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External fire exposure to roofs

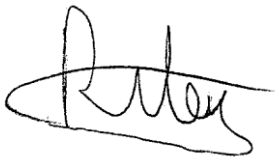
test report

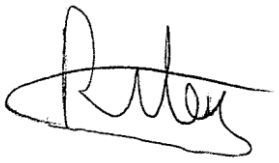
Issuing laboratory: Warringtonfire Testing and Certification Limited

Test standard:	CEN/TS 1187: 2012: Test 4
Test sponsor(s):	Liquasil Ltd
Product(s):	PR2
Report number:	548922
Version:	2

0249

Quality management

Version	Date	Summary of amendments including reasons		
1	2 April 2025	Description	Initial issue	
			Prepared by	Authorised by
		Name	Chris Riley	Chris Jacques
		Signature		
			*Signed for and on behalf of Warringtonfire Testing and Certification Limited	

Version	Date	Summary of amendments including reasons		
2	17 April 2025	Description	**This document replaces Issue 1 dated 2 April 2025 which is withdrawn. Report updated and re-issued to reflect updates made to the product description and to Table 5.**	
			Prepared by	Authorised by
		Name	Chris Riley	Chris Jacques
		Signature		
			*Signed for and on behalf of Warringtonfire Testing and Certification Limited	

Contents

1. Introduction

This report documents the findings of the external fire exposure to roofs test of ‘‘PR2’’ in accordance with CEN/TS 1187: 2012: Test 4.

Warringtonfire Testing and Certification Limited (Warringtonfire) performed the test on 06 January 2025 at the request of the sponsor listed in Table 1.

Table 1 Test sponsor details

Entity	Address
Test sponsor	
Liquasil Ltd	Unit 8, Radway Industrial Estate, Radway Road, Solihull, B90 4NR, United Kingdom

2. Test specimens

The description of the test specimens is detailed in Table 2. Prior to conducting the test, Warringtonfire verified the conformity of the test specimens with the description of the test specimens provided by the sponsor. This verification consisted of the following:

1. Where possible, the construction of the test specimens was checked to ensure that it matched the description of the test specimens provided by the sponsor.
2. Where possible, the thickness, weight per unit area and density measurements of the test specimens were checked to ensure that they matched the description of the test specimens provided by the sponsor. Warringtonfire ensured that the measurements were within the manufacturing tolerances stated by the sponsor or within a tolerance of ±10% in the absence of a manufacturing tolerance.

Any areas of discrepancy identified by Warringtonfire during the verification process were resolved with the sponsor prior to starting the test.

Unless otherwise specified:

- The information including measurements was provided by the test sponsor.
- All measurements taken by Warringtonfire or the sub-contract laboratory as part of the verification process are clearly identified.
- Where a measurement is listed without a verification measurement by Warringtonfire, this indicates that it was not possible for that measurement to be verified and the information supplied by the sponsor has to be relied on.

Table 2 Test specimen description

Item		Detail
General description		Silicone coating tested applied to a steel deck
Product reference of overall composite		"PR2"
Name of manufacturer		Liquasil Ltd
Overall thickness		1.11mm (determined by Warringtonfire)
Overall weight per unit area		5.71kg/m^2 (determined by Warringtonfire)
Coating (Test face)	Generic type	Silicone polymer coating
	Product reference	"PR2"
	Name of manufacturer	Liquasil Ltd
	Colour	Grey
	Number of coats	1
	Application thickness	250-300 microns (dry film thickness)
	Application rate	3m^2/litre
	Specific gravity	1.1
	Density	0.98g/cm^3 at 20ºC
	Application method	Brush and roller
	Curing process	Moisture cured over 7 days
	Flame retardant details	See Note 1 below
Steel	Generic type	Steel
	Product reference	See Note 2 below
	Name of manufacturer/supplier	Worcestershire Steels Ltd
	Thickness	0.7mm
	Weight per unit area	See Note 2 below
	Flame retardant details	See Note 1 below
Detailed description of joints		No joints present in any specimens
Detailed description of mechanical fixings		None present
Brief description of manufacturing process		See Note 3 below

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

Note 2: The sponsor was unable to provide this information.

Note 3: The sponsor was unwilling to provide this information.

3. Test procedure

Table 3 details the test procedure for this external fire exposure to roofs test.

