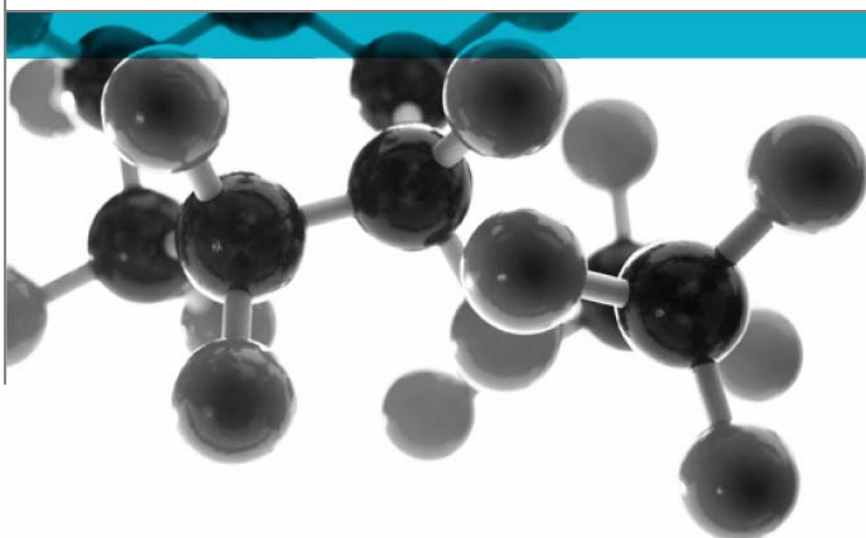


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DD CEN/TS 1187: 2012 Test 4



Incorporating Amendment No.1 – Test 4 – Two stage test method incorporating burning brands, wind and supplementary radiant heat

A Report To: Coilcolor Limited

Document Reference: 332921

Date: 25th October 2013

Issue No.: 1

Page 1

Testing
Advising
Assuring



Executive Summary

Objective To determine the fire performance of the following product when tested in accordance with DD CEN/TS 1187 Test 4.

Generic Description	Product reference	Thickness	Weight per unit area or density
Plastisol coated steel substrate	"PLASTICERAM Sun"	1.05mm *	7.12kg/m ² *
Individual components used to manufacture composite:			
Plastisol coating	"CC73-7223"	200 microns	1.24
Primer	"330/0107"	7 microns	1.14
Steel substrate	"G275 HDG S280"	0.7mm	275g/m ²
Please see page 5 of this test report for the full description of the product tested			
*Determined by Exova Warringtonfire			


Test Sponsor Coilcolor Limited, Whitehead Estate, Docks Way, Newport, NP20 2NW.


Test Results

	Specimen number	Time to fire penetration (min:sec)	Duration of flaming after withdrawal of test flame (min:sec)	Maximum flame spread distance (mm)
Stage 1	1	Did not penetrate	Nil	Zero
Stage 2	2	Did not penetrate	N/A	N/A
	3	Did not penetrate	N/A	N/A
	4	Did not penetrate	N/A	N/A

Date of Test: 11th October 2013

Signatories


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* For and on behalf of **Exova Warringtonfire**.

Report Issued: 25th October 2013

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Test Details

Purpose of test

To determine the performance of specimens of a roof construction when they are subjected to the conditions of the test specified in DD CEN/TS 1187:2012 Incorporating Amendment No.1 - Test 4 – Two stage test method incorporating burning brands, wind and supplementary radiant heat. This report should be read in conjunction with that European Standard.

Scope of test

A two stage test method incorporating burning brands, wind and supplementary radiant heat which is designed to assess:

- a) the capacity of the roof construction to withstand fire penetration
- b) the capacity of the roof construction to produce flaming droplets or debris which fall from the underside or from the exposed surface

The test specimens are tested at an angle of 45° to the horizontal (sloping position) unless the roof construction is used at an angle of 10° or less to the horizontal, in which case the specimens are tested horizontally (flat position).

Fire test study group

Certain aspects of some fire test specifications are open to different interpretations. The Fire Test Study Group and EGOLF have identified a number of such areas and have agreed Resolutions which define common agreement of interpretations between fire test laboratories which are members of the Groups. Where such Resolutions are applicable to this test they have been followed.

Instruction to test

The test was conducted on the 11th October 2013 at the request of BASF Coatings Limited, the sponsor of the test.

Provision of test specimens

The specimens were supplied by the sponsor of the test. **Exova Warringtonfire** was not involved in any selection or sampling procedure.

Conditioning of specimens

The specimens were received on the 5th September 2013. Prior to testing the specimens were conditioned to equilibrium in an atmosphere having a temperature of 23 ±2°C and a relative humidity of 45 to 55%.

Orientation of specimens

The specimens were tested in the sloping position.

