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Test report No. 2017-1965-1

issued 06.11.2017

For the detection of fire performance of construction products, determination of the heat of combustion according to DIN EN ISO 1716 and noncombustible test according to DIN EN ISO 1182

Customer: TRIPLE LITE INCORPORATED
2F, NO. 78 FENLIAO RD. SECTION 1
LINKOU DISTRICT, NEW TAIPEI CITY
TAIWAN, R.O.C.

Date of test: 29.09.2017
Date of sampling: *no official sampling of the specimen by a representative of Exova Warringtonfire, Frankfurt*
Datr of arrival: 05.10.2017
Date of tests: 02.11.2017

Description / designation of the test object

TRILITE RMS – REINFORCE MAGNESIUM SILICATE BOARD
(Magnesium Oxide- Sulphate Based)

Description of the relevant test procedure

DIN EN ISO 1182 (2010-10)

DIN EN ISO 1716 (2010-11)

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This classification report is a translation of the German version 2017-1965 (issued 06.11.2017). In case of doubt only the German Version is valid.

This Test reportclassification report contains 8 pages and 1 annex

1. Description of the sample material

1.1 Details of the customer:

Product name: TRILITE RMS – REINFORCE MAGNESIUM SILICATE BOARD
(Magnesium Oxide- Sulphate Based)

Product description TRILITE RMS – REINFORCE MAGNESIUM SILICATE BOARD
(Magnesium Oxide- Sulphate Based) with off-white color appearance is
produce from a core mixture of inert mineral ore based raw materials
mainly: MgO powder, $MgSO_4$ powder, perlite, wood fibre, other fillers
and embedded with layers of glassfibre mesh and non-woven cloth
on both sides.

Boards standard thickness produce are 3 mm to 20 mm

Boards Density: 1100 kg/m³ (tolerance \pm 12 %)

The material is formed by 5 layers, a surface layer (non-woven fabric),
then the glassfibre mesh (those two would be the none substantial
components), then the core raw material mixture (substantial
component) and on the other face the same described finish (surface
layer and glassfibre mesh)

Intended end use: TRILITE RMS boards are intended for use in internal and
external construction applications, such as internal and external
wall, ceiling, fascia, pre-fabricated homes, decorative substrate,
door productions, backer board, flooring, partitions, linings,
eaves, soffits, furniture's, countertops, fire rated applications

1.2 At the specimen preparation by Exova Warringtonfire, Frankfurt determined values:

Non combustible test according to DIN EN ISO 1182:

Sample of TRILITE RMS – REINFORCE MAGNESIUM SILICATE BOARD

- Colour: white
- Thickness: 10-20 mm
- Surface weight: i.a.. 19,93 kg/m² (in 20mm material thickness)
- Density: i.a. 996,5 kg/m³

The samples are air-conditioned according to DIN 13823 up to constant weight with standard air

The samples of the furnace test were then dried at 60 °c for 24 hours in the drying cabinet and stored in the Desiccator until testing.

The samples consisted of 2 discs each with a thickness of approx. 20 mm and a disc with a thickness of 10 mm, with a diameter of approx. 45 mm.

Calorific value according to DIN EN ISO 1716:

From the customer delivered material specimen of glasfiber mesh cloth, non woven cloth and magnesium core mixture.

Material	Colour	Thickness [mm]	Surface weight [kg/m ²]
glasfiber mesh cloth	weiß	0,28	0,151
non woven cloth	weiß	0,26	0,058
magnesium core mixture	weiß	10	19,721

The samples of the calorific value determination made after the air conditioning by crushing.

2. Test results

2.1 Test results:

Determination of the heat of combustion according to DIN EN ISO 1716 (Upper heat value according to DIN 51900)

Specimen clima storing: according to EN 13238
 Test procedure: crucible procedure
 Burn aid (VHM): parafin oil high-viscosity , Ph Eur,BP, USP, Fa. Merck
 Gross heat of combustion VHM: 46,0656 MJ/kg
 Measuring instrument : Parr 1266 / Isoperibole bomb-calorimeter
 Water equivalent E des calorimeters: 10,0622 kJ/K = 0,0100622 MJ/K

2.1.1 Glasfiber Mesh cloth: 0,151kg/m²

specimen no.	weighted-in quantity specimen g	weighted-in quantity VHM * g	gross heat of combustion	
			MJ/kg	MJ/m ²
1	0,4000	0,4032	-0,7346	-0,1109
2	0,4041	0,4030	-1,3240	-01999
3	0,4149	0,4077	-0,7600	-0,1148
Result/average:			0,0000	0,0000

Remarks: none

2.1.2 Non woven cloth: 0,058 kg/m²:

specimen no.	weighted-in quantity specimen g	weighted-in quantity VHM * g	gross heat of combustion	
			MJ/kg	MJ/m ²
1	0,5020	0,5101	4,9776	0,2887
2	0,5062	0,5169	4,5528	0,2641
3	0,5009	0,5096	3,6493	0,2117
Result/average:			4,3932	0,2548

Remarks: none

2.1 Determination of the heat of combustion according to DIN EN ISO 1716

2.1.3 Magnesium core mixture:

specimen no..	weighted-in quantity specimen [g]	weighted-in quantity VHM [g]	gross heat of combustion [MJ / kg]
1	0,5094	0,5040	-0,8547
2	0,5021	0,5024	-1,7578
3	0,5040	0,5048	-0,5775
Result/average:			0,0000

