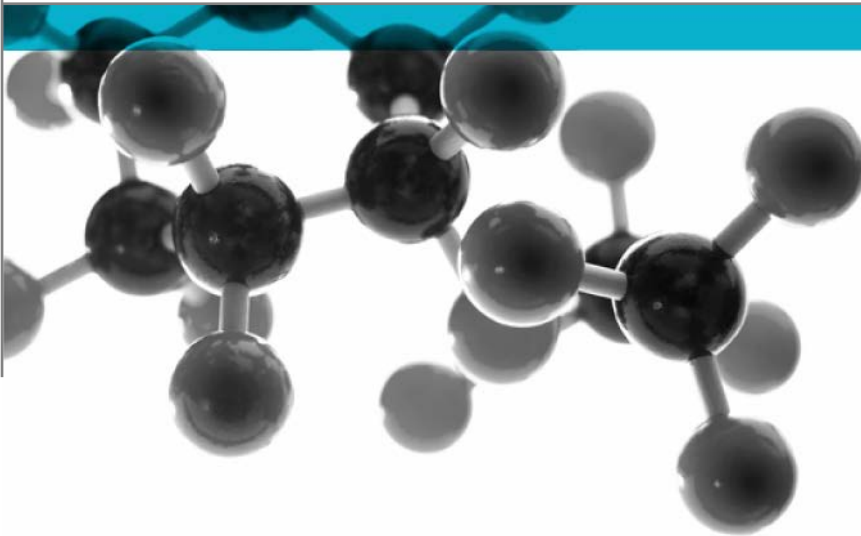


# ISO 5658-2:2006+A1:2011



## Reaction to Fire Tests – Spread of Flame - Lateral Spread of flame test on Building and Transport Products in Vertical Configuration

A Report To: IGP Pulvertechnik AG

Document Reference: 503848

Date: 24<sup>th</sup> May 2021

Issue No.: 1

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## Executive Summary

**Objective** To determine the performance of the following product when tested in accordance with ISO 5658-2:2006+A1:2011

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 <sup>2</sup> *
<b>Individual components used to manufacture composite:</b>			
Polyester coating	"59 Series"	0.06-0.08mm	1.60
Aluminium	"Aluminium"	0.7mm	Unable to provide
* determined by <a href="#">Warringtonfire</a>			
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



### Summary of Test Results:

Parameter	Units	Specimen Number			Average
		1	2	3	
Heat for Sustained Burning (Q <sub>sb</sub> )	MJm <sup>-2</sup>	2.53	2.57	2.63	2.58
Critical flux at Extinguishment (CFE)	kW/m <sup>2</sup> (±4%)	30.90	30.90	25.40	29.07
Flaming droplets with sustained flaming (>10s)	N/A	No	No	No	N/A

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

**Date of Test** 12<sup>th</sup> May 2021

## Signatories

	
Responsible Officer E. Anderson * Testing Officer	Authorised T. Kinder * Senior Technical Officer

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

Report Issued: 24<sup>th</sup> May 2021

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Author:	E. Anderson	Issue Date:	24 <sup>th</sup> May 2021
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## Test Details

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### Introduction

A test has been conducted in accordance with the procedure specified in ISO 5658-2:2006+A1:2011 Reaction to Fire Tests – Spread of Flame – Part 2: Lateral Spread on Building and Transport Products in Vertical Configuration on the specimens detailed in this report. The test was conducted using an impinging propane flame. It is advised that this report is read in conjunction with the aforementioned document.

### Scope of test

ISO 5658-2:2006+A1:2011 specifies a method of test for measuring the lateral spread of flame along the surface of a specimen of a product orientated in the vertical position. It provides data suitable for comparing the performance of essentially flat materials, composites or assemblies, which are used primarily as the exposed surfaces of walls.

### Instruction to test

The test was conducted on the 12<sup>th</sup> May 2021 at the request of IGP Pulvertechnik AG, the sponsor of the test.

### Conditioning of specimens

The specimens were received on the 4<sup>th</sup> May 2021.

Prior to test the specimens were conditioned to constant mass at a temperature of  $23 \pm 2^\circ\text{C}$  and a relative humidity of  $50 \pm 5\%$ .

### Exposed face

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

### Condition of specimen edges

Coating applied to test face, including the edges.

### Photograph of specimen



### Substrate

The coatings were applied to a 0.7mm thick aluminium substrate.

### Provision of test specimens

The specimens were supplied by the sponsor of the test. Warringtonfire was not involved in any selection or sampling procedure. The results stated in this report apply to the sample as received.

## 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 <sup>2</sup> (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	<b>See Note 1 Below</b>
	Curing process	<b>See Note 1 Below</b>
Substrate	Generic type	Aluminium
	Product reference	"Aluminium"
	Name of manufacturer	<b>See Note 1 Below</b>
	Thickness	0.7mm
	Weight per unit area / density	<b>See Note 1 Below</b>
Flame retardant details		The substrate is inherently flame retardant
Brief description of manufacturing process of coatings		<b>See Note 1 Below</b>

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

## Test Results

### Applicability of test results

The test results relate only to the behaviour of the specimens of the product under the particular conditions of the 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 manufactured product in the form in which they are 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.

The test results relating to the spread of flame parameters for the individual specimens together with observations made during the test and comments on any difficulties encountered during the test are given in Table 1.

### Test results

A total of three specimens were tested and the following results were obtained

Parameter	Units	Specimen Number			Average
		1	2	3	
Heat for Sustained Burning ( $Q_{sb}$ )	MJm <sup>-2</sup>	2.53	2.57	2.63	2.58
Critical flux at Extinguishment (CFE)	kW/m <sup>2</sup> (±4%)	30.90	30.90	25.40	29.07
Flaming droplets with sustained flaming (>10s)	N/A	No	No	No	N/A

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k=2$ , providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

### Validity

This report may only be reproduced in full. Extracts or abridgements shall not be published without permission of [Warringtonfire](#).

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. Where this report is used to confirm compliance for use on European rolling stock as per 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. 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.

## Appendix 1 – Observations during test

Specimen No:	1		Heat for Sustained Burning (MJ/m <sup>2</sup> )	2		Heat for Sustained Burning (MJ/m <sup>2</sup> )	3		Heat for Sustained Burning (MJ/m <sup>2</sup> )
Time to Ignition: (min:sec)	00:48			00:40			00:34		
Time to Travel	min	sec		min	sec		min	sec	
50mm	00	49	2.47	00	46	2.32	00	37	1.87
100mm	00	51	2.52	00	49	2.43	00	40	1.98
150mm	00	51	2.40	00	53	2.50	00	45	2.12
200mm	00	52	2.24	01	01	2.63	01	03	2.72
250mm	01	18	2.95	01	08	2.57	01	08	2.57
300mm	02	01	3.74	01	12	2.22	01	41	3.12
350mm									
400mm									
450 mm									
500mm									
550mm									
600mm									
650mm									
700mm									
750mm									
800mm									
Duration of Test (min:sec)	12:47			12:38			12:55		
Final Travel (mm)	300			300			340		
C.F.E. (kw/m <sup>2</sup> )	30.90			30.90			25.40		

### OBSERVATIONS:

None.

## Revision History

Issue No:	Re - Issue Date:
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