Technical Data Sheet: 03022016

Title; **UV/Condensation Exposure Test of Painted Aluminium Sheet and Edging/ Venting Strip Products.**

Relevant Standard; AS/NZS 2728:2013

Introduction: An Independent approved Laboratory was instructed to carry out a comparative UV/ Condensation test of several types of painted aluminium samples. The samples were either finished products such as perforated edging or venting strips or flat sheet being the pressures to the finished product.

In addition a large selection of reference sheets were received, identified as Colorsteel Maxx references.

A comparable and as close as possible matching reference colour was then selected from the reference material supplied.

Materials / Samples;

Specimens were prepared for testing and selected from a larger selection of colours available. Samples were selected to be representative across a range of colours. The sheet thickness of the samples was approx... 0.3mm

Methods:

Sheet specimens were prepared for testing (75mm x 150mm) and mounted in a sample holder with window. Exposing parts of the sample surfaced to direct UV exposure and also covering parts of the specimen.

The specimens were placed inside a QUV chamber for a period of nominal 2000 hours. The chamber was set to operate to the requirements of ASTM G 154 Cycle #6.

Colour and Gloss measurements were taken using a BYK Spectrophotometer in the standard D65/10 configuration, gloss was measured at 60 degrees. The colour coordinates were determined and compared to those obtained in the “as received’ condition.

The results were determined as the average of five individual measurements. Colour coordinates were determined as L*a*b values in accordance with the CIWELAB 1976 convention. The change in colour during the exposure test was expressed accordingly as AE value.

The AE value is a numerical expression of the colour change and the larger the value the larger the colour change.

Main Observations;

Colour;

The results determined for colour change generally seemed to follow the following trends;

- *AE values for almost all coloured samples fell in a very narrow band from around 1.0 to 1.2 units.*
- *AE values for near white samples fell in a very narrow band from around 0.2 to 0.4 units.*
- *The performance of the ESL samples in terms of colour change was effectively comparable and indistinguishable from those used as references.*

Gloss:

- Within the variations and the level of accuracy that can be expected from gloss level determinations all samples appeared to be reasonably stable and suffer from some limited loss of gloss in due course of the test. Again, the performance of ESL samples was comparable to and practically indistinguishable from the reference samples.

Summary;

This test is of comparative purpose only and does not form part of the performance requirement of ASNZS 2728:2013, which instead prescribers a 4 year exposure at mandated exposure sites.

A 4 year exposure duration is, however, not always practical. The laboratory test conducted here therefore allows for direct comparison under accelerated laboratory conditions to products used as references that claim to meet the requirements of ASNZS 2728:2013.

ESI sheet samples performed comparable and practically indistinguishable in terms of colour change and gloss by direct comparison to the reference samples.