Table 3 Test procedure

Item	Detail
Test standard	The test was performed in accordance with CEN/TS 1187: 2012: Test 4.
Supplementary standard	EN 13501-5: 2016
Deviations from the test standard	None
Product standard and/or EAD	The client did not provide an instruction to work in accordance with a product standard.
EGOLF agreements and/or recommendations	None
Pre-test conditioning	Test specimens received on 10 December 2024.
	Before testing, the test specimens were conditioned in accordance with the requirements of EN 13238:2010 at a temperature of 23 ± 2 °C and a relative humidity of 50 ± 5% for a minimum period of 48 hours, until constant mass was achieved. The time between leaving the conditioning atmosphere and testing did not exceed 4 hours.
Sampling / test specimen selection	The specimens were supplied by the sponsor of the test. Warringtonfire was not involved in any selection or sampling procedure.
Composite fabricated by	The test sponsor without the supervision of Warringtonfire due to the test specimen being built at test sponsor's site
Test face	The coated face of the test specimens was exposed to the heating conditions of the test when the test specimens were mounted in the test position.
Number of replicate tests	4 specimens were tested in total. Preliminary ignition test with burning brands (stage 1): 1 specimen(s) tested. Penetration test with burning brands, wind and supplementary radiant heat (stage 2): 3 specimen(s) tested.
Mounting and fixing	In order to achieve the under pressure of 15 ± 1 Pa required by the standard and to simulate end-use of protected, unexposed edges, the specimens were cemented along the edges. The specimens were mounted on a non-combustible ceramic fiber gasket material on a metal support frame during the penetration tests.
Joint details	Due to the nature of the top layer, no joints were applied to it.

4. Test results and observations

4.1 Test results

Table 4 shows a summary of the results for the preliminary ignition test.

Table 5 shows a summary of the results for the penetration test.

Table 4 Test results – preliminary ignition test with burning brands (stage 1)

Parameter	Specimen number 1
Date of test	06/01/2025
Roof pitch (°)	45
Room temperature at the start of test (°C)	12.1
Time to fire penetration (min:sec)	-
Duration of flaming after withdrawal of the test flame (min.sec)	0:00
Maximum flame spread distance (mm)	0
Nature of the penetration / opening	N/A
(-) Indicates that penetration did not occur	

Table 5 Test results – penetration test with burning brands, wind and supplementary radiant heat (stage 2)

Parameter	Specimen number		
	2	3	4
Date of test	**06/01/2025**	**06/01/2025**	**06/01/2025**
Roof pitch (°)	45	45	45
Room temperature at the start of test (°C)	12.4	13.9	12.1
Time to fire penetration (min:sec)	-	-	-
Time to mechanical failure (min:sec)	-	-	-
Nature of the penetration / opening	N/A	N/A	N/A
Occurrence of melting	-	-	-
Occurrence of non-flaming debris	-	-	-
Occurrence of flaming debris <5s burning duration	-	-	-
Occurrence of flaming debris >5s burning duration	-	-	-
Measured burning depth (mm)	0	0	0
Last damaged layer	N/A	N/A	N/A
Average time to fire penetration (min:sec)	-		
(-) Indicates that a parameter did not occur			

4.2 Test observations

Observations of any significant behaviour of the specimen during the tests are summarised in Table 6 below.

Table 6 Test observations

Min	Sec	Observations during test
Specimen 2		
1	0	Specimen warped at the corners
Specimen 3		
1	5	Specimen warped at the corners
Specimen 4		
1	18	Specimen warped at the corners

5. Application of test results

5.1 Validity

This document is the original version of this test report and is written in English. In case of doubt the original version prevails over a translation.

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Provisions of Regulation (EU) 305/2011, commonly known as the Construction Products Regulation (CPR), prevail over any conflicting provisions in the harmonized standards and technical specifications.

The test results relate to the behaviour of the test specimens of a 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, nor can the results be extrapolated and applied to other products.

Test reports are statements of fact prepared in accordance with the referenced version of the standards stated in Section 3 of this report. Test reports are based upon the information provided to Warringtonfire. Warringtonfire takes no responsibility for the accuracy or completeness of such information.

The results stated in this report apply to the sample as received. Any differences in composition, production process, thickness, density or colour of the product may significantly affect the performance and will therefore invalidate the application of the test results to the variant product. It is recommended that any proposed variation to the tested configuration or product should be referred to the test sponsor. The test sponsor should then obtain appropriate documentary evidence of compliance from Warringtonfire or another accredited testing authority. The supplier of the product is responsible for ensuring that the product which is supplied for use is identical to the test sample as received.

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5.2 Uncertainty of measurement

An uncertainty of measurement estimation has been conducted in relation to flame duration, flame spread and time taken to penetration. The findings are stated below:

Preliminary Test - Flame duration (minutes:seconds) ±10%. Flame spread (mm) ±10%

Time taken to penetration (minutes:seconds) ±10%

Appendix A Test specimen photographs

Figure 1: Total view of the exposed surface of the specimen prior to testing

Figure 2: Total view of the exposed surface of the specimen post testing

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