



# Common “paint” problems & Paint Guarantees

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the paint the professionals use

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# Purpose of Common Paint problems & Paint Guarantee

- Look at a selection of common issues
- Show you what Paint Guarantees actually cover



## A look at:

- Issues on Timber
- Issues on Concrete
- Issues in Interior
- Paint Guarantees

# Resene

the paint the professionals use

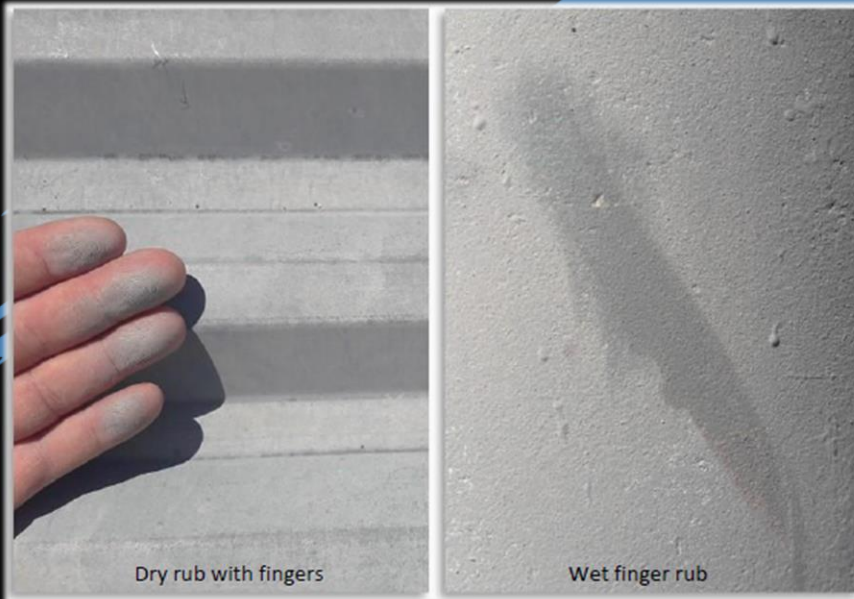
**Resene**   
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# Chalking



## Cause:

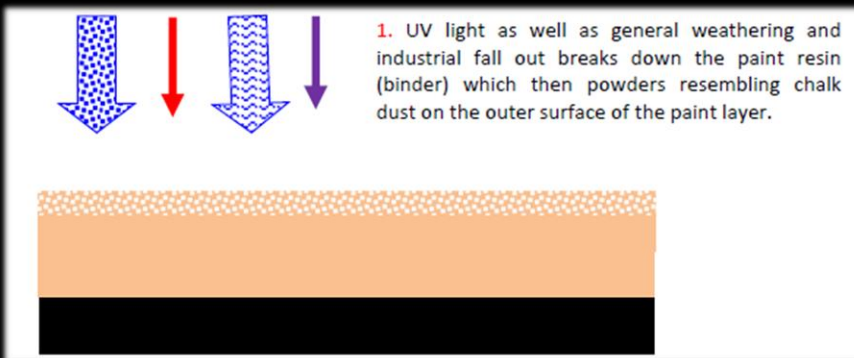
Occurs on all painted surfaces. UV light and general weathering breaks down the binders in paint surface over time to form a chalk like dust on surface. Often mistaken for fading

## Prevention:

Cannot be prevented however use of good quality paints slows the process. Higher Gloss performs better than lower gloss. Less obvious in lighter colours

## Remedy:

Clean down using correct method of scrubbing (not waterblasting). Prime and repaint



# General issues relating to timber substrates

# Lifting & peeling



## Cause:

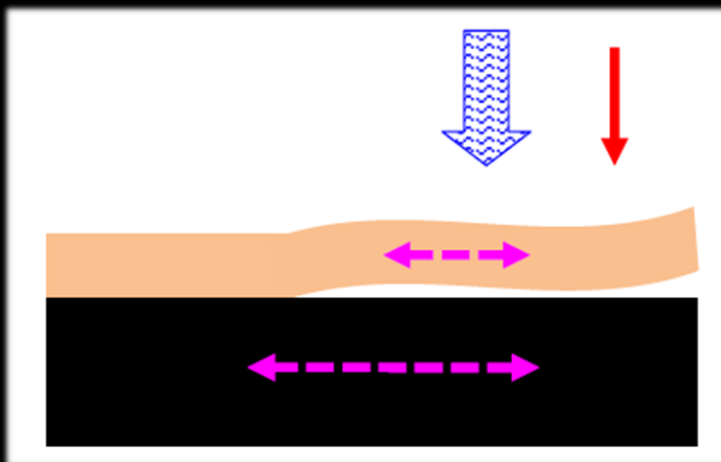
Often older original coatings in poor condition painted with new more flexible coatings. This creates surface tension and lifts the old coating from the surface. Dark colour will increase issues

## Prevention:

Testing for adhesion of existing coatings prior to commencing. Good surface preparation, full strip if possible. Use lighter colour if not stripping

## Remedy:

Strip to remove issues, full preparation and repaint



# Sharp edge splitting



## Cause:

Sharp edges cause stress in paint film, which pulls back from edge reducing film thickness. Thinner film area is affected by weather and moisture can migrate through. Timber can swell and split coating

## Prevention:

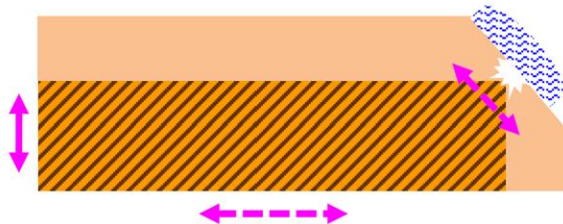
Sharp edges should be removed/ radiused prior to painting (2mm is ideal)

## Remedy:

Remove sharp edges by sanding, prime and re-paint

### Schematic:

1. Paint pulls back from a sharp edge due to surface tension when in its wet stage.



2. Water sits on the edge, penetrates and swells the timber. The dry paint film is thinner and therefore cannot expand as much as a normal film and splits further.

# Flaking & peeling



## Cause:

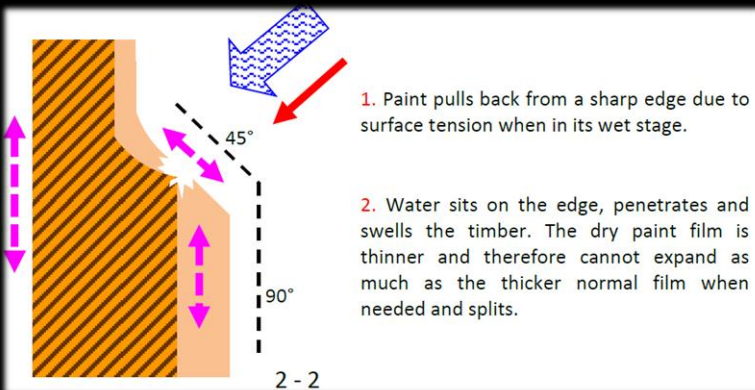
Increased exposure (double) to UV due to 30-45° angle. Sharp edge at base area starts the issue with low film build

## Prevention:

Ensure Sharp edges should be removed/radiused prior to painting. Ensure good surface preparation and correct primers & film builds are applied

## Remedy:

Clean back, treat mould, sand to remove damage and sharp edges, repaint





# Splitting - timber



## Cause:

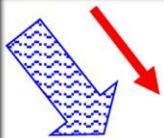
Movement of timber along its grain boundary. Hairline crack occurs allowing moisture ingress with loss of adhesion occurring around area

## Prevention:

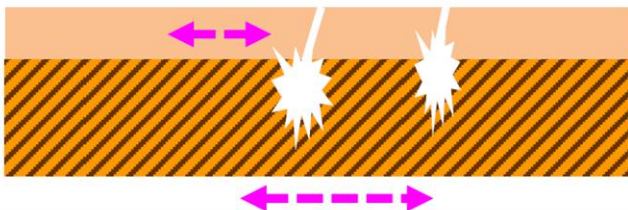
Select quality stable timber and correct primers/topcoats

## Remedy:

Clean back, treat mould, sand to remove damage, fill cracks, repaint



1. Stress is placed within the substrate grain structure which then moves beyond its cohesive capacity and splits along the grain. The paint film, which cannot move as much as the underlying substrate, then also splits at the weak point.



