

TECHNICAL ADVICE

# CARE & MAINTENANCE

## Chalking



# CARE & MAINTENANCE

## Chalking

### What

#### What is chalking?

**“Chalking”** is defined in AS/NZS 2310:2002 “Glossary of paint and painting terms” as... “The appearance of a loosely adherent fine powder on the surface of a paint film, arising from the degradation of one or more of its constituents”.

If the coating itself is breaking down due to ultra violet (UV) degradation, there will be some evidence of a white or coloured powdery “chalking” residue on the wipe-cloth. Some chalking is to be expected as all paints will be affected by UV radiation to some degree, over time.

The rate of this degradation will vary depending on the topcoat colour, environmental conditions and the type of paint used (ie. the particular resin system used in a given paint product).

The Dulux® Weathershield® guarantee covers premature blistering, flaking and peeling of the coating system however it does not cover fading (colour change) or “chalking” of the paint film. This is because there are factors outside of the manufacturer’s control – such as prevailing climate and weather conditions – that can strongly influence the performance of a paint film.

### Why

Chalking occurs due to ultra violet (UV) radiation from sunlight interacting with the constituents within the paint film. Over time UV degradation of the binder or resin within the paint film will allow the exposed pigment particles to become more loosely bound to the surface. A powdery surface is the result.

When attempting to diagnose the issue, there are several important factors that will need to be considered closely:

- 1. Dirt 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.
- 2. Fading.** The colour change or Fading that may have occurred due to exposure to UV which could be present in conjunction with chalking.

### How does it occur

Chalking is a natural process that happens slowly over time. Chalking may also result in colour fading or poor colour retention. Some chalking/fading is expected as the paint film weathers and an acceptable level of deterioration is set-out under various sub-sections of AS 3730 (2006) Latex-Exterior-coatings.



## CARE & MAINTENANCE

### Chalking

The following factors, beyond the control of the manufacturer or applicator, are known to accelerate such behaviour in paints:

- 1. Sunlight and ultraviolet (UV) radiation:** Chalking occurs more quickly in exterior environments where the painted surface is fully exposed to high levels of sunlight over an extended period. Surfaces protected from direct sunlight will deteriorate at a much slower rate. Also, the intensity of the solar radiation will affect the degree of chalking. In the southern hemisphere, north facing aspects and locations closer to the equator will receive much more UV radiation per square metre, resulting in more pronounced or rapid degradation.
- 2. Hot/cold temperature cycling:** The greater the extremes of UV radiation and temperature, the greater the stress on the coating system.
- 3. Application of darker coloured paint:** Darker colours absorb more energy (heat and UV radiation) from sunlight than lighter colours thereby putting greater stress on paint coating. High UV intensity and greater energy absorption will result in more deterioration of the paint surface. Also, chalking is visually more obvious on darker colours.
- 4. Coastal environments:** The combination of salt and atmospheric moisture creates a corrosive environment and constant exposure will cause coatings to start showing signs of deterioration more quickly than otherwise might be expected.
- 5. Correct film thickness:** Product application at lower than the recommended film build can accelerate the overall ageing process of the coating system, resulting in premature deterioration.  
  
If chalking occurs prematurely or non-uniformly, this is often a sign that there may have been some inconsistencies during application, resulting in fluctuations in the applied film build, leaving some areas more vulnerable to early degradation. This is clearly an application or workmanship issue.
- 6. Wrong product:** Using a paint that is designed primarily for interior use, on an exterior application. For example, oil based alkyd enamel paints when used on exterior exposed surfaces tend to lose their gloss and become powdery, after about 2 years of direct exposure to UV radiation. Epoxy resin coatings, in the absence of a suitable topcoat, will undergo yellowing and chalking on exterior exposure.

---

#### Solution

Unfortunately, degradation due to the “chalking” is irreversible once it begins to occur and the appearance can often become quite irregular or patchy in appearance.

To eliminate the effect completely, the entire surface will need to be pressure washed and/or scrubbed with a non-metallic scouring pad to remove all surface contaminants and chalking prior to repainting with an approved UV resistant coating system\*.

