MASTERWALL

M-TEX

A guide to colour fading of of deep/dark coatings

TECHNICAL DOCUMENT:

COLOUR FADING

MASTERWALL AUSTRALIA PTY LTD. 18-20 Cyber Loop, Dandenong South, Victoria, Australia
EMAIL. sales@masterwall.com.au **WEB.** masterwall.com.au **NATIONAL ENQUIRIES.** (03) 9799 6565 **FAX.** (03) 8740 2180

What is colour fading?

Australian Standard AS/NZS 2310:2002 "Glossary of paint and painting terms" defines "The loss of colour of one or more of the colour pigments within the paint film".

The technical term for colour fading is photodegradation.

Chromophores are light absorbing bodies that form part of the pigment molecule that allows specific colours to be seen by the human eye. The colours we see are based upon these chemical bonds and the amount of light that is absorbed in a particular wavelength.

Colour degradation is natural process. The compounds that are responsible for colour, degrade with time which in turn fade the colour of object (i.e. paint, coatings). Colouring compounds or pigment will naturally dissociate with time.

The rate of colour fading is dependent on the exposure of varying harsh atmospheric conditions that take place over the life cycle of the coating system.

The M-Tex Flexcoat is an elastometric coating that prevents premature blistering, flaking and peeling of the coating system however it does not cover fading (colour change) or chalking of the paint. This is because there are factors outside of the manufacturer's control – such as prevailing climate and weather conditions – that

can strongly influence the colourfastness of a paint film.

Why does this occur?

There are several factors to consider when looking at why this issue occurs:

Chalking:

When a coating or paint surface breaks down there may be evidence of a powder or chalk like residue. This is due to degradation via ultraviolet degradation. Varying degrees of chalking is common as all paints/coatings will be affected by UV radiation over time.

Dirt and pick up:

When the surface is wiped down with a damp cloth, the cloth will indicate varying levels of surface contamination however it should be noted that the residue on the cloth may simply be dirt, dust, grime, industrial pollution, salt deposits or other extraneous materials that have no relation to the paint coating.

Environmental Conditions:

Temperature and humidity on the day of application should be considered as both of these can affect application and the overall look of the job.

Application Technique:

Inconsistencies in application can be factor in leaving some areas more prone to fading and other durability concerns . This is usually represented as a visual band of irregular colour or appearance.

If the coating itself is breaking down there may be some evidence of a powdery "chalking" residue on the cloth due to ultra violet degradation. Some chalking is to be expected as all paints will be affected by UV radiation over time

How does this occur?

There are various considerations and phenomena that can explain the occurrence of colour fading in coatings systems, most of which are beyond the control of the product manufacturer and or applicator. Certain conditions can also accelerate the rate of fading. For Example:

Ultraviolet Radiation (Sunlight):

This occurs via exposure to Ultra Violet Radiation emitted by the sun causing a break down of the Chromophores chemical bonds which causes the pigment to lose colour or 'fade'. Some of these pigments also react with chemicals in the environment (oxygen, nitric acid, ozone) that further increase the rate of colour fading/decrease colour fastness of a coating.

Coastal Environments:

Salt, wind loads and atmospheric moisture all create a corrosive environment. Exposure to these harsher environmental impacts will all cause degradation and fading to accelerate.

Light Reflective Value:

Every coating/paint colour has a Light Reflective Value that refers to the percentage of light a paint or tint colour reflects. The lower the LRV the more light and heat will be absorbed not only into the coating but the substrate also. Thus the deeper or darker the colour the more prone it is to colour change and fading.

Thermal Cycling:

Hot and cold temperature cycling can further increase the rate of degradation of coatings via placing extra stress on the coatings chemical make up.

Correct thickness:

Product application lower than the recommended thickness can accelerate the fading and degradation process.

Over tinting:

Over tinting and or adding tint to a white based coating not intending for tinting can increase the risk of fading occurrences.

Incorrect Product:

Utilising and incorrectly specificizing a coating system/paint that is not intended for exterior use or over certain substrates can impact or increase the chances of accelerated colour fading.

Solution

Unfortunately it is not possible to completely eliminate the phenomenon of colour fading in coatings and paints. There are products that aim to mitigate this occurring and technical advice is recommended when selecting a colour for your coating specification. M-Tex Flexcoat is an acrylic membrane paint three times the thickness of standard paint films which aids in crack protection and colour fastness.

For coatings where fading has already begun, the entire surface will need to be pressure washed and/or scrubbed with a nonmetallic scouring pad to remove all surface contaminants and chalking prior to repainting with an approved coating system.

Prevention

To help mitigate or minimise colour change and fading:

- Specify and apply coatings systems that are UV resistant where possible.
- Always check the LRV of the specified paint/coating system. Use lighter colours where possible with higher light Reflective values.
- Select colours based on inorganic pigments and or oxides which are generally more UV resistant.
- Be aware and adhere to maintenance schedules of the specified paint or coating system to ensure the longevity of the system and to maintain any warranties associated with this.

References

Australian Standard AS/NZS 3730.20 states that the expected level of performance is “moderate” discolouration after 24 months (tested as per AS/NZS 1580.481.1.2)
Further information relating to paint degradation processes can be found in Australian Standard AS/NZS 2311 “The Painting of Buildings” Sections 1.6 & 1.9