# End grain/cut splitting



## Cause:

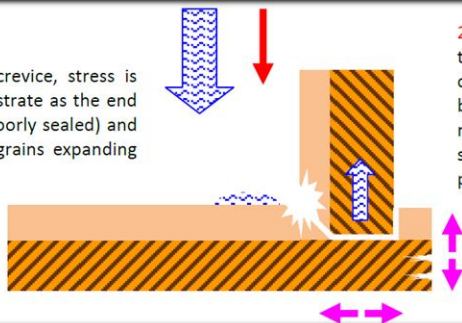
Natural movement of timber causes cracks to open at joints creating a crevice. Moisture ingress occurs overtime causing splitting

## Prevention:

End grain should be sealed at construction phase. Flexible sealants to seal joint

## Schematic:

1. Water seeps into the crevice, stress is placed on / within the substrate as the end grains are not sealed (or poorly sealed) and the water travels up the grains expanding the timber.



2. The timber grain structure then moves beyond its cohesive capacity and splits at the grain boundary. The paint film cannot move as much as the underlying substrate also splits at the weak point.

## Remedy:

Difficult to fix after construction phase. Scrape back, fill areas, seal crevice with paintable/flexible sealant before topcoating

# Cracked Timber sashes & Sills



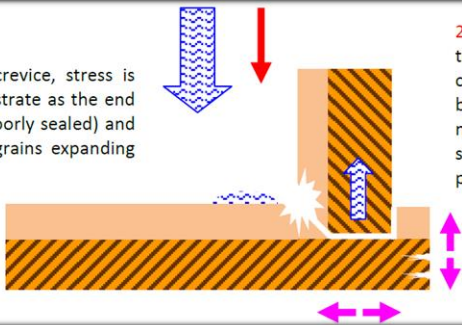
**Cause:**  
Natural movement of timber causes cracks to open at joints creating a crevice. Moisture ingress occurs overtime causing splitting

**Prevention:**  
Very difficult to prevent re-occurring unless specialist repairs carried out.

**Remedy:**  
Difficult to remedy when just re-painting and will likely re-occur. Specialist flexible epoxy repair systems can often deal with most issues.

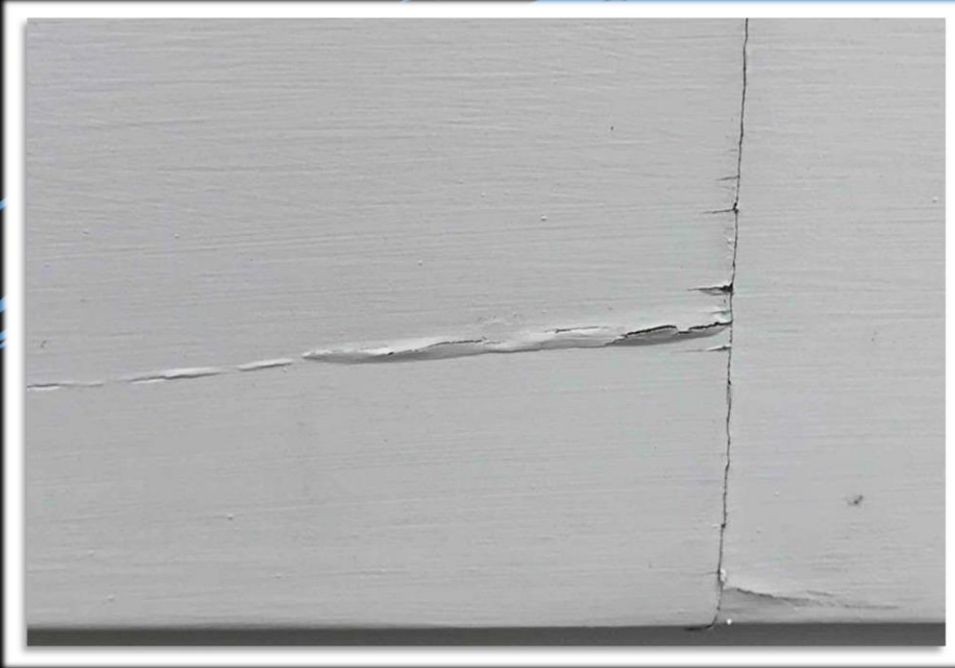
## Schematic:

1. Water seeps into the crevice, stress is placed on / within the substrate as the end grains are not sealed (or poorly sealed) and the water travels up the grains expanding the timber.



2. The timber grain structure then moves beyond its cohesive capacity and splits at the grain boundary. The paint film cannot move as much as the underlying substrate also splits at the weak point.

# End Grain Butt joint Splitting



## Cause:

Natural movement of timber causes cracks to open at joints creating a crevice. Moisture ingress occurs overtime causing splitting

## Prevention:

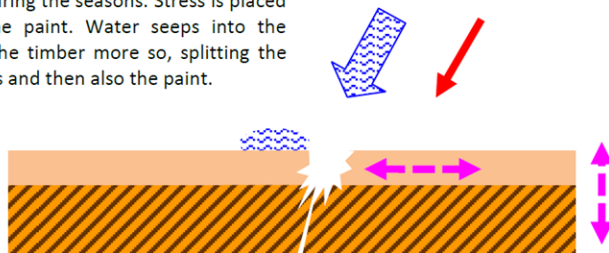
End grain should be sealed at construction phase.

## Remedy:

Difficult to fix after construction phase. Likely to re-occur. Scrape back, fill cracks, prime and re-paint

## Schematic:

1. Timber naturally moves during the seasons. Stress is placed on the joint and cracks the paint. Water seeps into the crevice, which then swells the timber more so, splitting the timber at its grain boundary's and then also the paint.



# Cracked Putty



## Cause:

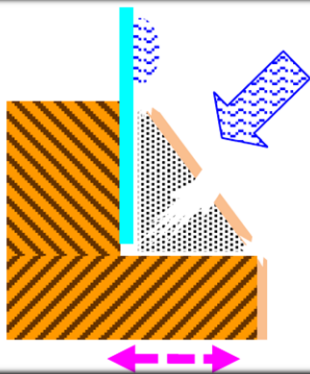
Timber in rebates often not primed prior to putty. Long term weathering also allows moisture to creep in over time causing failure

## Prevention:

Prime rebates prior to putty. (Use modern sealants). Apply good quality paint system over and check regularly

## Remedy:

Remove all affect putty, prime rebate area, re-putty (allow to cure fully) or use modern glazing sealant before re-painting



1. Water seeps into the crevice, cracks and between the glass/putty, which causes stress to be placed on and within the timber and paint film, splitting at any grain boundary weak point.

# Weatherboard Shrinkage



## Cause:

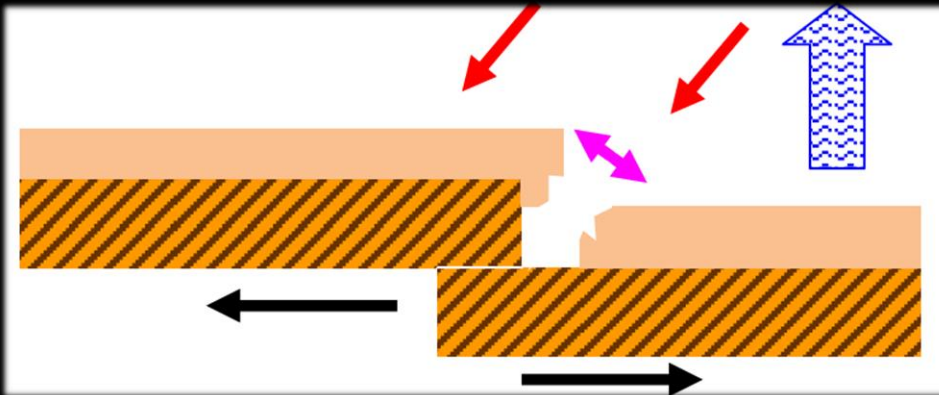
Timber expands and contracts through moisture uptake over the seasons causing movement in all weatherboards. Dark colours accentuates heat stress and movement.

## Prevention:

Allow timber to acclimatise and use dimensional stable timber and lighter colours to minimise issues. Apply 1<sup>st</sup> Topcoat before installing boards

## Remedy:

Use of lighter colours if possible. Stripe coating affecting areas would be required.



