Reaction to fire test report

Issuing laboratory: Warringtonfire Testing and Certification Limited

Test standard:	EN ISO 1182: 2020
Test sponsor(s):	Keltec Building & Paving Products Ltd
Product(s):	Keltec LId Tile/Cladding Adhesive
Report number:	551645
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Quality management

Version	Date	Summary of amendments including reasons		
1	2 July 2025	Description	Initial issue	
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		Signature		
			*Signed for and on behalf of Warringtonfire Testing and Certification Limited	

Contents

1. Introduction

This report documents the findings of the reaction to fire test of ‘‘Keltec Lld Tile/Cladding Adhesive’’ in accordance with EN ISO 1182: 2020.

Warringtonfire Testing and Certification Limited (Warringtonfire) performed the test on 29 April 2025 at the request of the test sponsor listed in Table 1.

Table 1 Test sponsor details

Entity	Address
Test sponsor	
Keltec Building & Paving Products Ltd	Kilpierce, Enniscorthy, County Wexford, Y21 K024 Ireland

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
Generic type	Tile and cladding adhesive
Product reference	“Keltec Lld Tile/Cladding Adhesive”
Name of manufacturer	Keltec Building & Paving Products Ltd
Composition details	A blend of sand, cement and powdered polymers
Colour	Grey
Thickness	5-20mm (stated by sponsor) 49.07mm (as tested by Warringtonfire)
Density	1513.63kg/m^3 (determined by Warringtonfire)
Application method	Trowel
Curing process	Air cured at 5-30°C for 28 days
Flame retardant details	See Note 1 below
Brief description of manufacturing process	Dry sand and powders mixed in a powder blender

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

3. Test procedure

Table 3 details the test procedure for this reaction to fire test.

Table 3 Test procedure

Item	Detail
Test standard	The test was performed in accordance with EN ISO 1182: 2020.
Supplementary standard	EN 13501-1: 2018
Deviations from the test standard	None
Product standard and/or EAD	EN 12004: 2007+A1: 2012
EGOLF agreements and/or recommendations	None
Pre-test conditioning	Test specimens were received on 14 April 2025.
	After conditioning, the test specimens were dried in a ventilated oven maintained at a temperature of 60 ± 5°C for between 20 and 24 hours and were cooled to ambient temperature in a desiccator prior to testing.
	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.
Sampling / test specimen selection	The test specimens were supplied by the test sponsor. Warringtonfire was not involved in any selection or sampling procedure.
Number of replicate tests	Five
Calibration	A calibration in accordance with paragraphs 7.3.1 and 7.3.2 of EN ISO 1182: 2020 was performed on the 16 October 2024 and the results are detailed in Appendix A.
Test specimen preparation	The sponsor provided the laboratory with cylinders with dimensions of 45 mm (diameter) x 50 mm (height).

4. Test results and observations

4.1 Test results

Table 4 shows a summary of the results for the test specimens. A fully detailed overview of the measurements is given in the laboratory record sheet (see Appendix).

Table 4 Test results

Parameter	Mean test results
Mass loss (%)	12
Duration of sustained flaming (s)	0
Average furnace temperature rise, ΔT (°C)	1

4.2 Test observations

No significant observations were noted during the course of testing (according to section 7.5.2 of the test standard).

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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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

Because of the nature of reaction to fire testing and the consequent difficulty in quantifying the uncertainty of measurements obtained from a reaction to fire test, it is not possible to provide a stated degree of accuracy of the result.

Appendix A Calibration

CALIBRATION RESULTS

Furnace Wall Temperature Calibration

Vertical axis	Level		
	30mm above centre [a]	Centre [b]	30mm below centre [c]
1	771.4	778.4	776.8
2	777.0	777.1	778.3
3	777.4	777.3	774.4

Average furnace wall temperature

T_{avg} = 776.5°C

Average furnace wall temperature on the three axis

$T_{avg.axis\ 1}$ = 775.5°C
$T_{avg.axis\ 2}$ = 777.5°C
$T_{avg.axis\ 3}$ = 776.4°C

Deviation of the temperature on the three axis to the average furnace wall temperature

$T_{dev.axis\ 1}$ = 0.12%
$T_{dev.axis\ 2}$ = 0.13%
$T_{dev.axis\ 3}$ = 0.01%

Average deviation of the temperature on the three axis to the average furnace wall temperature

$T_{avg.dev.axis}$ = 0.09%

Average furnace wall temperature at the three levels

$T_{avg.level\ 1}$ = 775.3°C
$T_{avg.level\ 2}$ = 777.6°C
$T_{avg.level\ 3}$ = 776.5°C

Deviation of the temperature on the three levels to the average furnace wall temperature

$T_{dev.level\ 1}$ = 0.15%
$T_{dev.level\ 2}$ = 0.15%
$T_{dev.level\ 3}$ = 0.01%

Average deviation of the temperature on the three levels to the average furnace wall temperature

$T_{avg.dev.level}$ = 0.10%

CALIBRATION RESULTS (CONTINUED)

Furnace Temperature Calibration

Furnace Height (mm)	Mean Furnace Temperature (°C)	Minimum Allowable Furnace Temperature (°C)	Maximum Allowable Furnace Temperature (°C)
145	656	639	671
135	685	664	698
125	709	683	716
115	724	698	729
105	734	709	737
95	741	717	743
85	745	722	746
75	746	723	747
65	745	720	746
55	739	712	743
45	729	699	736
35	713	679	724
25	692	652	705
15	665	616	678
5	635	570	639

Appendix B Test data

B.1 Laboratory record sheet

Parameter	Symbol or expression	Unit	Results					Arithmetic mean = ∑results/5
			Specimen Number					
			1	2	3	4	5	
Test date		-	29/04/2025					-
Total duration of sustained flaming	Cumulative total duration of sustained flaming (> 5 s)	s	0	0	0	0	0	0
Test duration		s	2100	2100	3300	3300	3000	2760
Specimen mass								
Initial test specimen mass	m_{si}	g	101.55	101.85	100.76	102.70	100.86	101.54
Final test specimen mass	m_{sf}	g	90.07	90.12	87.78	89.67	88.98	89.32
Mass loss (%)	$\delta m = (m_{si} - m_{sf})/m_{si}$	%	11	12	13	13	12	12
Furnace thermocouple temperatures								
Initial	$T_{1,i}$	°C	750	750	750	750	751	750
Initial	$T_{2,i}$	°C	750	749	749	750	750	750
Maximum	$T_{1,max}$	°C	764	766	785	775	774	773
Maximum	$T_{2,max}$	°C	765	768	791	774	772	774
Final	$T_{1,f}$	°C	763	765	784	775	773	772
Final	$T_{2,f}$	°C	765	768	790	774	771	773
Rise	$\Delta T_1 = T_{1,max} - T_{1,f}$	°C	0	1	1	0	1	1
Rise	$\Delta T_2 = T_{2,max} - T_{2,f}$	°C	1	1	1	0	1	1
Mean rise	$\Delta T = (\Delta T_1 + \Delta T_2)/2$	°C	1	1	1	0	1	1
Specimen surface thermocouple temperatures								
Maximum	T_S (max)	°C	776	784	804	789	787	788
Final	T_S (final)	°C	776	783	803	788	787	787
Temperature rise	$\Delta T_S = T_S$ (max) – T_S (final)	°C	1	1	0	1	0	0

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