Technical Report

QUV Accelerated Weather Testing

TR-0002302-9 | QUV Accelerated Weathering Performance Testing	**Date:** 21 December 2023
Assessment of Actflex Ultra Shield	**Document Number:** TR-0002302-9

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Executive Summary

The colour change is tabulated below for all products tested after 1000 hours.

Tabulated data for the series

System	QUV Hours	dL*(D65)	da*(D65)	db*(D65)	dE*ab(D65)	Visual Comment
Actflex Ultra Shield	1000 Hrs	-0.83	0.00	-0.06	0.83	No colour change Visually

The following conclusion is drawn from the results.

- Actflex Ultra Shield Mid Grey Polyaspartic topcoat has had no visual change in colour or gloss
- None of the samples experienced high levels of DFT loss.

Introduction

This technical report assesses the colour change, gloss change, and DFT loss after 1000 hours of accelerated weathering to ASTM D154 Cycle 1. The QUV testing assesses Actflex Ultra Shield Mid Grey.

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Assessment

Colour

The colour will be assessed using a spectrophotometer (Konica Minolta). Any colour data will be supported by a visual assessment of a colour matcher.

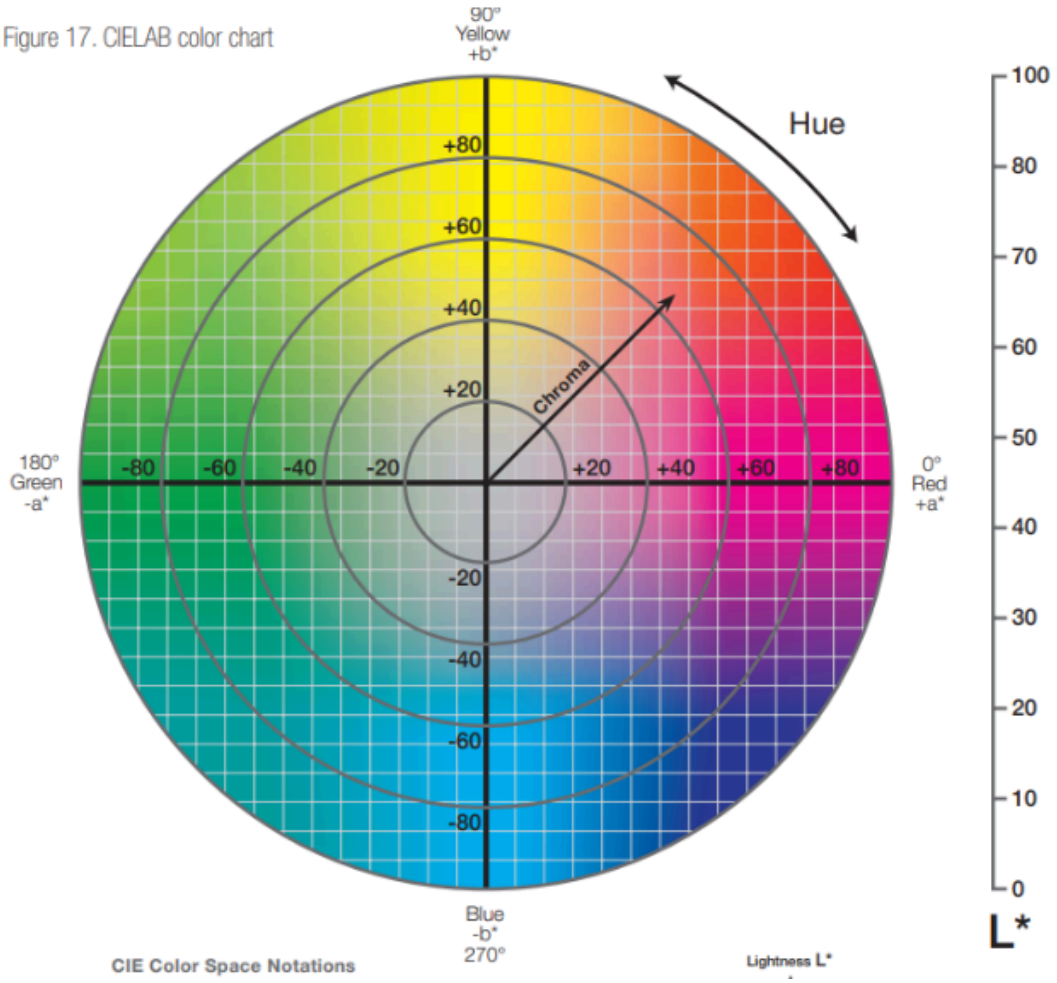
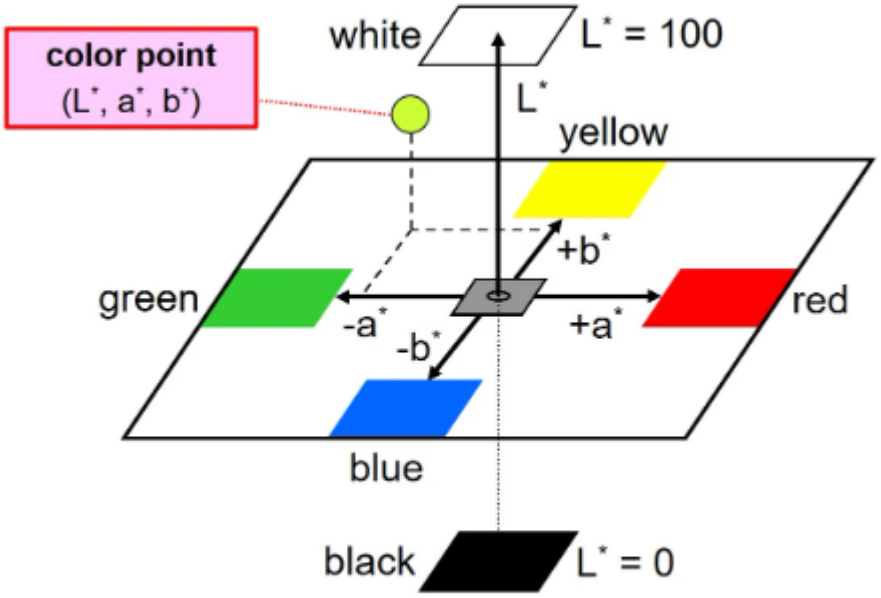


