Leeson Polyurethanes

A bond for life

Title	**:**	LEESONBOUND-UVR (PU4844/60) – Fire classification based on BS EN 13501-5:2016
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Date	**:**	25th February 2021

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Registered in England No. 2007874
VAT Registration: GB 418 8342 39

Introduction

LEESONBOUND-UVR (PU4844/60) is a two component polyurethane stone encapsulation binder for use with LeesonBound stone blends to create a bound aggregate surfacing. LEESONBOUND-UVR (PU4844/60) is the market leading system based on strength, sales and track record, and is based on aliphatic polyurethane technology to give enhanced UV performance.

The performance of LEESONBOUND-UVR (PU4844/60) to fire was determined to CEN/TS 1187:2012 *Test 4 External Fire Exposure to Roofs*, with testing performed by a UKAS accredited external laboratory, BRE Global Ltd. (UKAS 0578). From the results achieved in this testing Lesson Polyurethanes Ltd. determined the fire classification of LEESONBOUND-UVR (PU4844/60) based on the requirements of BS EN 13501-5:2016 *Fire classification of construction products and building elements. Classification using data from external fire exposure to roofs tests*.

Test Results

The results achieved were reported in report Q101065-1000 (Issue 1) dated 22nd May 2020 produced by BRE Global Ltd.

Test Samples:

- Sample Names - E12641/1, E12641/2, E12641/3, E12641/4
- Sample Description: PU-bound aggregate layer 22-25mm thick on plywood base 18mm thick. No jointed specimens were provided as the product is applied as a continuous layer.

Classification

The classification was determined based on the requirements of BS EN 13501-5:2016.

Preliminary Test (Stage 1):

Parameter	Criteria			
	Class $B_{ROOF}(t4)$	Class $C_{ROOF}(t4)$	Class $D_{ROOF}(t4)$	Class $E_{ROOF}(t4)$
Burn time	< 5 min	< 5 min	< 5 min	< 5 min
Flame spread distance	< 0,38 m	< 0,38 m	< 0,38 m	No limit
Penetration	None	None	None	None

Parameter	Test results
	E12641/1
Burn time	**00:00 min**
Flame spread distance	**0.00 m**
Penetration	**None**

Parameter	Compliance			
	Class $B_{ROOF}(t4)$	Class $C_{ROOF}(t4)$	Class $D_{ROOF}(t4)$	Class $E_{ROOF}(t4)$
Burn time	Yes	Yes	Yes	Yes
Flame spread distance	Yes	Yes	Yes	Yes
Penetration	Yes	Yes	Yes	Yes

Penetration Test (Stage 2):

Parameter	Criteria			
	Class $B_{ROOF}(t4)$	Class $C_{ROOF}(t4)$	Class $D_{ROOF}(t4)$	Class $E_{ROOF}(t4)$
Penetration	≥ 60 min	< 60 min ≥ 30 min	< 30 min	< 30 min

Parameter	Test results			
	E12631/2	E12631/3	E12631/4	Average
Penetration	**Did not penetrate**	**Did not penetrate**	**Did not penetrate**	**Did not penetrate**

Parameter	Compliance			
	Class $B_{ROOF}(t4)$	Class $C_{ROOF}(t4)$	Class $D_{ROOF}(t4)$	Class $E_{ROOF}(t4)$
Penetration	Yes	Yes	Yes	Yes

Conclusion

Based on the results achieved in testing and the requirements of BS EN 13501-5:2016 it is shown that LEESONBOUND-UVR (PU4844/60) has achieved a classification of $B_{ROOF}(t4)$.

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BRE Global Test Report

CEN/TS 1187: 2012 Test 4 External fire exposure to roofs test on LeesonBound UVR

Prepared for: Leeson Polyurethanes Ltd

Date: 22 May 2020

Report Number: Q101065-1000 Issue 1

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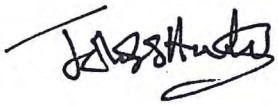
Signature 

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1 Objective

To determine the capacity to resist penetration by fire of the sample described in Section 2 using the external fire exposure to roofs test specified in CEN/TS 1187: 2012 Test 4[1].

2 Sample

2.1 Traceability

The test samples were supplied by the client. BRE Global were not involved in the sample selection process and therefore cannot comment upon the relationship between samples supplied for test and the product supplied to market.