# CARE & MAINTENANCE

## Chalking

- Prevention** The use of a water based 100% acrylic latex topcoat will provide superior exterior durability and gloss retention relative to many alternative coatings systems, especially oil based enamels.
- A number of Dulux® decorative paint products could be considered but for maximum gloss retention, the Dulux Weathershield® range provides the best performance.
- A range of Dulux Protective Coatings for exterior steel & concrete along with Dulux AcraTex® Texture Coating systems for exterior masonry façade surfaces and metal/tiled Roofing are also available. Consult your Dulux representative for specific details.
- To minimise or delay the onset of chalking:
1. Specify & apply paint products and coating systems that are acknowledged by the manufacturer to be UV resistant.
  2. Select lighter colours in general as they tend to absorb less heat & UV radiation.
  3. Select colours based on inorganic pigments and/or oxides which are generally more UV resistant.
  4. Establish a maintenance program from the start to ensure that the painted surfaces are washed annually and repainted within a predetermined time period to keep them in good condition.

- 
- References** For information on the methods for assessment of chalking, refer to AS 1580.481.1.11
- Further information relating to paint degradation processes can be found in Australian Standard AS/NZS 2311 "The Painting of Buildings" Sections 1.6.2 & 1.9.4
- \*Information on UV resistant products and coating systems can be also be found in AS/NZS 2311 Table 5.2

**Worth doing, worth Dulux.®**

**Dulux®**

1956 Dandenong Road Clayton  
Victoria 3168 Australia  
T 13 23 77  
[www.dulux.com.au/trade](http://www.dulux.com.au/trade)  
[www.dulux.com.au/specifier](http://www.dulux.com.au/specifier)

Dulux, Worth doing, worth Dulux, AcraTex and Weathershield are  
registered trade marks of DuluxGroup (Australia) Pty Ltd



TECHNICAL ADVICE

# CARE & MAINTENANCE

## Colour fading

# CARE & MAINTENANCE

## Colour fading

### What

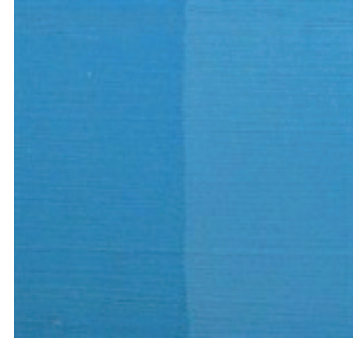
#### What is colour fading?

**“Fading”** is defined in AS/NZS 2310:2002 “Glossary of paint and painting terms” as “The loss of colour of one or more of the colour pigments within the paint film”. Premature and/or excessive lightening of the paint colour often occurs on surfaces with consistently high exposure to sunlight. Fading or poor colour retention can also be a result of the “chalking” process of the coating.

Colour change due to fading is a natural and expected form of paint degradation however it can also be easily confused with or exacerbated by other issues, such as environmental contamination which will also cause a noticeable change in appearance.

Over time, most colours will fade or lose their intensity to a varying degree, depending upon how much exposure to harsh atmospheric conditions takes place during the life of the coating system.

The Dulux® Weathershield® guarantee covers premature blistering, flaking and peeling of the coating system however it does not cover fading (colour change) or chalking of the paint film. 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

When attempting to diagnose the issue, there are several important factors that will need to be considered closely:

- 1. Dirt 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.
- 2. Chalking.** 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.
- 3. Application technique.** If the fading is occurring in “bands” of irregular colour or appearance, this is often a sign that there may have been some inconsistencies during application, resulting in fluctuations in the applied film build, leaving some areas more vulnerable to premature fading and other durability concerns.
- 4. Environmental conditions.** Other factors such as the temperature and humidity on the day of application also need to be taken into consideration as they have the potential to affect both the initial application and the overall appearance of the job.

Differences in the surface temperature on a roof can also cause colour differences. For example, darker bands are often visible along the screws and fasteners across a roof sheet as this area of the surface will be cooler due to the absorption of heat by the roof purlins or battens below.



# CARE & MAINTENANCE

## Colour fading

### How does it occur

Factors and conditions beyond the control of the manufacturer or applicator, are known to accelerate such behaviour in exterior paints for example:

- 1. Sunlight and ultraviolet (UV) radiation:** Fading occurs more quickly in exterior environments where the painted surface is exposed to high levels of sunlight over an extended period\*. Radiation emitted by the sun in the ultra violet (UV) and near infrared (IR) regions may be absorbed by pigments within the coating and strong absorption of these wavelength ranges can appear visually as fading of the paint film.
- 2. Hot/cold temperature cycling:** The greater the extremes of temperature, the greater the stress on the coating system which causes the paint degradation process to accelerate.
- 3. Application of darker coloured paint:** Darker colours tend to absorb more heat and UV radiation thereby putting greater stress on pigments present in the coating resulting in quicker paint degradation.
- 4. Coastal environments:** The combination of salt and atmospheric moisture creates a corrosive environment and constant exposure will cause coatings to start showing signs of deterioration (e.g. fading) more quickly than otherwise expected.
- 5. Correct film thickness:** Product application at lower than the recommended film thickness can accelerate the ageing process of the coating system allowing more UV to penetrate through the film, causing it to degrade more quickly and change colour.
- 6. Over-tinting:** Adding tinters to a white paint that is not intended for tinting or over-tinting a light or deep base can trigger fading problems.
- 7. Wrong product:** Using a paint that is designed for interior use only, for an exterior application is very likely to undergo unwanted colour change issues.

### Solution

Unfortunately colour change due to the “fading” effect is irreversible once it begins to occur and the colour can often become quite irregular or patchy in appearance.

To eliminate the effect the entire surface will need to be pressure washed and/or scrubbed with a non-metallic scouring pad to remove all surface contaminants and chalking prior to repainting with an approved coating system. Seek further technical advice with regards to more fade resistant colours.



# CARE & MAINTENANCE

## Colour fading

**Prevention** To minimise the “colour fading” effect:

- Specify and apply paint products & coating systems that are acknowledged by the manufacturer to be UV resistant.
- Select lighter colours in general as they tend to absorb less heat & UV radiation.
- Select colours based on inorganic pigments and/or oxides which are generally more UV resistant.
- Establish a maintenance program from the start to ensure that the painted surfaces are washed annually and repainted within a predetermined time period.

---

**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

**Worth doing, worth Dulux.®**

**Dulux®**

1956 Dandenong Road Clayton  
Victoria 3168 Australia  
T 13 23 77  
[www.dulux.com.au/trade](http://www.dulux.com.au/trade)  
[www.dulux.com.au/specifier](http://www.dulux.com.au/specifier)

Dulux, Worth doing, worth Dulux and Weathershield are  
registered trade marks of DuluxGroup (Australia) Pty Ltd

TECHNICAL ADVICE

# CARE & MAINTENANCE

## Paintwork touch-up





# CARE & MAINTENANCE

## Paintwork touch-up

### What

#### What is a touch-up?

**"Touch up"** is the term most commonly used to describe the recoating of very small localized areas of a newly painted surface, in order to conceal repairs to minor damage or to cover up small surface defects, such as scuff marks, that have occurred shortly after the painting process was completed.

Whilst the property owner and/or the builder will place considerable importance on achieving a blemish free surface, it is not always possible to achieve an invisible touch-up.

Small blemishes that may still be present will be highlighted or slight variations across the surface will be accentuated by the shadows that are cast when natural or artificial light hitting the painted surface is viewed at low or acute angles (glancing light).

### Why

The main problems associated with touch-up of wall and ceiling paints, from a viewing perspective are as follows:

**Gloss difference:** This is most evident when the paintwork is viewed at low or acute angles especially with head-on directional lighting. For example, looking along the wall towards the light in a long hallway.

The gloss difference is often related to the difference in film build. If the film thickness of the original paint was insufficient to fully seal the substrate, then it's sheen level is likely to be flatter than normal. The extra paint that is applied during the touch-up may deliver a correct but slightly higher sheen level.

**Surface texture:** The difference in surface texture between the original and touch-up paint is often the major cause of touch-up problems. Different application methods and techniques can produce a slightly different surface texture. The degree of the roller stipple may vary or a different appearance between roller and brush marks may be evident, especially under critical lighting conditions.

**Colour difference:** A colour variation between the original coat and the touch-up may present a problem, especially with deeper colours which tend to highlight any gloss or texture variations.

**Opacity:** The ability of paint to obliterate the background colour of the substrate is called "hiding power" or opacity. If the original coat was applied too thin or was overspread and failed to fully hide the surface below, the observed or perceived colour may not be the same. If full hiding is delivered to the repaired area by the touch-up coat, it is possible that it will stand out as having a different colour.

### How does it occur

It is not feasible to achieve a perfect match when fresh paint is applied to the same paint that has been adversely affected by in-service conditions such as weather, wear and soiling.

Touch-ups are often expected to be carried out when coatings on surfaces recently painted by a professional painter get damaged by other tradesmen working on the same site or in the same location.

## CARE & MAINTENANCE

### Paintwork touch-up

The appearance of the existing painted surface has now been compromised and this can be difficult to manage if the painter experiences any issues in readily achieving invisible touch-ups.