Figure 17. CIELAB color chart

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CIELAB is a three-dimensional system that triangulates and precisely defines any colour point. The initial colours of all the samples are scanned to create the standard reference. The samples are rescanned after weathering (250, 500, 750, and 1000 Hours of weathering in the QUV) to determine the changes in colour.



The 3-dimensional CIELAB color space.

CIE Colour Space Notations

dL*(D65)	difference in lightness / darkness value	"+" = lighter "-" darker
da*(D65)	difference on the red / green axis	"+" = redder "-" = greener
db*(D65)	difference on the yellow / blue axis	"+" = yellower "-" = bluer
dE*(D65)	total colour difference value	

The d or delta describes the change in colour rather than an actual colour. The dL number indicates a change in light or dark colour. The da number indicates a change in green or red, and the db indicates a change in blue or yellow. The delta (dL, da and db) numbers indicate how the colour has changed from the original colour scan. dE is the visual difference between the two colours.

Gloss

Laboratory gloss metre used to test gloss.

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Panel Preparation

System 0006/01 (Actflex Ultra Shield Mid Grey)

Actflex Ultra Shield Mid Grey	100µm DFT	

Results

Actflex Ultra Shield Mid Grey

System 0006/01 (Actflex Ultra Shield Mid grey)

Actflex Ultra Shield Mid Grey has not visually changed colour after 1000 hours of weathering (ASTM D154 Cycle 1). The Spectrophotometer has detected a darkening of the colour however, at this point, it can not be detected visually. The gloss and dry film thickness have not significantly changed.

System	QUV Hours	dL*(D65)	da*(D65)	db*(D65)	dE*ab(D65)
Actflex Ultra Shield Mid Grey	0 Hrs	0.00	-0.01	0.00	0.01
	250 Hrs	-0.41	0.01	0.02	0.41
	500 Hrs	-0.55	-0.07	-0.03	0.55
	750 Hrs	-0.54	-0.02	-0.06	0.55
	1000 Hrs	-0.83	0.00	-0.06	0.83

System	QUV Hours	Gloss
Actflex Ultra Shield Mid Grey	0 Hrs	95.8
	1000 Hrs	95.2

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Conclusion

The following conclusions are drawn from the above results.

- Actflex Ultra Shield Mid Grey Polyaspartic topcoat has had no visual change in colour or gloss
- None of the samples experienced high levels of DFT loss.

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