2.2 Description of sample and test format.

Unless otherwise stated all measurements are nominal.

Test Sponsor	Leeson Polyurethanes Ltd, Hermes Close, Warwick, CV34 6RP, UK
Manufacturer of the roofing product	As above
Trade name	LeesonBound UVR
Sample description (as provided by test sponsor/manufacturer)	Polyurethane bound aggregate, ref. PU4844/60 A product definition as supplied by the test sponsor has been included in this report as Appendix A.
Description of sample (as received by BRE Global)	PU-bound aggregate layer 22-25mm thick on plywood base 18mm thick. No jointed specimens were provided. Product was applied as a continuous layer. Photographs of the sample are given in Appendix B.
Sample receipt date	27 February 2020
Test face	Aggregate layer
Test format	The test was carried out in the flat position
Date of test	18 March 2020
Purchase order	37926

Test operator	P Potter

3 Conditioning

The specimens were conditioned as required by the standard.

4 Results

4.1 Preliminary ignition test

Specimen reference	Joint	Ambient	Flame spread mm	Flame duration min:sec	Penetration min:sec
E12641/1	None	21.4 °C 48.7 %RH	0	0:00	None

4.2 Penetration test

Specimen reference	Joint	Ambient	Penetration min:sec	Observations
E12641/2	None	21.3 °C 48.5 %RH	None	Did not ignite.
E12641/3	None	22.7 °C 41.2 %RH	None	Did not ignite.
E12641/4	None	23.2 °C 48.0 %RH	None	Did not ignite.

No jointed specimens were provided. The product was applied as a continuous layer.

4.3 Observations

No dripping of material occurred from the underside of any specimen tested, nor was any mechanical failure, or development of holes, observed.

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5 Conclusion

CEN/TS 1187: 2012 does not contain acceptance criteria and therefore this test report does not indicate a pass or fail of the product.

6 Validity

This test report does not represent type approval or certification of the product.

7 Reference

1 CEN/TS 1187: 2012. Test methods for external fire exposure to roofs. Test 4 – Method with two stages incorporating burning brands, wind and supplementary radiant heat. CEN, Avenue Marnlx 17, B-1000, Brussels, Belgium.

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Appendix A Product description provided by the test sponsor

PRODUCT DEFINITION

Test sponsor (Company name and address): Leeson Polyurethanes Ltd. Hermes Close, Warwick, CV34 6RP UK	
Trade name	LeesonBound UVR
Product reference/number	PU4844/60
General description	Polyurethane bound aggregate
Manufacturer of the roofing product (company name and address)	Leeson Polyurethanes Ltd. Hermes Close, Warwick, CV34 6RP UK
Place of manufacture	Leeson Polyurethanes Ltd. Hermes Close, Warwick, CV34 6RP UK
Test specimens assembled by (if not by roof product manufacturer)	As Above
Thickness (overall depth of roof structure tested)	36 mm
Mass per unit area (overall value for the roof structure tested)	58 kg/m²
Flame retardant treatment added or organic content limited during production (yes/no), if yes give details	None
Harmonised EN product standard, and AVCP System No. if applicable	To be tested to EN13501-5
Test face (Layer 1) - Name/reference - Manufacturer - Type - Thickness - Mass per unit area - Colour - Application method - Fire retardant (trade name, generic type, amount)	- LeesonBound UVR – PU4844/60 - Leeson Polyurethanes Ltd. - Polyurethane bound aggregate - 22 to 25 mm - 42.5 kg/m² - Scandinavian - Trowelling of wet coated aggregate, cured in-situ - None

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Test sponsor (Company name and address): Leeson Polyurethanes Ltd. Hermes Close, Warwick, CV34 6RP UK		
Trade name		LeesonBound UVR
Layer 2	- Name/reference - Manufacturer - Type - Thickness - Mass per unit area - Colour - Application method - Fire retardant (trade name, generic type, amount)	- Far Eastern Marine Grade Plywood - Welly timber industries Malaysia - Marine Grade Plywood - 18 mm - 15.5 kg/m^2 - Natural - Attached to roof mechanically with nails/screws - None

Report Ends

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Appendix B Photographs of the test specimens