# Weatherboard Sealant Tearing

## Cause:

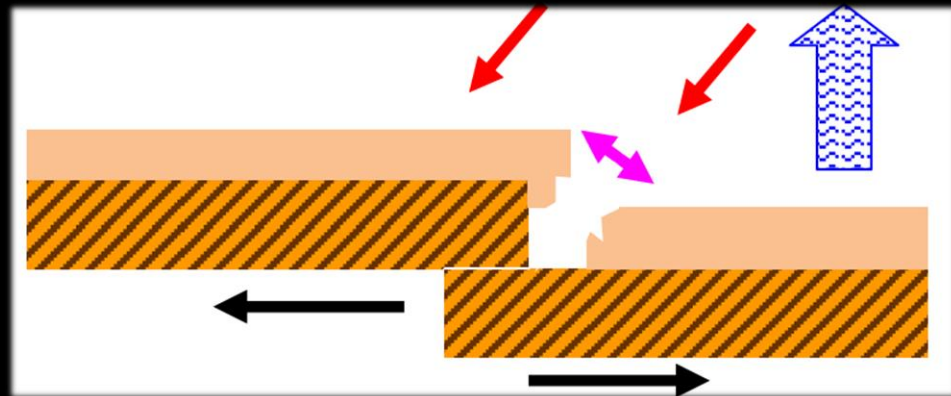
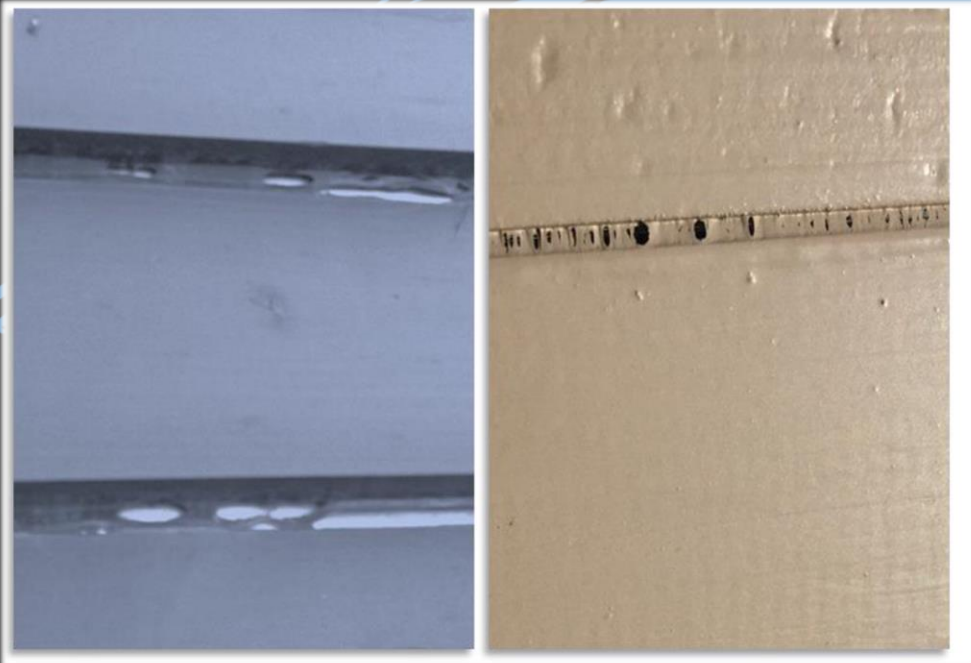
Timber expands and contracts through the seasons causing movement in all weatherboards. Dark colours accentuates heat stress and movement.

## Prevention:

Allow timber to acclimatise and use dimensional stable timber and lighter colours to minimise issues. Apply 1<sup>st</sup> Topcoat before installing boards. Don't use sealants, all weatherboards expand & contract

## Remedy:

Use of lighter colours if possible. Stripe coating affecting areas would be required.



# Tannin Staining



## Cause:

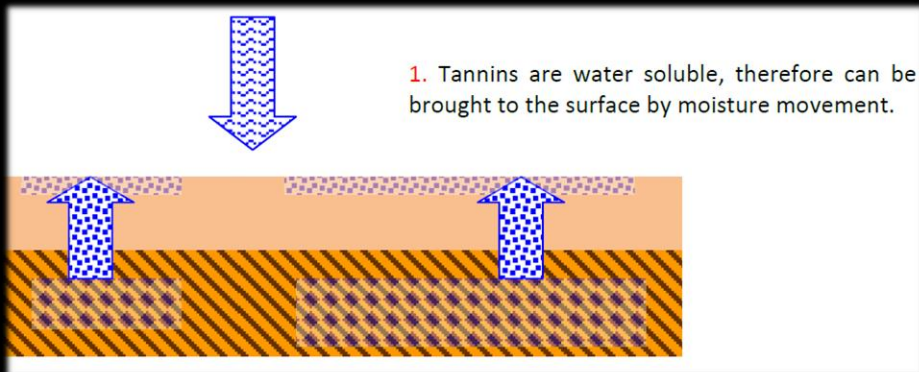
Yellow/Red brown tannins migrate through paint or stain surface showing grain pattern (often occurs with cedar)

## Prevention:

Use of quality Alkyd Wood primer

## Remedy:

Clean and spot prime with Alkyd wood primer or stain blocking paint.





# Resin Bleed



## Cause:

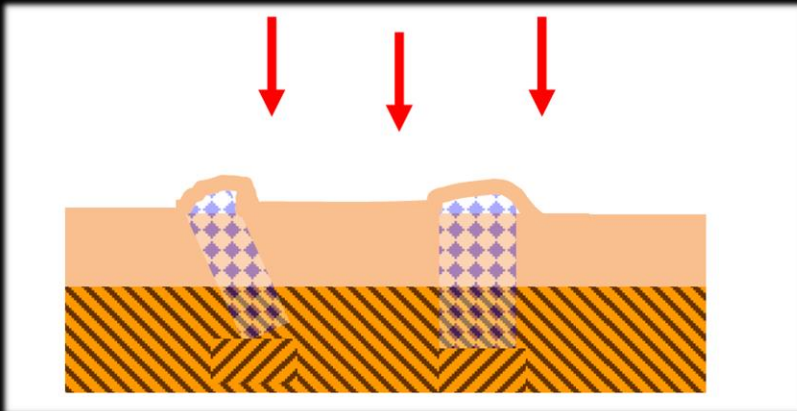
Resinous (sappy) grain section of timber, when heated can migrate through coating. Darker colours exacerbate the issue. Often occurs with lesser quality timber

## Prevention:

Natural process difficult to stop. Use higher quality timber, chose lighter colours

## Remedy:

Scrape off residue, allow a few days for underlying resin to harden. Prime with Aluminium alkyd primer



# Resin “show through”



## **Cause:**

Wood extractives migrate through a section of timber. Darker colours exacerbate the issue. Often occurs with lesser quality finger jointed pine in the smaller sections

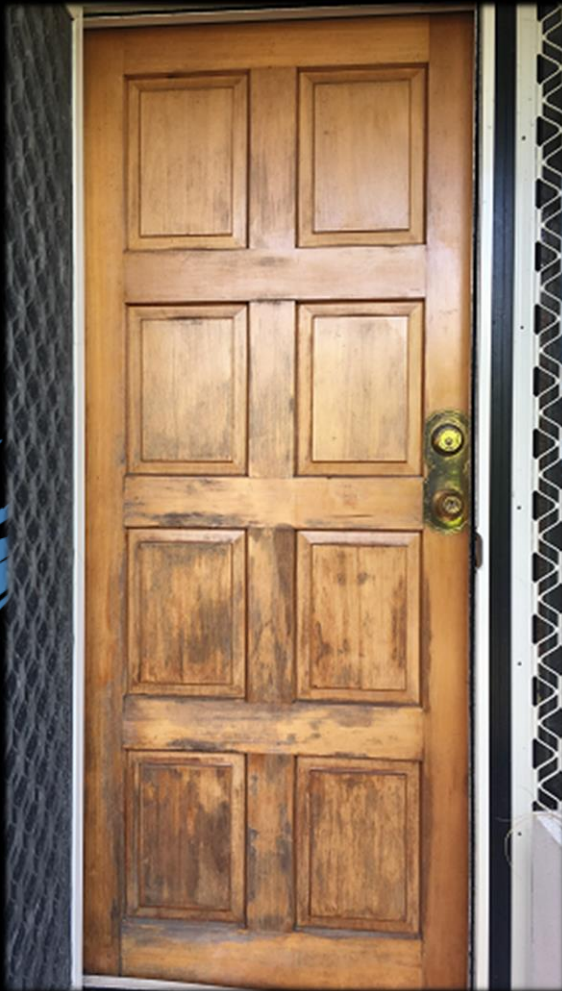
## **Prevention:**

Natural process difficult to stop. Use higher quality timber, chose lighter colours

## **Remedy:**

Scrape off residue, allow a few days for underlying resin to harden. Prime with Aluminium alkyd primer, Repaint

# Clear Coatings Exterior



## Cause:

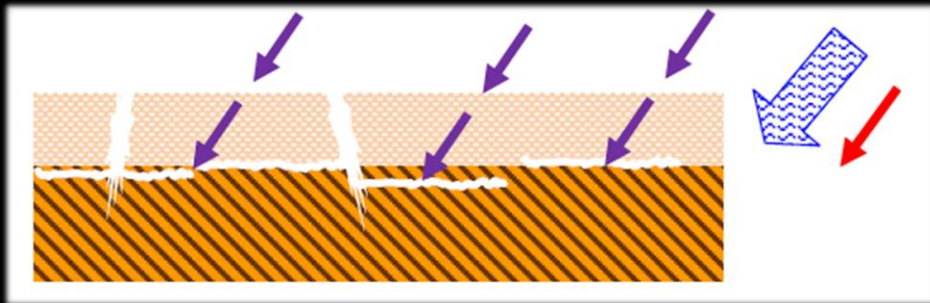
UV light penetrates through Clear coatings and breaks down the timber cell structure. Splitting of coating and swelling occurs allowing moisture to penetrate. Premature coating failure always occurs

