

DULUX BEST PAINTING PRACTICE

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THIS ISSUE SUPERSEDES ALL PREVIOUS PUBLICATIONS

PREVIEW TO THE IMPORTANCE OF GOOD PAINTING PRACTICE AND THE KEY ELEMENTS

Paint coatings are composed of different chemicals, which combine synergistically to provide the paint with its properties. However, in order to derive the optimum paint properties and maximise the longevity of the coatings, it is of paramount importance that the paint coating is applied using best painting practices and according to the manufacturer's specifications. In the main, it is essential that the substrate to which the paint coating is applied is free of defects that will affect the adhesion of the coating system. Adhesion to the substrate is the key to coating longevity. In addition, it is important to use a paint coating system that will protect the building substrates and enhance the aesthetics of the building. This document addresses the most important elements of surface defects, and provides detailed instructions for the repair, removal, cleaning and general preparation that is required prior to the painting of new and existing plaster, concrete, brickwork, and building boards.

Prevention is better than cure and the secret of a perfect, long-lasting paint finish is a sound, clean and dry substrate, and the correct use of products. It is important to note that for optimum coating performance, fresh plaster should be allowed to dry and cure adequately, i.e. one week drying for every 5mm thickness, and longer in cold or damp weather.

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1. DEFECTS IN BUILDINGS AND REMEDIES

1.1 **Dampness and Moisture in Walls: Key Products for Remedy are Dampshield and Rainshield**

Definition of Structural Dampness

This refers to the presence of unwanted moisture in the structure of a building, either the result of intrusion from outside or condensation from within the structure. The most damage to paint systems, and eventually to the substrate and the structure, is caused by excessive moisture in the walls.

Damp can be of three categories, viz:

- Condensation due to temperature differences between moisture containing air and the building surfaces.
- Rising damp emanates from water in the ground. Rising damp is the common term for the slow upward movement of water in the lower sections of walls and other ground-supported structures by capillary action. The height of the rise is rarely above 1.5m.
- Penetrating damp is caused by rain and is also known as descending damp and lateral damp.

Prior to painting, the building needs to be inspected for all signs of dampness. Tell-tale signs of dampness are the deposition of salts on the surface, flaking paint, water staining and discolouration.

Pigments used in Dulux premium quality exterior coatings are chemically stable and UV stable under “normal” conditions i.e. moisture levels below 12%. The pigments used have the highest rating resistance to acid and alkali but at high moisture levels, soluble salts from the plaster composition and elsewhere are transported through the coating by the moisture and deposited on the coating surface. The result is discolouration of the surface of the paint and sometimes deterioration of plaster.

Prior to painting, it is essential that causes of dampness are established and cured. A damp proofing specialist or plumber should be consulted if necessary for rectification using appropriate water drainage and plumbing methods.

N.B The ICI Dulux Quality Guarantee excludes damage to coating systems arising from dampness and moisture ingress.

1.1.1 **Remedy: Rising dampness in solid walls**

This occurs where plaster has been continued below DPC level, or in the absence of adequate DPC protection. On walls containing up to 50% moisture, apply DULUX PRE-PAINT DAMPSHIELD from the ground up to 1.5m, as an apron around the wall. Ensure application and preparation is in accordance with specification. Note that DULUX PRE-PAINT DAMPSHIELD is a moisture barrier and as such will not cure the source of the moisture, but merely remedy the effects.

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1.1.2 Remedy: Dampness in boundary walls, earth-retaining walls and any free-standing structure

For retaining walls, apply one coat of DULUX PRE-PAINT DAMPSHIELD and two coats of DULUX RAINSHIELD - Membrane free, flexible fibre reinforced waterproofing on the earth retaining face of the wall. Allow to dry for a week before commencing with the earth piling. In the case of boundary or freestanding walls or parapet walls, the tops should be sealed with DULUX RAINSHIELD - Membrane free, flexible fibre reinforced waterproofing, applied to achieve a waterproofing film thickness of 1000 microns (at least four full coats). The waterproofing system should be taken up, over, and down the walls and extended at least 25mm down the sides. To prevent capillary action (water cohesion) the waterproofing system must be worked well into the substrate.