Description of Test Specimens

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

General description		Plastisol coated steel substrate
Name of manufacturer of composite		Coilcolor Limited
Thickness of composite		1.05mm (determined by Exova Warringtonfire)
Weight per unit area of composite		7.12kg/m ² (determined by Exova Warringtonfire)
Product reference of overall coating		"PLASTICERAM Sun"
Overall thickness of coating		185 – 210 microns
Application rate of coating		760m ² /kg/μ
Plastisol coating	Generic type	Plastisol
	Product reference	"CC73-7223"
	Name of manufacturer	BASF Coatings Limited
	Colour reference	"Goosewing Grey"
	Number of coats	One
	Application thickness per coat	200 microns
	Specific gravity	1.24
	Application method	Roller
	Trade name of flame retardant	"Barium Metaborate"
	Generic type of flame retardant	Barium metaborate
	Amount of flame retardant	1%
Curing process per coat		Conventional gas oven fusion
Primer	Generic type	Acrylic chrome containing plastisol primer
	Product reference	"330/0107"
	Name of manufacturer	Beckers
	Number of coats	One
	Application thickness per coat	7 microns
	Specific gravity	1.14
	Application method	Reverse roller
	Flame retardant details	See Note 1 below
Curing process per coat		Conventional gas oven fusion
Substrate	Generic type	Galvanised steel
	Product reference	"G275 HDG S280"
	Detailed description / composition details	Hot-dipped galvanised, 275 g/m ² on cold rolled steel base. Tensile S280 in coil form
	Name of manufacturer	TATA
	Thickness	0.7mm
	Weight per unit area	275g/m ²
	Flame retardant details	This component is inherently flame retardant
Brief description of manufacturing process		Reverse roller coated in coil form

Note 1 - The sponsor of the test has confirmed that no flame retardant additives were utilised in the production of the component.

Test Results

Results of test

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

The test results relate only to the specimens of the roof construction which were tested. Small differences in the composition or thickness of the construction may significantly affect the results of the test and may therefore invalidate the test results. Care should be taken to ensure that any construction which is supplied or used is fully represented by the specimens which were tested.

The results of the tests on each of the specimens are given in Table 1.

Validity

The specification and interpretation of fire test methods is 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.

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TABLE 1

PRELIMINARY IGNITION TEST WITH BURNING BRANDS (STAGE 1)	Specimen No:
Room temperature at start of test (°C)	26
Time to fire penetration (if applicable) (min:sec)	Did not penetrate
Duration of flaming after withdrawal of the test flame (if applicable) (min:sec)	Nil
Maximum flame spread distance (if applicable) (mm)	Nil

PENETRATION TEST WITH BURNING BRANDS, WIND AND SUPPLEMENTARY RADIANT HEAT (STAGE 2)	Specimen No:		
	2	3	4
Room temperature at start of test (°C)	27	28	28
Time to fire penetration (if applicable) (min:sec)	Did not penetrate	Did not penetrate	Did not penetrate
Additional observations:			
In the case of all three specimens, flash flaming occurred on the surface of the specimen during the first minute of the test.			
In the case of all three specimens, no flaming penetration occurred.			

Table 2 Classes of External Fire Performance for Roofs/Roof Coverings In Accordance With 13501-5: 2005

Test Method	Class	Classification criteria
DD CEN/TS 1187: 2012, Test 1	B _{Roof} (t1)	All of the following conditions shall be satisfied for any one test: <ul style="list-style-type: none"> - external and internal fire spread upwards <0.700m; - external and internal fire spread downwards<0.600m; - maximum burned length external and internal<0.800m; - no burning material (droplets or debris)falling from exposed side; - no burning/glowing particles penetrating the roof construction; - no single through opening>25mm² - sum of all through openings,4500mm² - lateral fire spread does not reach the edges of the measuring zone; - no internal glowing combustion; - maximum radius of fire spread on 'horizontal' roofs, external and internal <0.200m
	F _{Roof} (t1)	No performance determined
DD CEN/TS 1187: 2012, Test 2	B _{Roof} (t2)	For both test series at 2m/s and 4m/s wind speed: <ul style="list-style-type: none"> - mean damaged length of the roof covering and substrate ≤ 0.550m; - max damaged length of the roof covering and substrate ≤ 0.800m.
	F _{Roof} (t2)	No performance determined
DD CEN/TS 1187: 2012, Test 3	B _{Roof} (t3)	T _E ≥ 30 min and T _p ≥ 30 min
	C _{Roof} (t3)	T _E ≥ 10 min and T _p ≥ 15 min
	D _{Roof} (t3)	T _p > 5 min
	F _{Roof} (t3)	No performance determined
DD CEN/TS 1187: 2012, Test 4	B _{Roof} (t4)	<ul style="list-style-type: none"> - No penetration of roof system within 1 h - In preliminary test after withdrawal of the test flame, specimens burn for <5 min - In preliminary test, flame spread <0.38m across region of burning.
	C _{Roof} (t4)	<ul style="list-style-type: none"> - No penetration of roof system within 30 min - In preliminary test after withdrawal of the test flame, specimens burn for <5 min - In preliminary test, flame spread <0.38m across region of burning.
	D _{Roof} (t4)	<ul style="list-style-type: none"> - Roof system is penetrated within 30 min but is not penetrated in the preliminary test. - In preliminary test after withdrawal of the test flame, specimens burn for <5 min - In preliminary test, flame spread <0.38m across region of burning.
	E _{Roof} (t4)	<ul style="list-style-type: none"> - Roof system is penetrated within 30 min but is not penetrated in the preliminary test. - Flame spread is not controlled
	F _{Roof} (t4)	No performance determined

Revision History

Issue No :	Issue Date:
Revised By:	Approved By:
Reason for Revision:	

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