm : 9.8

Nominal thickness of the independent layers:
Marmoleum, mm : 2.0 density, kg/m²: ± 2.4
HDF board, mm : 6.8 density, kg/m³ : ± 880.
Cork sheet, mm : 1.0 density, kg/m³ : ± 220.

The surface layer of the Marmoleum has a minimum thickness of 0,8 mm.

Family of Products

: Linoleum laminated on HDF board with a cork sheet backing.

Purpose

: Classification accordance EN 13501:2002.
Reaction to fire test, according to:
➤ EN ISO 11925-2:1998 Reaction to fire tests for building products, Part 2: Ignitability when subjected to direct impingement of flame (ISO 11925-2:1998).
➤ EN ISO 9239 reaction to fire tests for floor coverings, Part 1: Determination of the burning behaviour using a radiant heat source (ISO 9239-1:1998). Tested on particle board.

Date
19 October 2006

Number of project
033.11483/01.01

Order number
CE06 043 01
MARMOLEUM CLICK

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Your reference
Your letter of 6-9-2006
Your order of 9-10-2006

The Standard Conditions for Research Instructions given to TNO, as filed at the Registry of the District Court and the Chamber of Commerce in The Hague shall apply to all instructions given to TNO; the Standard Conditions will be sent on request.



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Results : On pages three up to and including six.

Conclusion : MARMOLEUM CLICK floor covering fulfilled the requirements of:

- EN ISO 11925-2, ($F_s \leq 150$ mm within 20 s.) and
- EN ISO 9239-1, (critical flux ≥ 4.5 kW.m²).

Class: C_{FL}. Additional classification: **s1**.

Notation: C_{FL} - **s1**

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

The method might not be suitable if the product is exposed to much larger flames or heat radiant sources.

The validity of this report will expire five years after its issue or directly after alterations or modifications of the examined product(combination)(s) and/or the criteria.

This report shall not be reproduced, except in full, without the written approval of the testing laboratory.

Projectmanager:

Visa:

V.Kruys

J. Brinks



Date
19 October 2006

Test results: EN-ISO 11925-2:1998 Small burner examination

Date of test : 21 september 2006.
Conditioning time, climate : 7 days, 23 ± 2 °C and 50 ± 5 %
Description of substrate : 6 mm. Fibre cement board, 1800 kg/m³.
Flame application : Surface.
Application time : 15 seconds.

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Surface ignition	All test specimens are tested in one direction									
Total burning time ¹ (15 s)	15	15	15	15	15	15	15	15	15	15
Flame tip reaches 150 mm (sec)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Extent (mm) of damaged area, length	35	35	40	35	35	35	35	40	40	35
Extent (mm) of damaged area, width	10	11	10	10	10	10	9	11	11	11
Material melts (y/n)	n	n	n	n	n	n	n	n	n	n
Shrinks away ² (y/n)	n	n	n	n	n	n	n	n	n	n
Glowing ³ (sec)										
Flaming debris ⁴ (yes/no)	n	n	n	n	n	n	n	n	n	n
Ignition of filter paper (y/n)	n	n	n	n	n	n	n	n	n	n
Conclusion	Marmoleum Click floor covering , fulfilled the requirements EN ISO 11925-2 ⁵ (Fs ≤ 150 mm within of 20 s.).									

Assessment:

Based on the test results and evaluating the criteria for classification according to clause 8 of the EN-ISO 11925-2:2002 the examined Marmoleum Click floor covering proved to be capable of resisting, for a short period, a small flame attack without substantial flame spread.

If assessed according to Table 1 of the European classification standard EN 13501-1:2002 “**Classification standard for building product and building elements**” the examined product will be classified as follows: Class E.

¹ Inclusive a flame application time of 15 or 30 seconds with surface or edge impingement.

² Shrinks away from flame without being ignited.

³ The time at which it occurs and its duration.

⁴ The test shall be terminated if flaming debris is observed.

⁵ Under conditions of surface flame attack and, if appropriate to the end-use application of the product, edge flame attack.



Date
19 October 2006

Test results: EN ISO 9239-1:1998. Radiant Panel test.

Test results are noted in the following appendices enclosed.

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Date of test : 25 september 2006.
Conditioning time, climate : 7 days, 23 ± 2 °C and 50 ± 5 %
Description of substrate : Particle board.
Sampling procedure : by contractor.
Age : no information received; at the time of
examination approx. 4 weeks.
Description of cleaning used : N/A.
Number of tested specimens : 3 + 1.
Glued to the substrate : N/A.

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Critical Radiant Flux⁶, kW/m² 6.4
Flashing⁷ : no
Transitory flaming⁸ : no
Sustained flaming⁹ : no

Smoke production; light attenuation, according to DIN 50055.

- Maximum light attenuation, % 36.4
- Curve of the light attenuation over 30 minutes, %.min⁻¹ 119.5

Conclusion:

MARMOLEUM CLICK floor covering tiles fulfilled the requirements of EN ISO 9239-1:1998, **Class: C_{FL}**. Additional classification: **s1**.

Classification criteria:

- Critical flux¹⁰ ≥ 4.5 kW.m².
- Smoke production¹¹, Smoke ≤ 750 %. Min⁻¹.

Remarks:

1. Cleaning procedures to examine the durability of the fire performance shall be in accordance with the procedures specified in the product standards for floor coverings.
2. EN ISO 11925-2, (Fs ≤ 150 mm within 20 s.) and EN ISO 9239-1, (critical flux ≥ 4.5 kW.m²) Class: C_{FL}. Additional classification: s1 is equal to the German classification DIN 4102, teil 14: B1.
3. MARMOLEUM CLICK floor covering tiles in accordance with DIN 4102: DIN 4102: B1.

⁶ Critical heat flux at extinguishment: Incident heat flux (kW/m²) at the surface of a specimen at the point where the flame ceases to advance and may subsequently go out.

⁷ Existence of flame on or over the surface of the specimen for periods of less than 1 s.

⁸ Existence of flame on or over the surface of the specimen for periods of between 1 s. and 4 s.

⁹ Existence of flame on or over the surface of the specimen for periods of more than 4 s.

¹⁰ Test duration 30 minutes.

¹¹ Smoke production: s1 = Smoke ≤ 750 %. Min⁻¹; s2 = not s1.



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Appendix.



A tested specimen.