## Prevention:

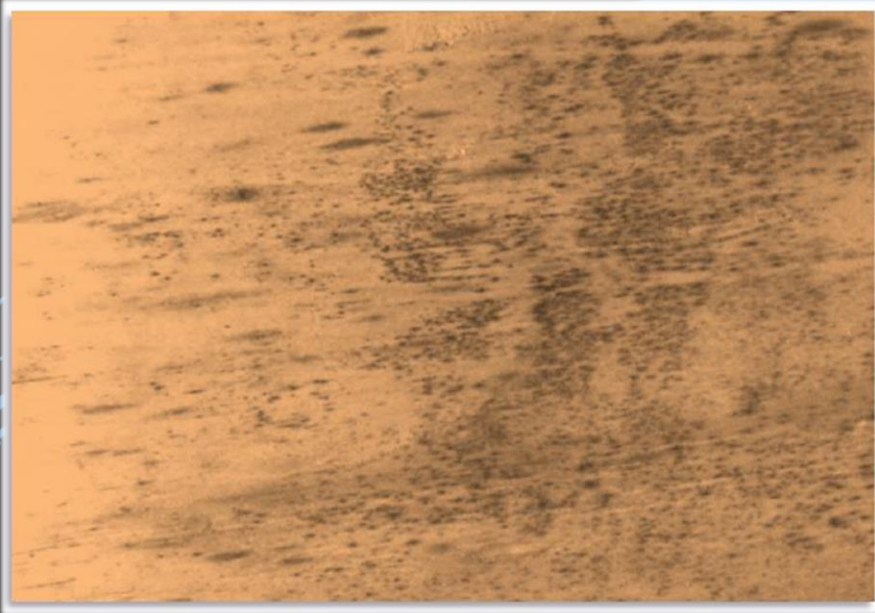
Avoid using film forming polyurethane type coatings in exterior situation

## Remedy:

Strip completely, sand and prepare surface. Paint door



# Under film mould Clear coatings



## Cause:

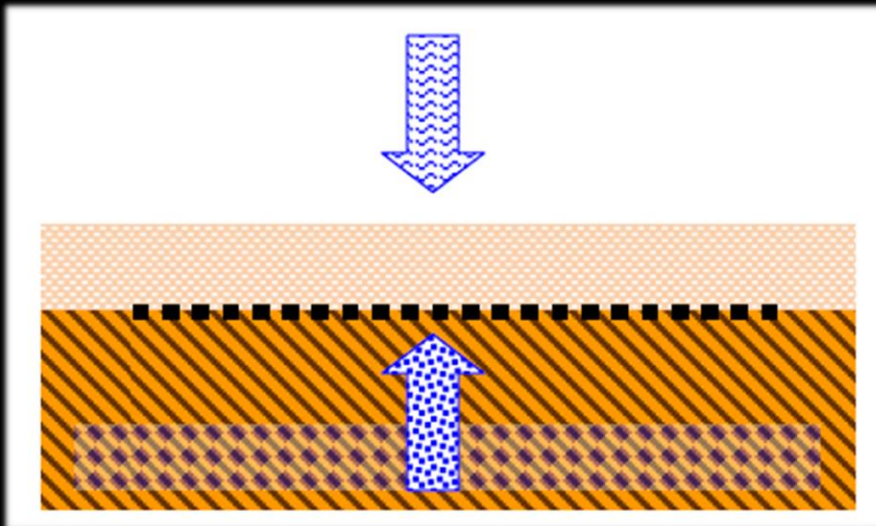
Slow absorption of moisture can solubilise sugars present with in timber creating a food source for mould spores which are already present.

## Prevention:

Avoid polyurethanes in exterior situations. Follow substrate manufacturers recommendations for coating

## Remedy:

Strip completely, sand and prepare surface. Recoat - (Paint if exterior)



# Weather erosion Exterior stains



## Cause:

This is normal wear & tear as timber stains are designed to erode so as not to build up excess film on timber. North facing will erode much faster the South.

## Prevention:

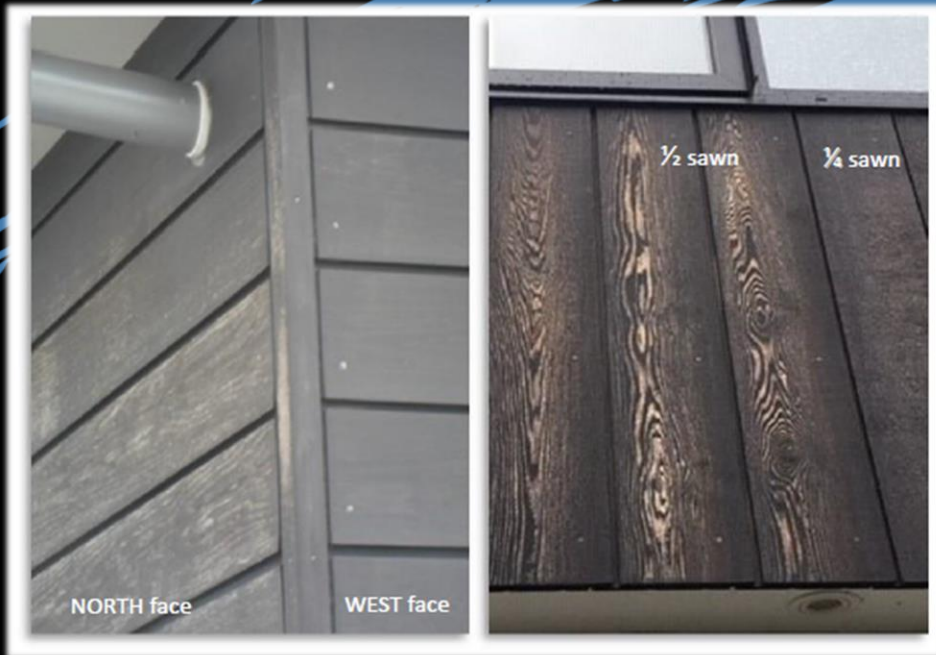
Natural process and cannot be avoided. Most stains require maintenance every 2 years depending on exposure levels

## Remedy:

Clean down and re-stain as required

# Weather erosion

## Early vs Latewood wood



### Cause:

This is normal wear & tear as timber stains are designed to erode so as not to build up excess film on timber. Different density of Early vs Late wood grains in the different cuts of timber means different absorption levels of stain and therefore erosion levels.

### Prevention:

Natural process and cannot be avoided. Quarter sawn boards better on North & West elevations

### Remedy:

Clean down and re-stain as required

# General issues relating to cementitious substrates

# Efflorescence



## Cause:

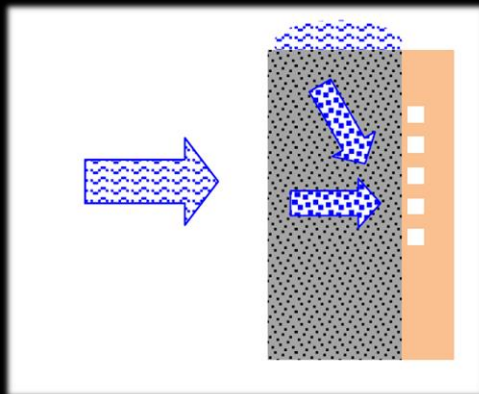
Moisture related issue. Moisture carries Calcium Hydroxide (lime) to the surface, reacts with carbon dioxide, forms insoluble calcium carbonate (efflorescence)

## Prevention:

Eliminate source of moisture. Painting over will not solve the issue

## Remedy:

Scrub with stiff brush and carefully wash down. Spot prime with a solvent based pigmented sealer.





# Water Ingress Porous blocks/ Wind pressure



## Cause:

Exterior of Block not adequately coated to provide a weathertight area. Concealed gutters, roof line, flashing issues etc can also contribute

## Prevention:

Apply a suitable “weathertight” coatings system to exterior

## Remedy:

As above

# Lime Burn



## **Cause:**

Fresh concrete/cement/plaster are initially very alkaline (pH of 13 to 14). Paint applied too soon can result in “burn through” of binders (lime burn).