1.1.3 Remedy: Areas prone to penetrating damp

Repair and seal any area of water ingress from roofs, balconies, horizontal or sloping wall tops, joints between windows and plaster reveals, etc. with DULUX RAINSHIELD - Membrane free, flexible fibre reinforced waterproofing, applied to achieve a waterproofing film thickness of 1000 microns (at least four full coats).

1.1.4 Remedy: Efflorescence and lime bloom as a result of excessive moisture

These are a result of water within the structure, dissolving salts and lime, then evaporating and leaving a white deposit on the surface. It should be brushed down and wiped with a dampened (not wet) sponge. The brushing/wiping must be repeated as often as the deposits appear. Painting must not commence until efflorescence has ceased.

1.2 Defects and Cracks in Plaster and Concrete

1.2.1 Cracking

Cracking in walls can have numerous causes, but one of the main causes is the settlement of the building in combination with inferior plaster mix, and the presence of moisture and dampness. It is important to assess the cracking and ensure that it is not interfering with the structure of the building.

Remedy: Hair cracks (-0.2mm)

Remove dust and debris. Apply DULUX PRE-PAINT MULTI PURPOSE CRACKFILLER with a filling knife. Work the filler into the crack, leave to dry and sand to a smooth surface.

On interior surfaces, use DULUX PREPAINT INTERIOR CRACKFILLER. Allow to dry and sand to a smooth surface.

1.2.2 Remedy: Medium plaster cracks (+0.2mm and -2mm)

Rake out with a scraper blade. Treat fungal growth with either 4:1 water/chlorine, or 4:1 water/sodium hypochlorite (bleach). Ensure that the areas are completely

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saturated, and allow the solution to react for a minimum of 4 hours. Rinse the complete wall surface thoroughly with clean water and allow drying. Remove dust and debris. Apply DULUX PRE-PAINT MULTI PURPOSE CRACKFILLER with a filling knife and smooth off with a wet knife.

On interior surfaces, use DULUX PRE-PAINT INTERIOR CRACKFILLER. Allow to dry and sand to a smooth surface.

1.2.3 Remedy: Extensive map-crazed cracks

Open and clean all cracks wider than 2mm according to instructions above (medium cracks). After all cracks have been opened and cleaned, coat the entire surface from corner to corner with DULUX PRE-PAINT SMOOTHOVER™ Exterior & Interior. Apply with a wet plastering trowel, skimming tool or large scraper, moving in an upward curve, maintaining a firm and even pressure. The product can be sanded, using water sandpaper and water.

On exterior, textured wall surfaces one to two coats, DULUX RAINSHIELD - Membrane free, flexible fibre reinforced waterproofing may be applied to achieve the required crack-bridging and waterproofing thickness of 150 dry film build, from corner to corner in strict accordance with application instructions for vertical wall surfaces.

1.2.4 Remedy: Large structural cracks (+2mm), holes and corner cracks

Open out with a disc grinder in a V-shape to 3mm or larger. Cut on both sides of the wall. Treat fungal growth with either 4:1 water/chlorine, or 4:1 water/sodium hypochlorite (bleach). Ensure that the areas are completely saturated, and allow the solution to react for a minimum of 4 hours. Rinse the complete wall surface thoroughly with clean water and allow drying. Apply DULUX PRE-PAINT QUICK SETTING CEMENT Interior & Exterior in strict accordance with application instructions.

1.2.5 Remedy: Movement/Expansion joints

Remove the defective existing sealant and clean out thoroughly. Ensure the joint is cut through the plaster into the brick. This will prevent the plaster from cracking next to the actual joint. Insert backing cord on both sides of the wall and fill with a suitable, paintable and flexible joint sealant with a putty knife or small trowel, forcing the paste well into the backing cord and gaps. Where necessary, create an expansion joint in a V-shape to 3mm or larger. Use a disc grinder and cut on both sides of the wall. Follow the manufacturer's instructions for cleaning and filling for the chosen flexible joint sealant

1.2.6 Remedy: Friable plaster and mortar

Plaster of which the adhesion is suspect must be removed down to sound brickwork, and re-plastered to match existing.

