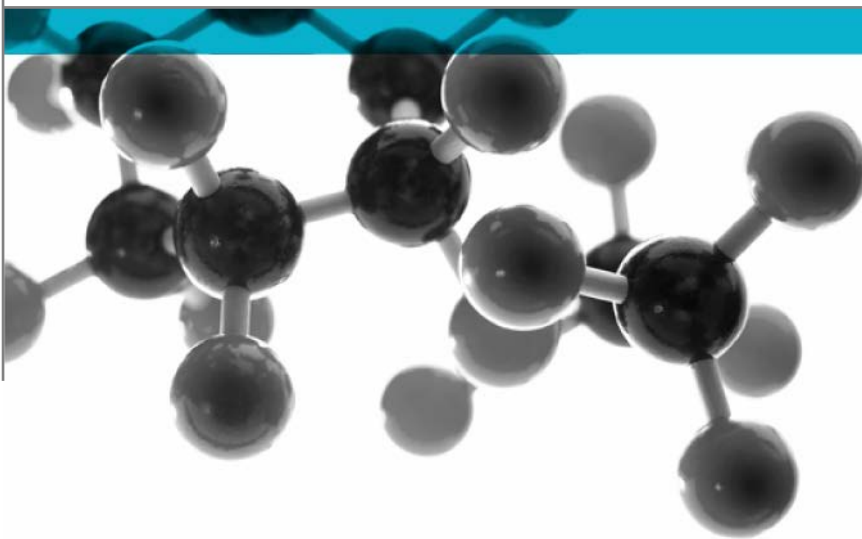


EN 45545-2: 2013 + A1:2015



Summary Test Report – Requirement Table 5 (R1 & R6)

Test Method References “T02” (ISO 5658-2:2006+A1:2011. Spread of Flame - Lateral Spread of flame test on Building and Transport Products in Vertical Configuration), “T03.01” (ISO 5660-1: 2015+A1: 2019; Heat release rate (Cone Calorimeter Method) & Smoke Production Rate (Dynamic Measurement), “T10.01” / “T10.02” / “T10.04” (ISO 5659-2: 2017; Plastics – Smoke Generation. Part 2 Determination of Optical Density by a Single Chamber Method) and “T11.01” (Gas Analysis in the Smoke Box EN ISO 5659-2, using FTIR Technique)

A Report To: IGP Pulvertechnik AG

Document Reference: 503851

Date: 22nd June 2021

Issue No.: 1

Page 1

Executive Summary

Objective

To assess the results of tests performed in accordance with methods T02, T03.01, T10.01 / T10.02 / T10.04 and T11.01 as defined in EN 45545-2: 2013 + A1:2015 at an irradiance level of 50kW/m² without a pilot flame, on specimens of a product and to provide an opinion of compliance with the requirements for R1 & R6, as defined in EN 45545-2: 2013 + A1:2015.

Generic Description	Product reference	Thickness	Weight per unit area or specific gravity
Polyester powder coating on aluminium	"IGP HWF Classic"	1.12mm*	2.92kg/m ² *
Individual components used to manufacture composite:			
Polyester coating	"59 Series"	0.06-0.08mm	1.60
Aluminium	"Aluminium"	0.7mm	Unable to provide
* determined by Warringtonfire			
Please see page 5 of this test report for the full description of the product tested			

Test Sponsor


IGP Pulvertechnik AG, Ringstrasse 30, 9500 Wil, Switzerland


Opinion

We consider the results of the tests confirmed in reports referenced 503848, 503849 & 503850 to the test methods detailed above demonstrate that the product, as tested, complies with the requirements of R1 (detailed in Table 5 of EN 45545-2: 2013 + A1:2015) for a HL1, HL2 and HL3 Hazard Level Classification.

We consider the results of the tests confirmed in reports referenced 503849 & 503850 to the test methods detailed above demonstrate that the product, as tested, complies with the requirements of R6 (detailed in Table 5 of EN 45545-2: 2013 + A1:2015) for a HL1, HL2 and HL3 Hazard Level Classification.

Signatories


Responsible Officer K. Deluce * Testing Officer


Authorised J. Lucas-Cox * Operations Manager

* For and on behalf of [Warringtonfire](#).

Report Issued: 22nd June 2021

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Test Details

Terms Of Reference

To assess the results of tests performed in accordance with methods T02, T03.01, T10.01 / T10.02 / T10.04 and T11.01 as defined in EN 45545-2: 2013 + A1:2015 at an irradiance level of 50kW/m² without a pilot flame, on specimens of a product and to provide an opinion of compliance with the requirements for R1 & R6, as defined in EN 45545-2: 2013 + A1:2015.

Note – Method ‘T02’ requires testing in accordance with ISO 5658-2:2006. Warringtonfire conduct the test in accordance with the latest version of this standard (ISO 5658-2:2006 + A1:2011).

The only difference is the calculation used to determine the Qsb value. This is not required to classify in accordance with EN 45545-2:2015, and will therefore have no affect on the overall classification.