## **Prevention:**

Recommended curing period of 28 days allows alkaline level to drop prior to painting. Prime with Lime Lock type sealer

## **Remedy:**

Leave as is, or spot prime and re-paint

# Lime Staining



## Cause:

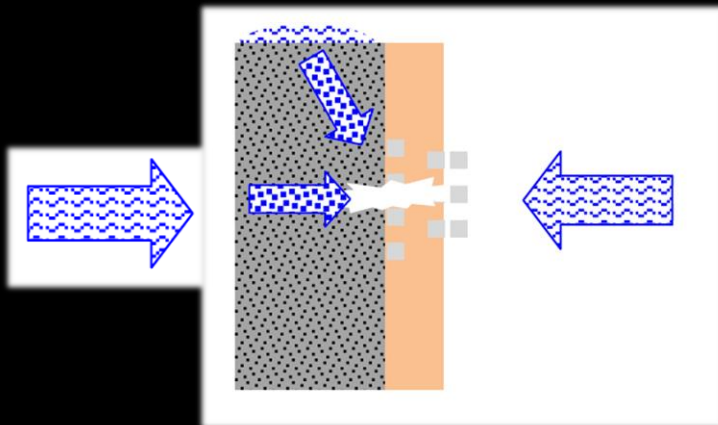
Similar to efflorescence Lime staining is caused by moisture. Excess Lime reacts with carbon dioxide to form efflorescence

## Prevention:

Ensure correct barriers to moisture are in place at time of construction

## Remedy:

Difficult to remedy unless source of moisture can be eliminated



# Old Bitumen coatings



## Cause:

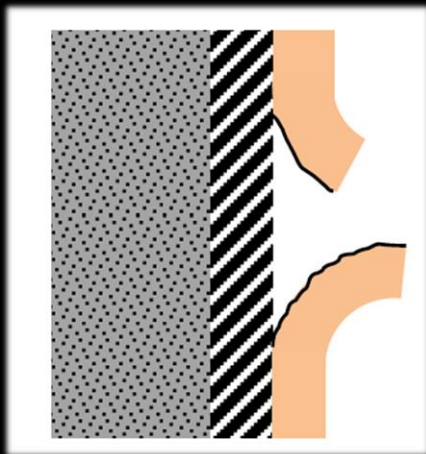
Early waterproofing membrane were 2-5 coats of bitumen emulsion followed by latex coatings. Inter-coat adhesion becomes weak and eventually lets go

## Prevention:

Remove all coatings back to bare substrate and repaint

## Remedy:

As above, although should bitumen still be present specialist primers are required such as Resene Membrane Primer



# Precast/Tilt slab



## Probable Cause:

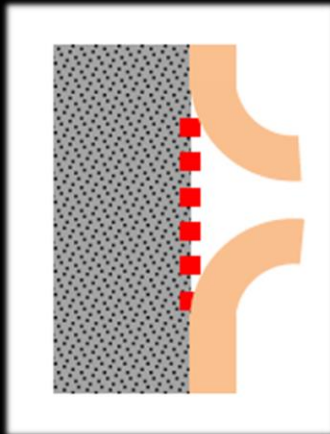
Failure to remove form oils/release agents used in manufacturing process prior to painting. (waterblasting does not adequately remove form oils /release agents). Smooth surface also contributes to the issue.

## Prevention:

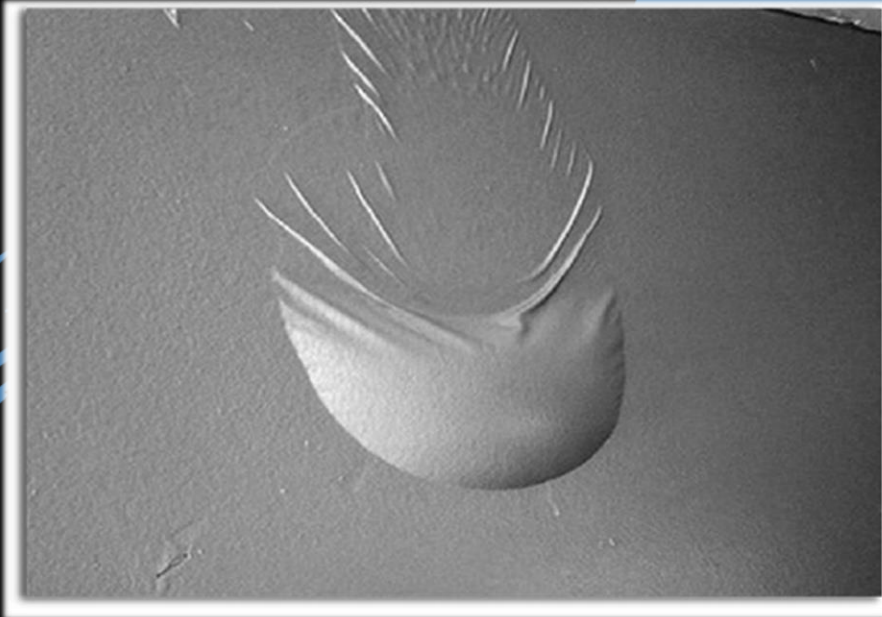
Ensure all Form oils / release agents are removed prior to painting. Use an alkali resistant primer

## Remedy:

Remove all poorly adhering area, scrub down to remove release agents. Prime with suitable primer



# Water source blisters



## Cause:

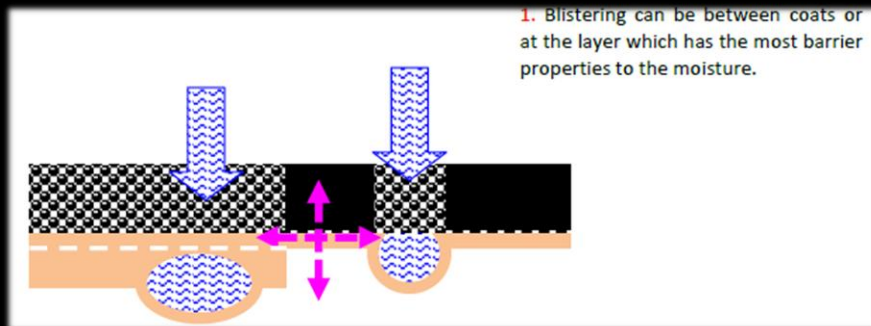
Excessive moisture source behind coating or within the substrate

## Prevention:

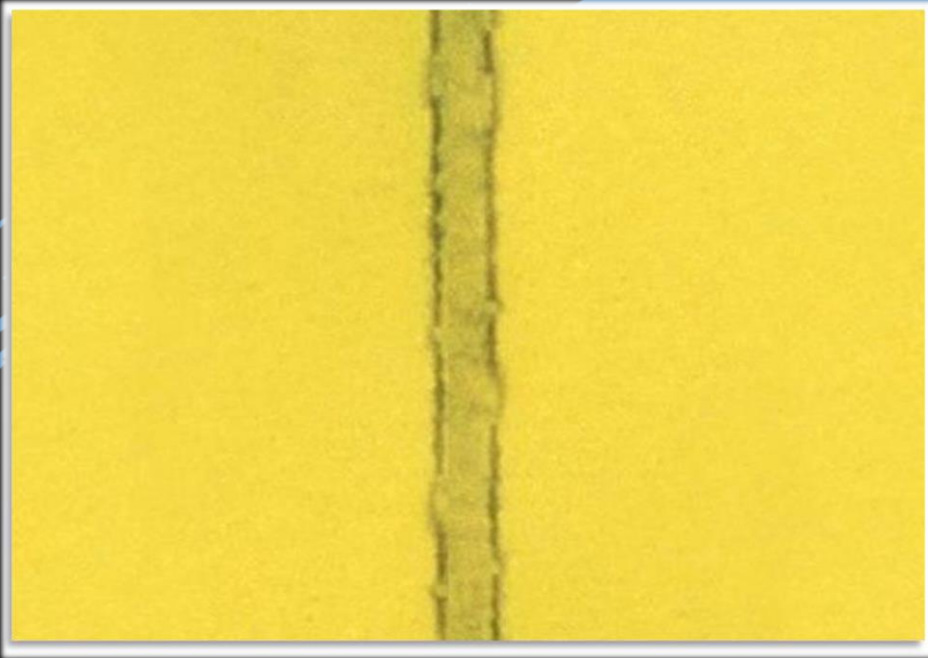
This is typically a construction issue. Check flashings, cappings, drainage, vapour barriers behind walls, construction joints, window reveals and joinery etc

## Remedy:

Find cause of moisture and rectify it



# Painted construction Sealants



## Cause:

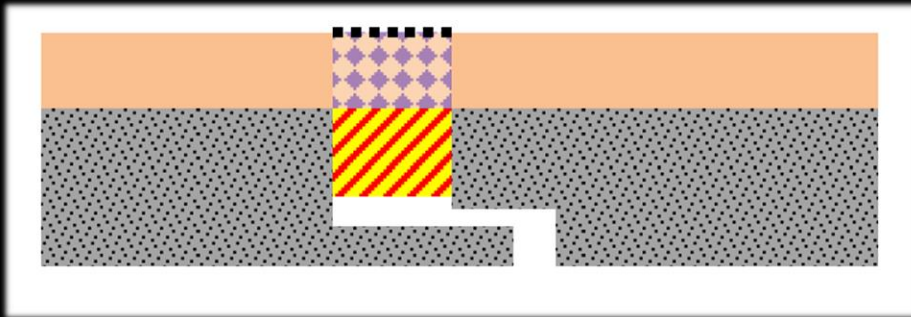
Until recently most construction joint sealants were not intended to be painted. Plasticisers in the sealants migrate through the coatings causing it to become tacky and pick up dirt etc easily.