Remarks: none

2.2 Test results:

**Determination of the total heat of combustion according to DIN EN ISO 1716
(Upper heat value according to DIN 51900)**

Component	Material	Surface weight [kg/m²]	share of the product [%]	gross heat of combustion [MJ/kg]
1	glasfiber mesh cloth	0,151	0,76	0,0000
2	non woven cloth	0,058	0,29	0,0127
3	magnesium core mixture	19,721	98,95	0,0000
	Total product	19,93	100	0,0127

Remarks: none

2.3 Non- combustibility test according to DIN EN ISO 1182

Specimen-No.		1	2	3	4	5	average
Test duration	[min]	40	40	40	45	40	--
Initial mass	[g]	79,67	79,39	78,48	79,99	79,77	79,46
Final mass	[g]	48,20	48,12	48,01	48,42	48,20	48,19
Mass loss	[g]	31,47	31,27	30,47	31,57	31,57	31,27
Mass loss	[%]	39,5	39,4	38,8	39,5	39,6	39,36
T_{max}	[°C]	773,4	772,4	776,2	784,6	774,3	--
T_{f End}	[°C]	770,6	770,8	775,5	783,8	771,9	--
T_{Smax}		782,1	779,8	787,0	793,3	784,2	--
T_{Sf}		779,7	778,5	785,9	792,8	782,0	--
ΔT_s	[°C]	2,4	1,3	1,1	0,5	2,2	1,5
ΔT	[°C]	2,8	1,6	0,7	0,8	2,4	1,66
Sustained flaming	[s]	0	0	0	0	0	0
Total time of sustained	[s]	0	0	0	0	0	0

Remarks: none

Furnace calibration, see annex 1

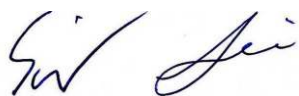
T_{max} = max. furnace temperature
T_{f End} = final furnace temperature
T_{Smax} = max. specimen surface temperature
T_{Sf} = final specimen surface temperature
ΔT (T_{max} - T_f) = furnace temperature rise
ΔT_s (T_{Smax} - T_{Sf}) = specimen surface temperature rise

3. Special comment

- 3.1** The fire test result is only valid for the in chapter one described material. In the composition with other materials (for example coatings, deposits) the burning behaviour could be influenced unfavourable.
The burning behaviour in composition with other materials has to be tested separately.
- 3.2** The test results refer only on the behaviour of the specimen under the special conditions of the test. They are under circumstances not the only appraisal criterion for the potential burning behaviour of the building product in the use of application.
- 3.3** The tests were accomplished according to the standards DIN EN ISO 1182 and DIN EN ISO 1716.
- 3.4** This test report is only used for issuing a classification report according to DIN EN 13501-1.

This test report replaces the report 2017-1965 issued 06.11.2017 (date of signature) which is invalid from now on.

Frankfurt, the 16.11.2017



P. Scheinkönig / A. Garcia
Tester in charge

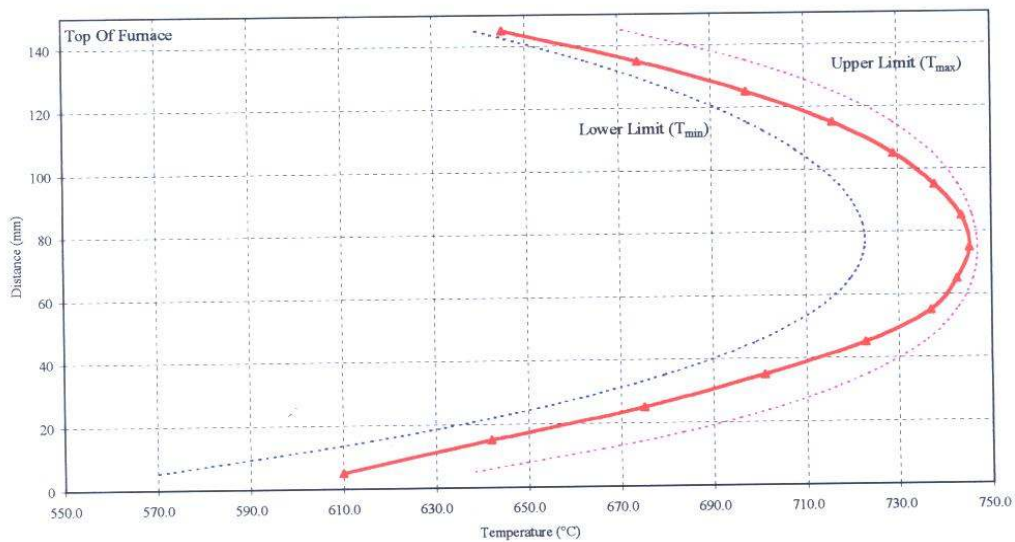


i.V. M. Ronzheimer
Dipl.-Ing. T. Zachäus
Head of the test laboratory

2. Furnace Centreline Temperature

Furnace Height (mm)	T _{min} (°C)	T _{max} (°C)	Measured (°C)
145	639.4	671.0	645.0
135	663.5	697.5	674.3
125	682.8	716.1	697.5
115	697.9	728.9	716.0
105	709.3	737.4	729.0
95	717.3	742.8	737.8
85	721.8	745.9	743.5
75	722.7	747.0	745.3
65	719.6	746.0	742.5
55	711.9	742.5	736.8
45	698.8	735.5	722.8
35	679.3	723.5	701.0
25	652.2	705.0	675.0
15	616.2	677.5	642.0
5	569.5	638.6	610.0

ISO 1182: Raczek Furnace 009 Profile



The furnace centreline temperature complies with the requirements of prEN ISO 1182.