Introduction

Specimens of a product have been tested in accordance with the test methods “T02” (ISO 5658-2:2006+A1:2011. Spread of Flame - Lateral Spread of flame test on Building and Transport Products in Vertical Configuration), “T03.01” (ISO 5660-1: 2015+A1: 2019; Heat release rate (Cone Calorimeter Method) & Smoke Production Rate (Dynamic Measurement), “T10.01” / “T10.02” / “T10.04” (ISO 5659-2: 2017; Plastics – Smoke Generation. Part 2 Determination of Optical Density by a Single Chamber Method) and “T11.01” (Gas Analysis in the Smoke Box EN ISO 5659-2, using FTIR Technique) as specified in EN 45545-2:2013 + A1:2015 “Requirements for Fire Behaviour of Materials and Components”. The results of the tests are fully reported in the Warringtonfire test reports No's. 503848, 503849 & 503850.

This summary report has been prepared at the request of the sponsor and relates the results of the tests to the requirements for R1 & R6, as defined in Table 5 of EN 45545-2: 2013 + A1:2015.

This summary should be read in conjunction with, and not accepted as a substitute for the Warringtonfire test reports No's. 503848, 503849 & 503850. Those test reports may include additional information which may be relevant to the assessment of the potential fire hazard of the product. Where this assessment covers a system used on European rolling stock covered by the Technical Specification for Interoperability (LOC&PAS TSI (Commission Regulation (EU) No. 1302/2014)) all tests must have been conducted within the last 5 years or the test reports must have been reviewed within the last five years.

Face subjected to tests

The specimens were mounted in the test positions such that the coated face was exposed to the heating conditions of the tests.

Results of test

The following results were obtained for the specimens, which were tested.

“T02” ISO 5658-2:2006+A1:2011

Critical flux at extinguishment (CFE) = 29.07 kW/m²
Flaming droplets with sustained flaming (>10s) = No

“T03.01” ISO 5660-1: 2015+A1: 2019

MARHE = 33.8 kW/m²

“T10.01” / “T10.02” / T10.04 ISO 5659-2: 2017

Ds (4) = 111
VOF4 = 134
Ds max. = 145

“T11.01” Gas Analysis in the Smoke Box ISO, Using FTIR Technique

CIT_{4mins} = 0.01
CIT_{8mins} = 0.01

Applicability of test results

The test results relate only to the behaviour of the test specimens of the product under the particular conditions of the test, they are not intended to be the sole criterion for assessing the potential 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 will therefore invalidate the test results. It is the responsibility of the supplier of the product to ensure that the product which is supplied is identical with the specimens which were tested.

Description of Test Specimens

The description of the specimens given below has been prepared from information provided by the sponsor of the test. This information has not been independently verified by Warringtonfire. All values quoted are nominal, unless tolerances are given.

General description		Polyester powder coating on aluminium
Product reference of coating system		"IGP HWF Classic"
Name of manufacturer		IGP Pulvertechnik AG
Overall thickness		1.12mm (determined by Warringtonfire)
Overall weight per unit area		2.92kg/m ² (determined by Warringtonfire)
Final coating product (Test face)	Generic type	Polyester coating
	Product reference	"59 Series"
	Name of manufacturer	IGP Pulvertechnik AG
	Colour reference	"A70370"
	Colour	Grey
	Number of coats	One
	Thickness per coat	60-80 microns
	Specific gravity	1.60
	Application method	Spray
	Flame retardant details	See Note 1 Below
	Curing process	See Note 1 Below
Substrate	Generic type	Aluminium
	Product reference	"Aluminium"
	Name of manufacturer	See Note 1 Below
	Thickness	0.7mm
	Weight per unit area / density	See Note 1 Below
	Flame retardant details	The substrate is inherently flame retardant
Brief description of manufacturing process of coatings		See Note 1 Below

Note 1: The sponsor was unable to provide this information.

Classification

Opinion

We consider the results of the tests confirmed in reports referenced 503848, 503849 & 503850 to the test methods detailed above demonstrate that the product, as tested, complies with the requirements of R1 (detailed in Table 5 of EN 45545-2: 2013 + A1:2015) for a HL1, HL2 and HL3 Hazard Level Classification.

We consider the results of the tests confirmed in reports referenced 503849 & 503850 to the test methods detailed above demonstrate that the product, as tested, complies with the requirements of R6 (detailed in Table 5 of EN 45545-2: 2013 + A1:2015) for a HL1, HL2 and HL3 Hazard Level Classification.

Validity of opinion

This opinion is based on the requirements of EN 45545-2: 2013 + A1:2015 at the date of this report. If EN 45545-2 is revised or amended in any way subsequent to that date, care must be taken to ensure that this opinion is not invalidated by those revisions or amendments.

The opinion has been formulated on the assumption that the specimens are representative of the product in practice. Warringtonfire was not involved in any sampling or selection procedures which would confirm this or in any audit testing which would provide confidence in the consistency of the product in the tests.

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Revision History

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

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