## Prevention:

Do not paint over construction sealants unless they specifically state they can be painted

## Remedy:

No remedy. Some who paint them are happy for the discolouration to occur



# Concrete Spalling



## Cause:

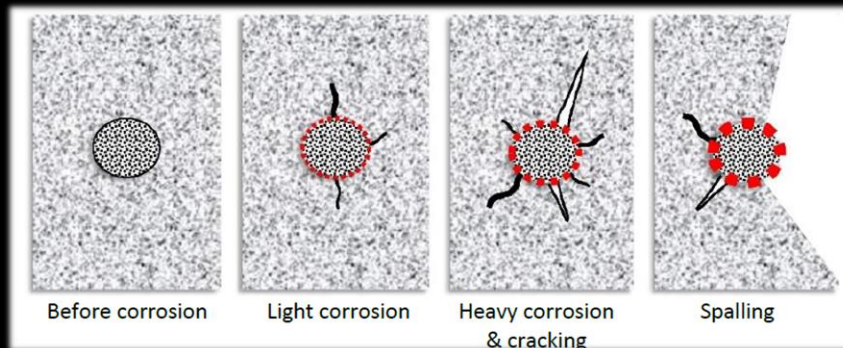
Often a combination of poor design and insufficient concrete cover, along with weather conditions causes the concrete to erode and crack the concrete. Small cracks become larger

## Prevention:

Good design and steel placement in construction phase

## Remedy:

Specialist Spalling engineers should be engaged





# General issues relating to Interior substrates

# Adhesion failure Steam & water



## Cause:

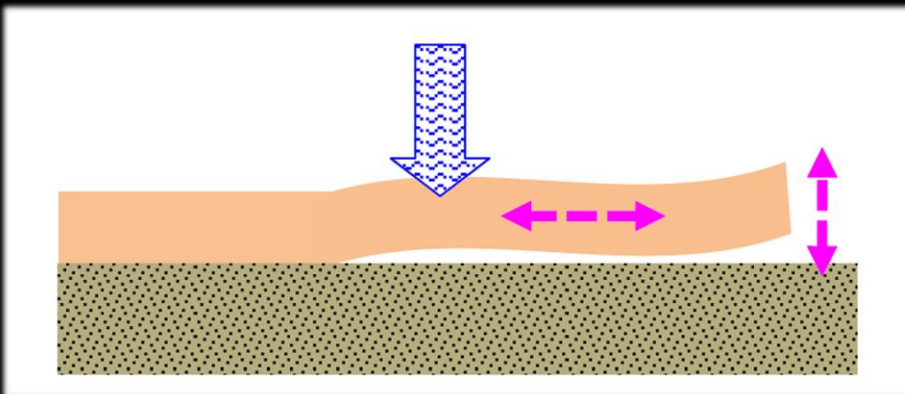
Poor surface preparation, incompatible coatings, lack of a good barrier sealer prior to top coats. Moisture penetration in form of steam and surface condensation etc

## Prevention:

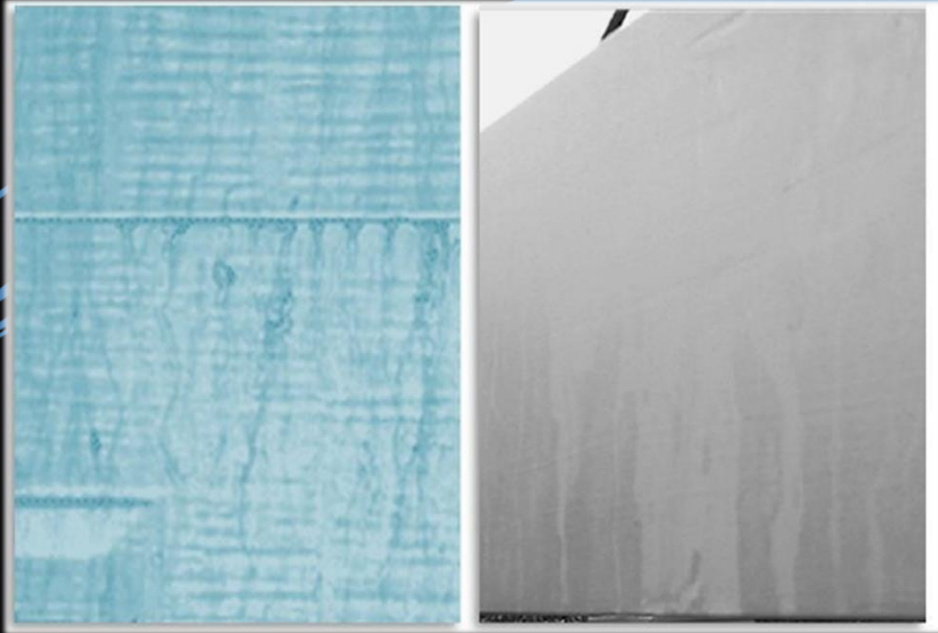
Ensure correct surface preparation and correct primers/sealers are used. Ensure good ventilation

## Remedy:

Strip to remove loose coatings, clean and seal with suitable barrier sealer base coat before applying topcoats



# Surfactant Leaching



## Cause:

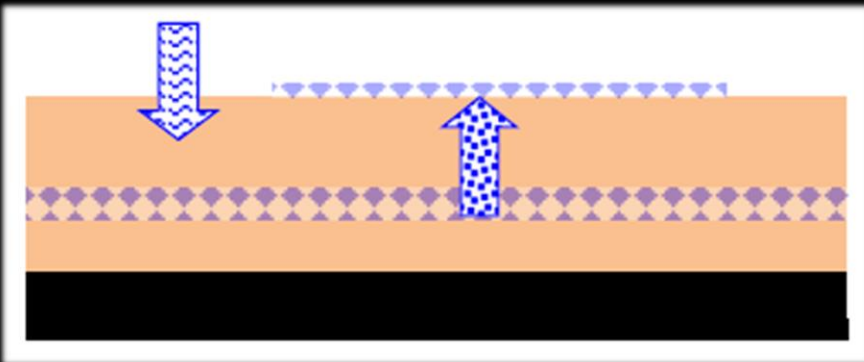
Caused by water settling on waterborne coatings too soon after painting. Water softens the fresh paint and draws out water soluble surfactants. As water dries surfactants are deposited on surface

## Prevention:

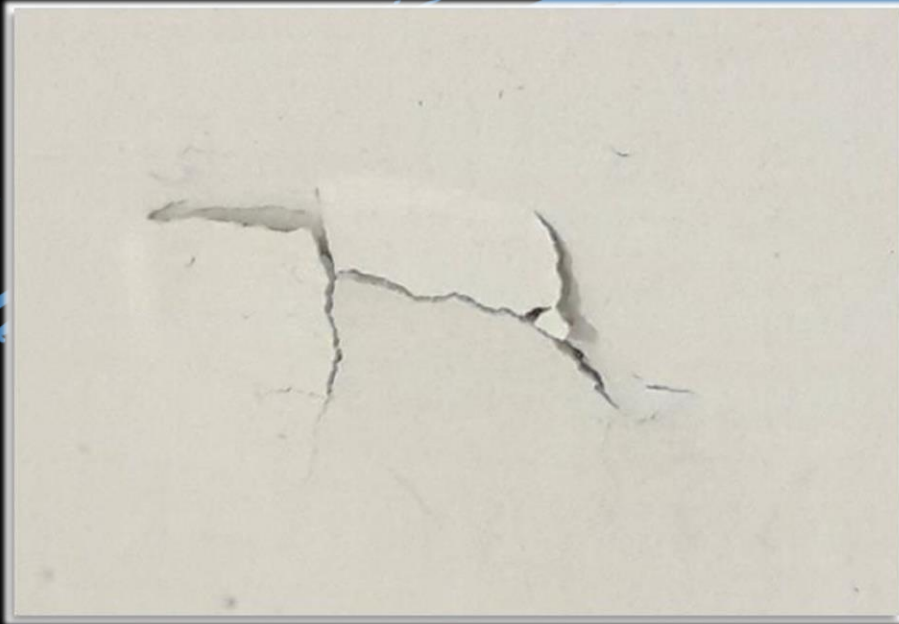
Ensure good airflow & drying conditions. Avoid cool, damp, low air flow conditions if possible.

