Certificate of Accreditation

UKAS United Kingdom Accreditation Service

PRA World Ltd

Testing Laboratory No. 9943

Is accredited in accordance with International Standard ISO/IEC 17025:2017 – General Requirements for the competence of testing and calibration laboratories.

This accreditation demonstrates technical competence for a defined scope specified in the schedule to this certificate, and the operation of a management system (refer joint ISO-ILAC-IAF Communiqué dated April 2017). The schedule to this certificate is an essential accreditation document and from time to time may be revised and reissued.

The most recent issue of the schedule of accreditation, which bears the same accreditation number as this certificate, is available from www.ukas.com.

This accreditation is subject to continuing conformity with United Kingdom Accreditation Service requirements.

Matt Gantley, *Chief Executive Officer*
United Kingdom Accreditation Service

Initial Accreditation: 8 November 2017
Certificate Issued: 25 January 2024

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UKAS is appointed as the sole national accreditation body for the UK by The Accreditation Regulations 2009 (SI No 3155/2009) and operates under a Memorandum of Understanding (MoU) with the Department for Business and Trade (DBT).

Technical Report

Artificial UV Radiation Resistance

Re-Issued Report

For

FUTURAL (UK) LTD

Date Received	04 April 2024
Date lab activities	09 April 2024 – 02 July 2024
Client	Futural (UK) LTD 128 City Road, London, EC1V 2NX United Kingdom
Work Requested	Artificial UV Radiation Resistance
Samples Submitted	Two colour samples of Futural product
Work Carried out by	David Corrigan Senior Technician
Approved by	Dr Laura Pilon Authorised Signatory

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UKAS TESTING
9943

1 Introduction

Two samples of the Futural product, 3mm PVDF pre-coated aluminium panels were received from the client and were tested as received.

1. Sample 1
2. Sample 2

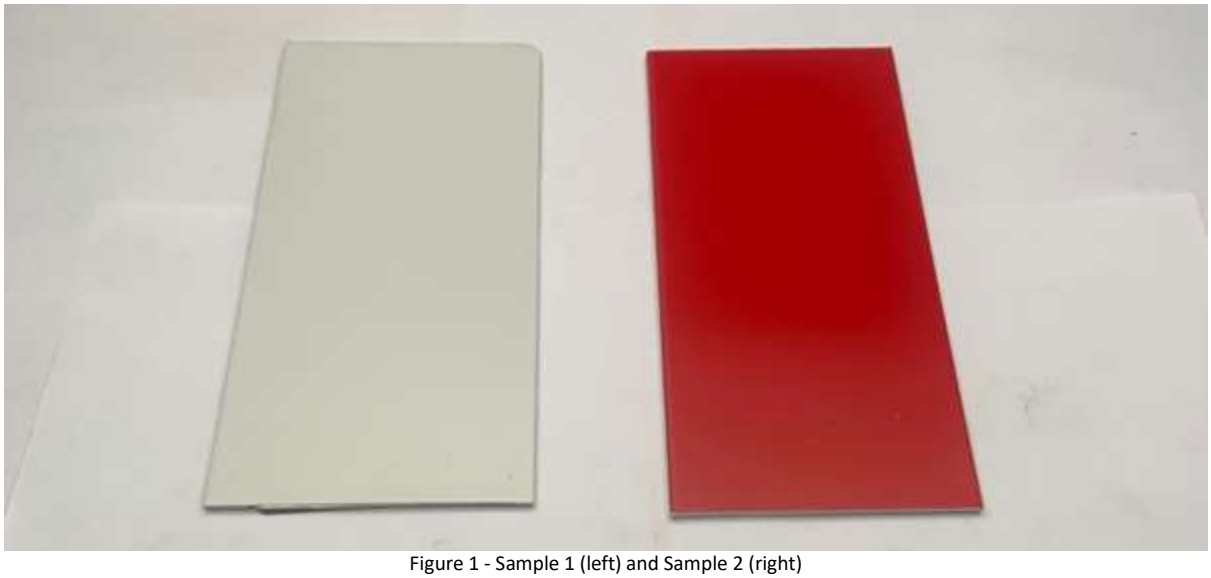

Figure 1 - Sample 1 (left) and Sample 2 (right)

Test results reported herein that are identified with a ‡ symbol are not UKAS accredited.

2 Results

2.1 QUV Weathering BS EN ISO 16474-3:2021[1]

Sample	Initial (0hrs)			Final (2000hrs)			Results		BS EN 1396:2023 ‡ UV Resistance Classification[2]	Pass/ Fail
	L*	a*	b*	L*	a*	b*	Colour Change ΔE	Retained Gloss		
Sample 1	89.21	-1.01	1.93	89.16	-0.94	1.72	0.23	98.6%	R_{uv4}	Pass
Sample 2	42.68	49.69	28.42	42.47	50.06	28.89	0.63	99.3%	R_{uv4}	Pass

[1] BS EN ISO 16474-3:2021 is technically equivalent to EN 13523-10:2017 for the assessment of artificial UV radiation resistance
[2] Classification in accordance with the requirements of BS EN 1396:2023 ‡ Table C.3

*Spelling error corrected. D. Corrigan 01st October 2024

3 Test Procedures

3.1 QUV Weathering BS EN ISO 16474-3:2021

Artificial weathering was conducted in accordance with BS EN ISO 16474-3:2021. Coated panels were supplied by the customer and tested as received. The panels were conditioned at 23 °C/50% RH overnight. The coating thickness was measured before testing according to BS EN ISO 2808-7C (eddy current). Edges were protected with chemical resistant tape.

A UVA-340 lamp was used, with radiant exposure, H, of 0.83W/m^2/nm. The test was conducted with 4hrs of UV exposure @ 60°C followed by 4hrs of humidity exposure at 40°C, for a total exposure period of 2000 hours. The starting phase was dry irradiance.

Before and after the QUV exposure, assessments for colour (BS EN ISO 18314:2018) and gloss (BS EN ISO 2813:2014) were made, the change in colour and the % gloss retention were calculated and the results were classified in accordance with BS EN 1396:2023 Table C.3 shown below.

BS EN 1396:2023
EN 1396:2023 (E)

Table C.3 — Requirements for the UV resistance for natural and artificial testing conditions

Requirements	UV resistance category							
	R_{uv2}	R_{uv3}		R_{uv4}		R_{uv5}	
Test duration, natural exposure (years)	2	2		2		4	
Test duration [e], artificial UV radiation (h)	2 000	2 000		2 000		4 000	
Maximum colour change ΔE* [a] before and after the test (CIELab units)	5	3		3 [c]	2 [d]	3 [c]	2 [d]
Minimum retained gloss after the test (RG [b]), %	30	50 [c]	60 [d]	80		80	

[a] The ΔE* value is not applicable for saturated and other special colours such as metallics and pearlescent. In that case the colour change verification method and its acceptance value should be agreed at the time of enquiry and order.

[b] The retained gloss (RG) is the ratio of the final gloss value, given in percent. The RG requirement is not applicable to matt coating systems as specified in Table 3.

[c] Natural UV radiation.

[d] Artificial UV radiation.

[e] The UV category can be granted after an artificial UV radiation test but it should be validated after completion of natural ageing in an accredited outdoor exposure site.

End of Report