

| | |
|---|-------------------------------|
| TR-0002302-4 QUV Accelerated Weathering Performance Testing | Date: 21 December 2023 |
| Assessment of ACTFLEX ULTRA FC | Document Number: TR-0002302-4 |

[Executive Summary](#)

[Introduction](#)

[Assessment](#)

[Panel Preparation](#)

[Results](#)

[Metalox-GC450 / Opalon-S30 - 24 Hour Recoat](#)

[ACTFLEX ULTRA FC Mid Grey / ACTFLEX ULTRA FC Mid Grey - 24 Hours Recoat](#)

[System 0003/01 \(Mid Grey/24 Hours\)](#)

[ACTFLEX ULTRA FC Mid Grey](#)

[Conclusion](#)

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 FC Tint | 1000 Hrs | -0.15 | 0.03 | 0.37 | 0.4 | No colour change Visually |
| ACTFLEX ULTRA FC Mid Grey | 1000 Hrs | -0.83 | 0 | -0.06 | 0.83 | No colour change Visually |

The following conclusion is drawn from the results.

- ACTFLEX ULTRA FC Mid Grey, ACTFLEX ULTRA FC Mid Grey, tint had no visual change in colour or gloss.
- None of the samples experienced high levels of DFT loss.

Introduction

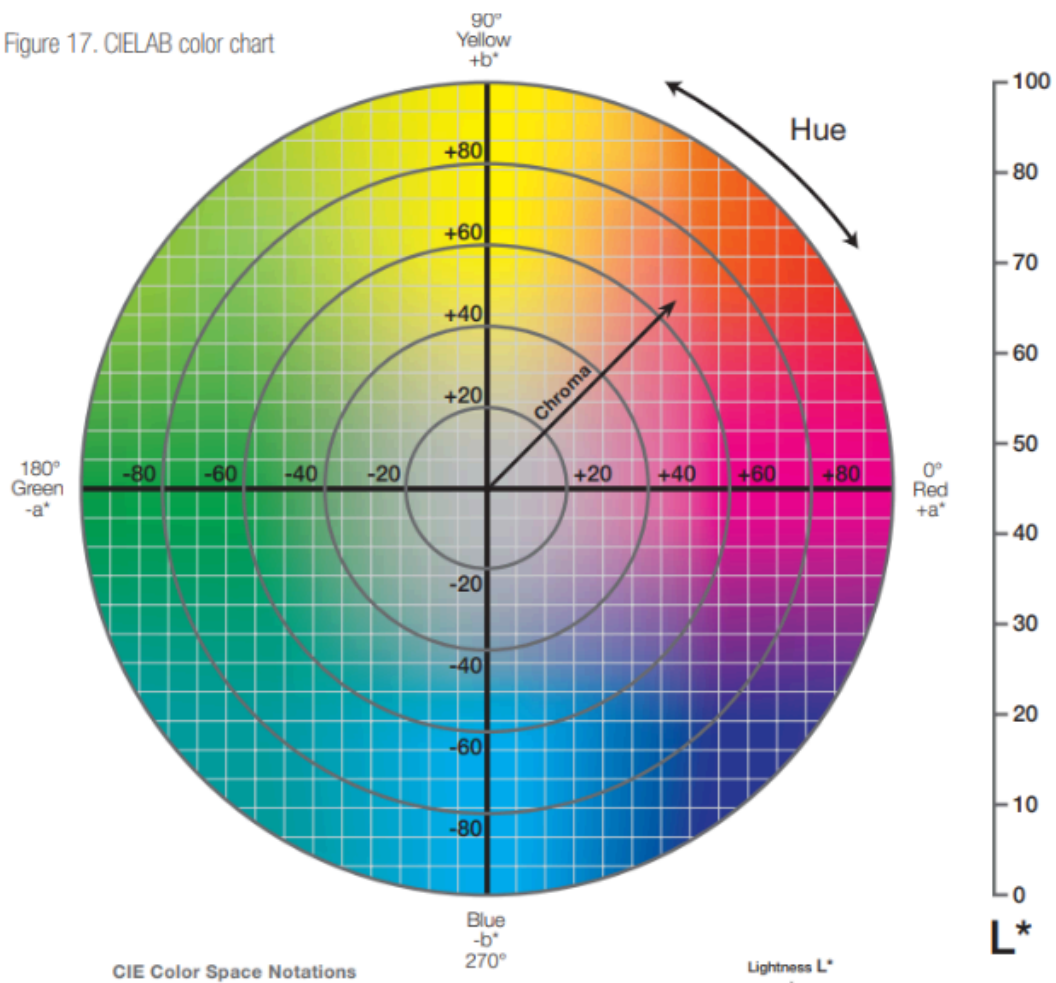
This technical report assesses the colour change, gloss change, and DFT loss after 1000 hours of accelerated weathering to ASTM D154 Cycle 1. The list of test panels in the series is tabulated in panel preparation