## Remedy:

Clean down as soon as possible using a mild detergent and warm water



# Stress cracking



## Cause:

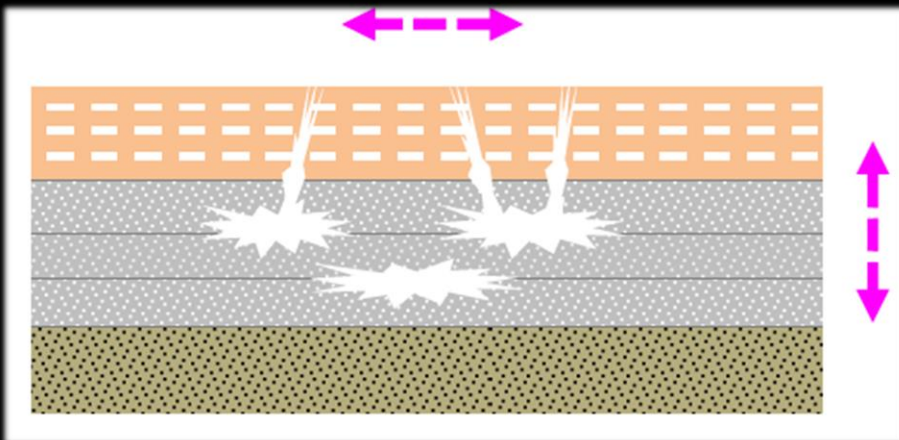
Multiple coats of paint applied over weak plaster compound. Surface tension on new paint pulls plaster from the surface

## Prevention:

Use correct consistency of plaster compound and allow proper drying conditions prior to painting

## Remedy:

Requires specialist plasterer etc to strip and replaster



# Stress point & corner cracking



## Cause:

Focus of stresses, building movement, incorrect placement of plasterboard joints

## Prevention:

Correct installation of plasterboard & Trim

## Remedy:

Difficult to remedy either. Scrap out joints and re-plaster with paper tape (may not stop the issue).

Corner cracking will continue to occur

# Bridging



## Cause:

Not using flexible sealant/filler in joints and corners of solid substrates that meet with plasterboard.

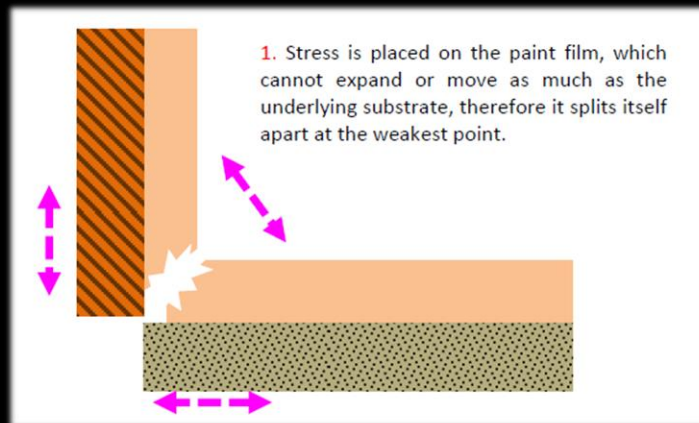
Movement causes

## Prevention:

Use correct sealants/fillers

## Remedy:

Scrape out , prepare and fill with appropriate filler, repaint



# Critical Lighting



**Cause:**

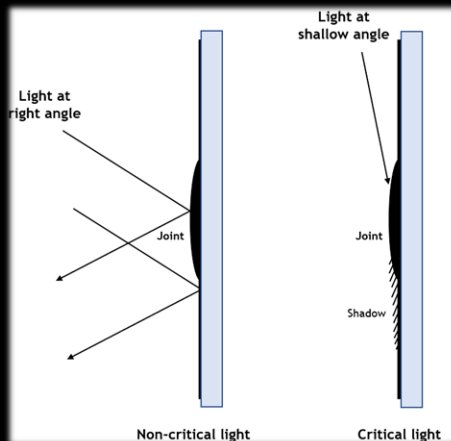
Critical light source striking wall or ceiling at a shallow angle casting shadows

**Prevention:**

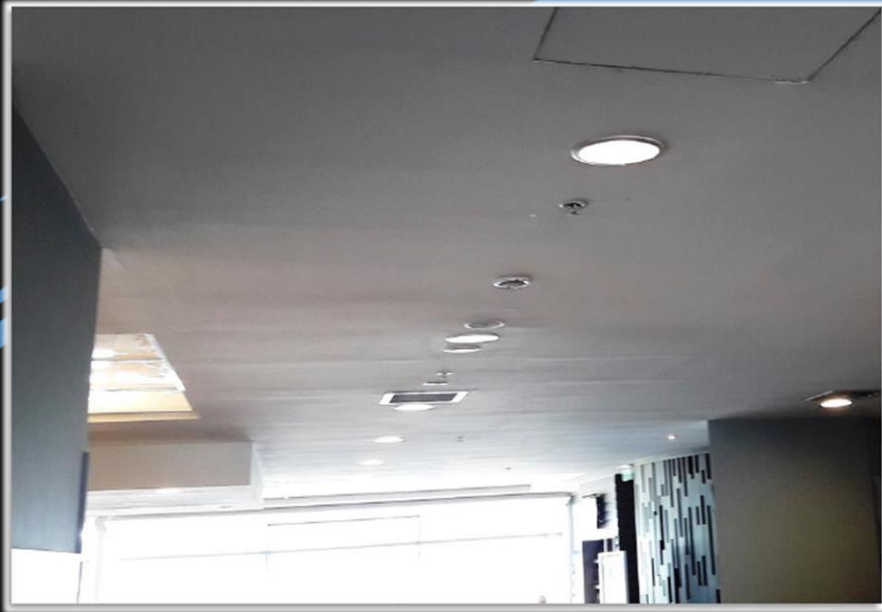
Correct and consistent plastering

**Remedy:**

Replastering affected areas



# Wavy surface



## Cause:

Critical light across an area with potential framing issues, fixing issues, moisture or temperature issues in framing or ceiling space etc

## Prevention:

Correct installation of framing and plasterboard etc

## Remedy:

Difficult to remedy without significant remedial work



# Coverage



## Cause:

Generally insufficient paint being applied. Often with incorrect application techniques and tools. Incorrect rollers sleeves not applying enough paint

## Prevention:

Follow industry standard guidelines along with paint manufacturers recommendations. Apply at correct spreading rates using correct rollers sleeves and tools etc

## Remedy:

Apply additional coats to achieve coverage.

# Roller marks



## **Cause:**

**Coating drying too fast in warm conditions, Poor application technique, over spreading paint applying coating too thin causing fast drying**

## **Prevention:**

**Correct application technique, correct spreading rates, hot weather additives to extend “wet edge” times**

## **Remedy:**

**Additional coats to be applied. May not hide all issues**



# Paint Guarantees

What does a Paint Manufacturers  
Guarantee actually cover?

In general terms, it covers the quality of the  
paint product only, not the workmanship of the  
contractor

**Resene**   
Construction Systems

  
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**carboline**<sup>®</sup>  
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# Paint Guarantees

## Decorative Paint

Resene products are manufactured under ISO 9001  
& ISO 14001 Quality & Environmental Management  
Certification programmes

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Construction Systems

  
**Altex**  
Yacht & Boat Paint

  
**carboline**<sup>®</sup>  
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# Overview

The is a general misunderstanding that a time period Guarantee on the side on a paint pail is the length of time the product will last in any situation before a re-paint is required.