Mortar pointing or grout in brickwork that is soft and friable, must be scraped out between the bricks and re-applied with a 1:3 cement/sand mortar.

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1.2.7 Remedy: **Concrete spalling** (carbonating)

Occurs when the reinforcing steel in concrete corrodes. The corrosion is caused by the ingress of salt and carbon dioxide into the concrete. When steel corrodes, the rust has a larger volume than the original steel and this expansion breaks the surrounding concrete. Concrete where spalling (carbonating) occurs must be chipped away and removed. Prepare damaged and rusted steel reinforcing by cleaning away all corrosion down to bright, shiny metal. Paint with a corrosion resistant paint system. Inadequate cleaning, repair and painting, may lead to further contamination of the concrete. Ensure that all concrete areas with a negative pH (less than 12) are removed and repaired. Re-instate with a lightweight cement mix, or a patching plaster, or apply DULUX PRE-PAINT EXPANDING FOAM, in strict accordance with application instructions.

1.2.8 Remedy: **Mapping/repair witnesses / Rough, uneven plaster**

Apply DULUX PRE-PAINT SMOOTHOVER™ Exterior & Interior with a wet plastering trowel, skimming tool or large scraper, moving in an upward curve, maintaining a firm and even pressure. The product can be sanded, using water sandpaper and water. It may be necessary to build-up the required film thickness with more than one application, as the maximum build per coat should not exceed 5mm.

2. PREPARATION AND PRIMING

2.1 **Cleaning**

Dirt, dust, loose/flaking paint and chalk must be removed before painting. Chalk is loose white powder from previous coating. It is easily detected by rubbing the surface with a black cloth.

Exterior

To remove flaking paint, chalkiness, as well as dirt and debris, clean exterior walls by high-pressure water blast, using a rotating nozzle at a pressure of 150 to 180 Bar. Remove any remaining loose, flaking paint from the surface with a sharp paint scraper and firm hand pressure. It is not necessary to remove well-bonded layers of paint. Crosshatch tests should be done on areas where the adhesion of paint is suspect. Feather edges of tightly bonded paint with rough to medium grit paper to smooth them off and provide an even surface without repair witnesses. N.B. For chalked paint that cannot be removed by washing, DULUX TRADE BONDING LIQUID may be applied to penetrate and bond the surface. Please note that Dulux Trade Bonding Liquid must be overcoated within 48 hours.

Interior

Wash interior wall surfaces with a solution of DULUX PRE-PAINT SUGAR SOAP POWDER. This will ensure that any dirt and grease on the surface, as well as chalked paint, has been removed. Rinse thoroughly with clean water.

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Enamel surfaces to be over-coated with water-based paints: To aid adhesion, sand to a matt finish and apply DULUX UNIVERSAL UNDERCOAT.

Fungal growth (lichen and algae)

Scrub with one of the following solutions: either 4:1 water/chlorine, or 4:1 water/sodium hypochlorite. Ensure that the areas are completely saturated, and allow the solution to react for a minimum of 4 hours. Rinse the complete wall surface thoroughly with clean water and allow drying. In some instances, the fungi or algae may have to be wire brushed to open the spores and to aid the solution penetrating the pores and killing the fungi. Rinse the complete wall surface thoroughly with clean water.

Pre-cast concrete

Acid etch the surface with a solution of hydrochloric acid to remove laitance, uncured cement, etc. as follows: use one (1) volume hydrochloric acid to two (2) volumes water. More than one application may be necessary to achieve a paintable surface. N.B. Hydrochloric acid is corrosive - please wear protective clothing, gloves, masks and eye goggles against splashes. Allow the acid solution to react for 15 minutes and then wash away all acid with copious amounts of clean water. Remove excess water and allow thorough drying

Roofs

Cement Tile

To remove flaking paint, chalkiness, as well as dirt and debris, clean roof tiles by high-pressure water blast, using a rotating nozzle at a pressure of 150 to 180 Bar. Remove any remaining loose, flaking paint from the surface with a sharp paint scraper and firm hand pressure, or scrub the entire roof area using a bristle brush and potable water. Cleaning will reveal areas where adhesion of paint is still suspect, remove down to sound substrate with scraper blades and feather the edges. Old, Weathered Fibre Cement may be porous and encourage the growth of fungus. Scrub areas with an antifungal and allow reacting before rinsing of the residue thoroughly using potable water.