Unless specifically stated in a contract, the professional painter is not specifically responsible for damage caused by others nor should they be under any obligation to attempt touch-up or provide other forms of repair to rectify this damage. This can however be covered by a separate remuneration agreement between both parties or as an 'extra' to the main contract.

(Ref: AS/NZS 2311 Clause 9.2.1.5)

---

#### Solution

Firstly, the area to be touched-up needs to be clean and dry.

Achieving a touch-up that is invisible under all or most lighting and viewing conditions requires application of the same sample of paint that was originally applied to the surface.

In addition, the application equipment used (brush or roller sleeve) should be the same as those used for the original application, as should the equipment loading, the speed, pressure and direction of application.

Alternatively, combined application methods may be used, such as brushing to apply paint to the affected area followed by laying-off with a dampened but unloaded roller to provide a match to the texture of the surrounding area.

The relative ease of touching-up generally increases as the gloss level of the paint decreases. This is consistent with the general principle that flatter paints conceal surface irregularities better because they scatter the light more effectively. (Ref: AS/NZS 2311 Section 6.8).

Quality or invisibility of touch-up are not a matter of paint performance, but are one of skill and technique. If the same sample of paint is used, applied with the same equipment, loading, technique, pressure, direction of lay-off and preferably by the same painter, an invisible touch-up can be expected. However, it cannot be guaranteed.

In some situations, performing an effective touch-up may be too difficult since it might be necessary to repaint the entire affected surface, which is a costly and time consuming exercise.

---

#### Prevention

Damage to applied coatings by other tradesmen is the joint responsibility of the tradesperson(s), supervisors and job planners involved. If damage is unavoidable, painting should be rescheduled to a later stage.

Neither the paint nor the professional painter should be held responsible for rectifying damage (at their own cost) brought about by others negligence, lack of care or poor work practice. The people responsible need to be held accountable for providing acceptable restoration of the original paintwork, by whatever means is deemed appropriate, including complete repaint of the affected surface when necessary.

## CARE & MAINTENANCE

### Paintwork touch-up

The probability of achieving an invisible touch-up will decrease as the number of deviations from the original application conditions increase. If touch-ups are invisible at some viewing angles but visible at other viewing angles, this indicates that they do not have the same (microscopic) surface texture as the surrounding areas of the original paintwork. Therefore application conditions used for touch-up were clearly different to those employed when the original paintwork was done.

The easiest coating to touch-up is the one that was applied properly in the first instance. Ideal conditions include a level, clean, sealed surface with sufficient film thickness to give full opacity and colour.

The general principle that flatter paints conceal surface irregularities better because they scatter the light more effectively than higher gloss levels means that the ease of touch-up is enhanced when flatter paints are employed.

#### Recommended touch-up technique

In order to overcome the main problems associated with an effective touch-up of paints (above), the professional painter should adhere to the following steps:

- Use the same paint that was used originally to minimise any colour difference. Pastel colours are more forgiving than deeper colours.
- Minimise gloss and opacity variations by applying only enough paint to cover the damaged area. Final sheen level may take several days to fully develop as the paint cures.
- Minimise surface texture differences by using the same type of roller sleeve when touching-up as was used for the original paintwork, especially the same nap length.
- Do not use a brush to touch-up rolled areas (the brush marks will be visible and will cause a gloss difference).
- Use combined application methods, such as brushing to apply paint to the affected area followed immediately by laying-off with a dampened, but unloaded roller to provide a match to the texture of the surrounding area.

Note: It is not recommended using a fresh or new can of paint purchased weeks or months after the original paint work was completed, as small batch-to-batch variations can occur and the colour may be marginally different yet still within specification tolerances. It will therefore be necessary to repaint the entire surface to hide these unsightly repairs and unsuccessful touch-ups.

#### References

Further information on this topic can be found in the Australian Standard AS/NZS 2311 "The Painting of Buildings" Section 6.8 and Clause 9.2.1.5.



**Worth doing, worth Dulux.®**

**Dulux®**

1956 Dandenong Road Clayton  
Victoria 3168 Australia  
T 13 23 77  
[dulux.com.au/trade](http://dulux.com.au/trade)  
[dulux.com.au/specifier](http://dulux.com.au/specifier)

Dulux and Worth doing, worth Dulux, are  
registered trade marks of DuluxGroup  
(Australia) Pty Ltd