Assessment

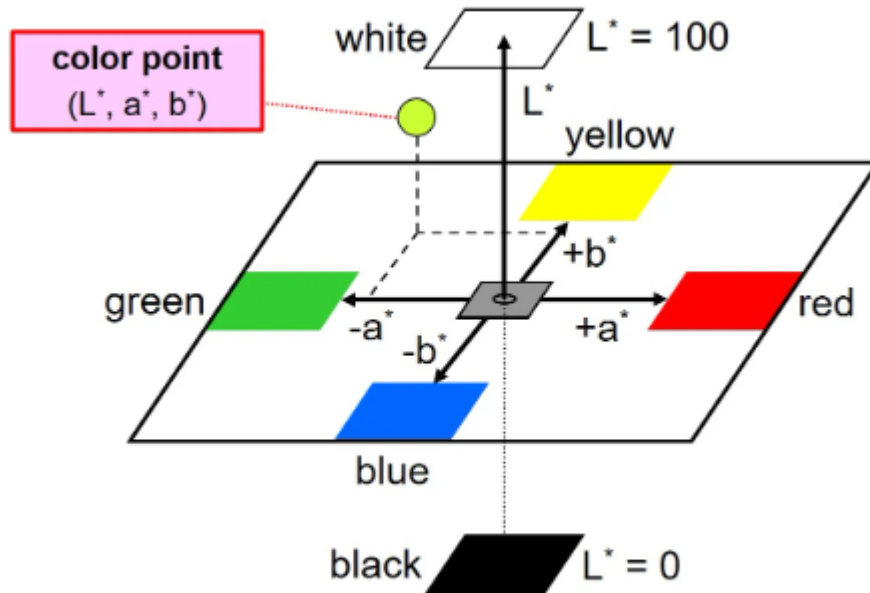
Colour

The colour will be assessed using a spectrophotometer (Konica Minolta - CM-36dG). A visual assessment of a colour change will support any colour data.

Figure 17. CIELAB color chart



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 meter used to test gloss.