Galvanised Iron

Bristle scrub the surface with scourers and DULUX GALVANISED IRON CLEANER, following the recommendations on the packaging. Remove the cleaner residue using high-pressure water blast, using a rotating nozzle at a pressure of 150 to 180 Bar, or scrub the entire roof area using a bristle brush and potable water. Test for a "water-break" free surface. Cleaning will reveal areas where adhesion of paint is still suspect, remove down to sound substrate with scraper blades and feather the edges. Any white rust should be cleaned to bare shiny metal whilst red rust should be pacified using mechanical cleaning and a suitable rust converter. Through rust should not be cleaned or treated, but removed and new bolts, screws, hinges or sheets should be fitted.

N.B. When in close proximity to the ocean, it is important to ensure that surfaces are free of contaminants, specifically salt deposits, before painting can commence. Inter-coat washing is therefore essential.

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2.2 The Correct Use of Primers

The correct primer should always be applied to a new substrate to ensure that it is sealed and to ensure coating adhesion. Substituting the primer with a non-primer, or an economical contractor's PVA may compromise the coating system, as the system is only as strong as its weakest link. The PVA may not perform adequately as a primer because alkali attack or any moisture in the structure can weaken it, resulting in loss of adhesion and failure of the entire coating system.

Primers for Cement and Gypsum (Rhinolite) Plaster, Galvanised Iron and composite boards

DULUX PLASTER PRIMER is recommended as a primer for smooth interior plaster surfaces, new and exposed ceiling boards, as well as new and exposed Rhinolite (2-coat plaster). Surfaces must be allowed to dry out thoroughly – no more than 12% moisture content. For very absorbent surfaces such as gypsum plaster more than one coat **DULUX PLASTER PRIMER** could be required to achieve correct binding and sealing properties.

DULUX PLASTER PRIMER is also the recommended primer/sealer for all areas where crackfiller has been applied. Crack filler is porous and if left unsealed, it will absorb binder from the topcoats, resulting in dull patches.

DULUX TRADE PLASTER PRIMER – MOISTURE TOLERANT may be used as an early primer for newly plastered walls, as it tolerates moisture of up to 30%. It protects topcoats from alkali attack and efflorescence.

DULUX GALVANISED IRON PRIMER should be applied to all bare, well cleaned galvanised iron surfaces.

DULUX TRADE ECOSURE WATER-BASED PLASTER PRIMER is an environmentally friendly primer for use on new dry interior and exterior porous surfaces such as brick, concrete, cement, and most types of composite boarding.

Magnesium Oxide (MgO) composition boards should be primed using Dulux Trade Alkali Resistant Primer, to prevent the alkali mineral salts in the board matrix, to chemically interact with the top coat, preventing alkali burn and flaking.

A minimum of two finishing coats to be applied on all surfaces.

2.3 Touching up of Painted Surfaces

In the manufacture of coloured paint, every effort is made to control the colour consistency between batches so that there are no perceptible differences. However, it is good practice to use cans from the same batch to eliminate any differences.

Touching-up must always be done from corner to corner and from top to bottom.* This is particularly pertinent in exterior products that are older than two years where use of the original colour paint for touch-ups may show colour differences.

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Exterior

If painting from corner to corner is not done, the following problems may result:

- Where newly painted walls have been damaged, the same principle applies as for the redecoration of existing surfaces: Where touch-ups are done on a wall, there will be a colour difference due to the extra depth of colour on that one spot.
- The touched-up patch will also stand slightly proud on the walls, which will result in an uneven appearance. Furthermore, light reflection on uneven surfaces will result in sheen differences.
- Touch-ups and patching are usually done with a brush and these brush marks will contribute to the difference in appearance, against a background where a roller was previously used.
- The effect of touch-ups and spot-patching will be made worse in cases where a crack filler has been used on damaged areas – touching up/patching without a sealer/primer will result in a dull, rough appearance where the crack filler has absorbed the binder in the topcoat.

Interior

- Touch-ups and patching are usually done with a brush and these brush marks will contribute to the difference in appearance, against a background where a roller was previously used.
- The effect of touch-ups and spot-patching will be made worse in cases where a crack filler has been used on damaged areas – touching up/patching without a sealer/primer will result in a dull, rough appearance where the crack filler has absorbed the binder in the topcoat.
- To avoid an effect known as picture framing, cutting of corners and edges should always be followed by rolling.

Please bear in mind that the appearance of a colour can depend on the type of lighting. Therefore, check the colour in actual lighting conditions that will be used.

N.B. If repainting from corner to corner is not a viable option, we recommend that the Paint Distributor eye-match the existing colour on the walls. A better colour match will be achieved if paint from the same batch is tinted and boxed. Please bear in mind that the appearance of a colour can depend on the type of lighting. Therefore, check the colour in the actual lighting conditions that will be used.

3. GENERAL PRECAUTIONS AND ADDITIONAL INFORMATION

- Colour references are as accurate as modern printing will allow. Please refer to the in-store stripe cards/standard card, or on-shelf colour displays for an accurate representation of the colour. Among others, the following factors may affect final

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colour appearance: product sheen and texture, colour and light reflections, application, surface texture and preparation. A wet sample applied to the wall that will be painted, will show the true colour of the final finish.

- For best colour and sheen consistency, it is advisable to use containers of the same batch number, or to mix different batches together in a large container, or to finish in a corner before starting a new container.
- Before using any product, read the packaging. Note any special warnings or specialist applications needed.
- For detailed safety information, refer to Material Safety Data Sheets.
- Keep all paint products out of reach of children and animals.
- Ensure good ventilation during application and drying.
- When using solvent-based paints, respiratory protection must be worn.
- Do not smoke, eat or drink whilst handling.
- Do not apply during cold, very hot or wet weather – surface temperatures should be between 10 and 35°C.
- Adhere to preparation and application instructions contained in Dulux Technical Data Sheets.
- All products should be stored in a cool, dry, and well ventilated space. Flammable products should be kept away from heat sources, direct sunlight and open flames. Always check warnings on packs.
- For safe disposal instructions, refer to Material Safety Data Sheet.

4. BASIC FIRST AID

First Aid should only be administered by a trained individual.

- Inhalation. Move to fresh air, keep the patient warm and still. If breathing becomes irregular or stops, administer artificial respiration.
- Eye contact. Wash with clean, fresh water for several minutes, holding eyelids apart. Remove any glasses or contact lenses.
- Skin contact. Remove contaminated clothing, wash skin thoroughly with water and soap. Do not use solvents or thinners.
- Ingestion. If any products are accidentally swallowed, do not induce vomiting. Keep the patient at rest and seek immediate medical attention.
- *Always seek medical attention if in doubt or if symptoms persist.*

5. LEAD FREE

All Dulux products contain no added lead. However, surfaces that have been repainted or older surfaces may contain lead. Special precautions should be taken during surface preparation of old painted surfaces. For further advice, please contact the Dulux Technical Advice Centre

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DISCLAIMER

The recommendations contained herein are given in good faith and meant to guide the specifier or user in conjunction with the Dulux Technical Data Sheets. They are gained from our tests and experiences and are believed to be accurate and reliable.

Important Note; Technology may change with time, necessitating changes to this Best Paint Practice Document

It is the responsibility of the user to ensure that the latest Best Painting Practice Document is being used for reference. Best Painting Practice Document are available on our website www.dulux.co.za or please contact: Dulux On-Line on 0860 330 111. Email ZA.Helpline@akzonobel.com

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