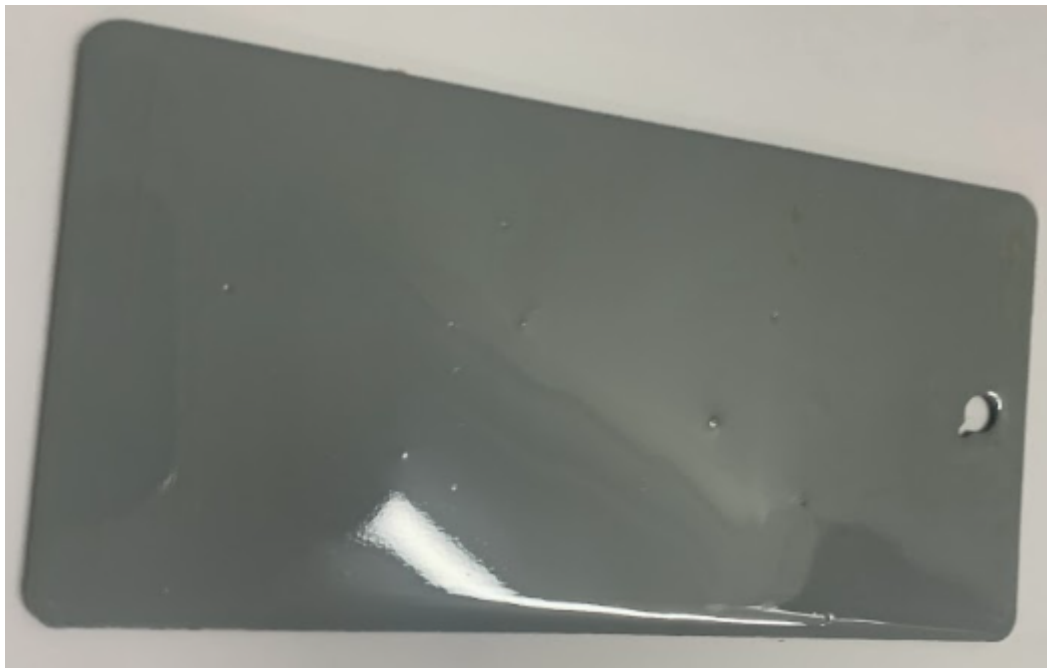
ACTFLEX ULTRA FC - 24 Hours Recoat

System 0003/01

ACTFLEX ULTRA FC Mid Grey has not visually changed colour after 1000 hours of weathering (ASTM D154 Cycle 1). It has been the best performer of the series. The dry film thickness has not changed.

| System | QUV Hours | dL*(D65) | da*(D65) | db*(D65) | dE*ab(D65) |
|-------------------------------------|-----------|----------|----------|----------|------------|
| ACTFLEX ULTRA FC / ACTFLEX ULTRA FC | 0 Hrs | 0.00 | -0.01 | 0.00 | 0.01 |
| | 250 Hrs | -0.20 | -0.03 | 0.06 | 0.21 |
| | 500 Hrs | -0.33 | -0.06 | 0.04 | 0.34 |
| | 750 Hrs | -0.29 | -0.08 | 0.00 | 0.30 |
| | 1000 Hrs | -0.34 | -0.05 | 0.00 | 0.34 |

| System | QUV Hours | Gloss |
|-------------------------------------|-----------|-------|
| ACTFLEX ULTRA FC / ACTFLEX ULTRA FC | 0 Hrs | 100.0 |
| | 1000 Hrs | 97.6 |



<https://liquimix.com/ACTFLEX ULTRA FC>

ACTFLEX ULTRA FC Mid Grey

System 0006/01 (ACTFLEX ULTRA FC)

ACTFLEX ULTRA FC Mid Grey has not visually changed colour after 1000 hours of weathering (ASTM D154 Cycle 1). The Spectrophotometer (Konica Minolta - CM-36dG) has detected a darkening of the colour however, at this point, it can not be detected visually. The dry film thickness has not changed.

| System | QUV Hours | dL*(D65) | da*(D65) | db*(D65) | dE*ab(D65) |
|---------------------------|-----------|----------|----------|----------|------------|
| ACTFLEX ULTRA FC 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 FC Mid Grey | 0 Hrs | 95.8 |
| | 1000 Hrs | 95.2 |



<https://liquimix.com/ACTFLEX ULTRA FC>

Conclusion

The following conclusions are drawn from the above results.

- ACTFLEX ULTRA FC Mid Grey had no visual change in colour or gloss.
- None of the samples experienced high levels of DFT loss.



Bryant Wells

B Chem Sc, MBA, Certified NACE 3
Technical Manager

Disclaimer

Any advice, recommendations, information, assistance or service provided by Liquimix in relation to goods manufactured by it or their use and application is given in good faith and is believed by Liquimix to be appropriate and reliable. However, any advice, recommendation, information, assistance or service provided by Liquimix is provided without liability or responsibility PROVIDED THAT the foregoing shall not exclude, limit, restrict or modify the rights, entitlements and remedies conferred upon any person or the liabilities imposed upon Liquimix by any condition or warranty implied by commonwealth, state or territory Act or ordinance rendering void or prohibiting such exclusion, limitation, restriction or modification.