This is not the case and claims are often misinterpreted unless the exclusions and Terms & Conditions of the guarantee are fully understood

## **In simple terms**

**The lifespan of a paint coating is greatly affected by workmanship standards, substrate type and condition, adherence to specifications & Industry guidelines, & exposure levels & conditions**

# Substrate & Exposure



Paint coatings on North facing timber will have a far shorter expected life span than paint coatings on South facing concrete. Coatings on substrates that are affected by heat stress will have shorter lifespan than coatings on substrates that aren't

## Substrate & Exposure



**North facing timber joinery, particularly sills, is affected significantly more due to it's angle to the sun which increases UV impact**





# Responsibility: Paint Manufacturer

## PRODUCT QUALITY

- Paint that is “fit for purpose” and manufactured to appropriate standards
- Technical Data Information
- Safety Data Information
- System specifications
- Advice & Support

Paint Manufacturer's Guarantee covers:  
PRODUCT FILM INTEGRITY & ADHESION



# Responsibility: Tradesman

## WORKMANSHIP

- Substrate condition assessment
- Surface preparation
- Application methods & tools
- Product selection
- Adherence to specification
- Adherence to industry standard guidelines
- Environmental & climatic conditions

Tradesman's Guarantee covers:  
WORKMANSHIP STANDARDS

## Paint problems almost always occur due to:

- **Poor substrate condition**
- **Poor surface preparation**
- **Incorrect application methods & tools**
- **Incorrect product selection**
- **Lack of adherence to specification**
- **Lack of adherence to industry standard guidelines**
- **Adverse environmental & climatic conditions**
- **High exposure levels**

**The leading cause of  
coating failure is:**

**Poor surface preparation**  
(ie workmanship)

# Promise of Quality Guarantee

## Enjoy the Resene Promise of Quality Guarantee



In a world of ever changing values, there are still some things upon which you can rely. One of these is that Resene will continue to strive to produce the best paints that it possibly can, benchmarked against the highest international standards.

Our products are guaranteed to provide film integrity and adhesion for the expected life of the paint system<sup>1</sup>.

This is the Resene Promise of Quality Guarantee.

We will deliver top quality paint, advice and colour, developed specifically to meet our customers' needs.

This promise is backed by our commitment to leading edge paint technology, strong and exciting colours, and reducing the impact of paint on the natural environment.

Should Resene fail to deliver on our promise in any way, we will unhesitatingly acknowledge our responsibilities.

Nick Nightingale  
Managing Director, Resene Paints Ltd



**Resene**  
the paint the professionals use

<sup>1</sup> See the 'Resene expected paint system life' chart (over) for the expected life of the paint system. Should the paint fail to provide the film integrity and adhesion detailed, Resene will provide replacement paint to rectify the affected area upon presentation of the original proof of purchase for the Resene paints used on the project. This Promise of Quality Guarantee is transferable to a new owner should the property be sold within the expected life of the paint system provided the new owner holds the original proof of purchase for the Resene paints used.

## Resene expected paint system life

The expected paint system life chart below indicates the expected life of a well maintained pigmented waterborne paint system applied to a properly prepared surface to the specifications of Resene before recoating is required. Well maintained means regular washing of exterior surfaces and repairing any obvious damage. See the Resene Caring for your paint finish brochure for recommended cleaning instructions.

For example:  
Painting an EXTERIOR building, the concrete WALLS are to be painted and the surface condition is described as 'IDEAL' (SC1), giving the indication that 12 years could be expected provided regular washing and repairs are carried out during this time. After this the surface will require painting. The box at the bottom of this page gauges the expected surface condition at the end of the stated lifetime. The system for example should have received very little change (0) in surface cracking but it would be expected to have suffered colour change (3).

### Expected paint system life

Exterior			Interior		
Cementitious	Metal Corrosion less than 2% of surface	Timber	Plaster and cloth plaster	Solid plaster	Timber
SC1 12 years	10 years	10 years	SC1 10 years	10 years	10 years
SC2 12 years	10 years	10 years	SC2 10 years	10 years	10 years
SC3 10 years	7 years	6 years	SC3 6 years	6 years	5 years
SC4 8 years	5 years	3 years	SC4 -	-	-

Exterior expected life figures are for vertical exposure. Surfaces less than 60° to the horizontal will have a 50% reduced life expectancy compared to the stated life expectancies above. Interior expected life figures refer only to durability characteristics of chipping, cracking, flaking, peeling and general film integrity. Colourfastness is excluded. Due to the vast range of staining and the varying effects of this on the substrate and finish it is not possible to include these factors in a general guideline.

Extreme marine environments, adhesion failure of previous coatings, dark colours, substrate damage or use of solventborne products will result in reduced life expectancies. Refer Resene for assistance.

Surface conditions are defined as follows:

- SC1: IDEAL New surface in excellent condition. No defects. Surface has not been exposed to weather.
- SC2: GOOD Coated surfaces requiring repair for cosmetic reasons only. Apparently sound coating protecting substrate, no paint breakdown.
- SC3: FAIR Some substrate exposed for undetermined time due to incidence of paint breakdown - requires preparatory work and spot painting.
- SC4: POOR Substantial areas exposed to weathering for substantial time or never painted.

Test method	Description	Exterior	Interior
AS1580 481.1.11	Chalking	2.5	0
AS1580 481.1.12	Colour change	3	1
AS1580 481.1.5	Gloss change	3.5	0
AS1580 481.1.8	Cracking	0	0
AS1580 481.1.10	Flaking	0	0
AS1580 481.1.2	Discolouration	4	1

Key: 0 = No change, 5 = Severe change

Important conditions of guarantee: Control in any way be construed to be a joint and several guarantee. Consequential damages are excluded. Full guarantee terms apply for the first two years, and a diminishing pro-rata guarantee for the remaining years of life expectancy.

If in doubt about any aspect of your specification or project please contact Resene.

Printed on environmentally responsible paper, which complies with the requirements of environmental management systems ISO14001 and ISO27001, using vegetable based inks.

# Enjoy the Resene Promise of Quality Guarantee

In a world of ever changing values, there are still some things upon which you can rely. One of these is that Resene will continue to strive to produce the best paints that it possibly can, benchmarked against the highest international standards.

Our products are guaranteed to provide film integrity and adhesion for the expected life of the paint system<sup>1</sup>.

This is the Resene ~~Promise of Quality Guarantee~~.

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This promise is backed by our commitment to leading edge paint technology, strong and exciting colours, and reducing the impact of paint on the natural environment.

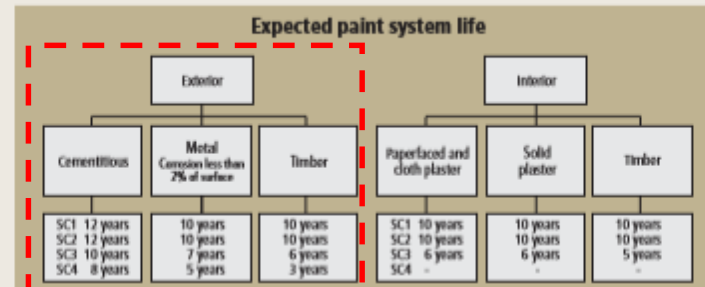
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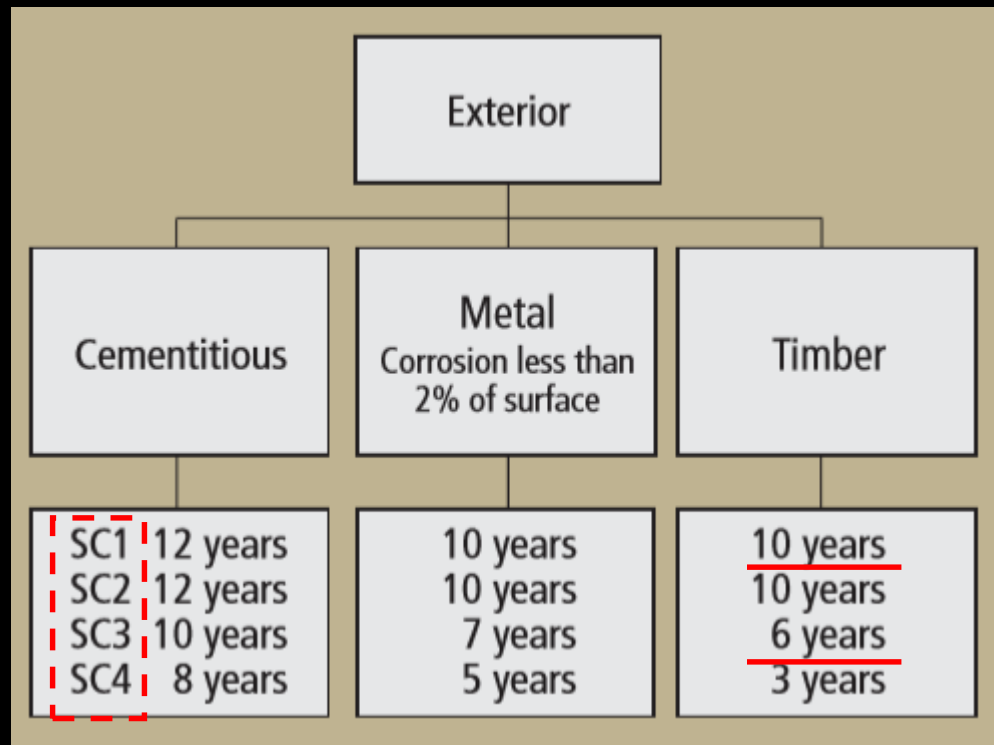
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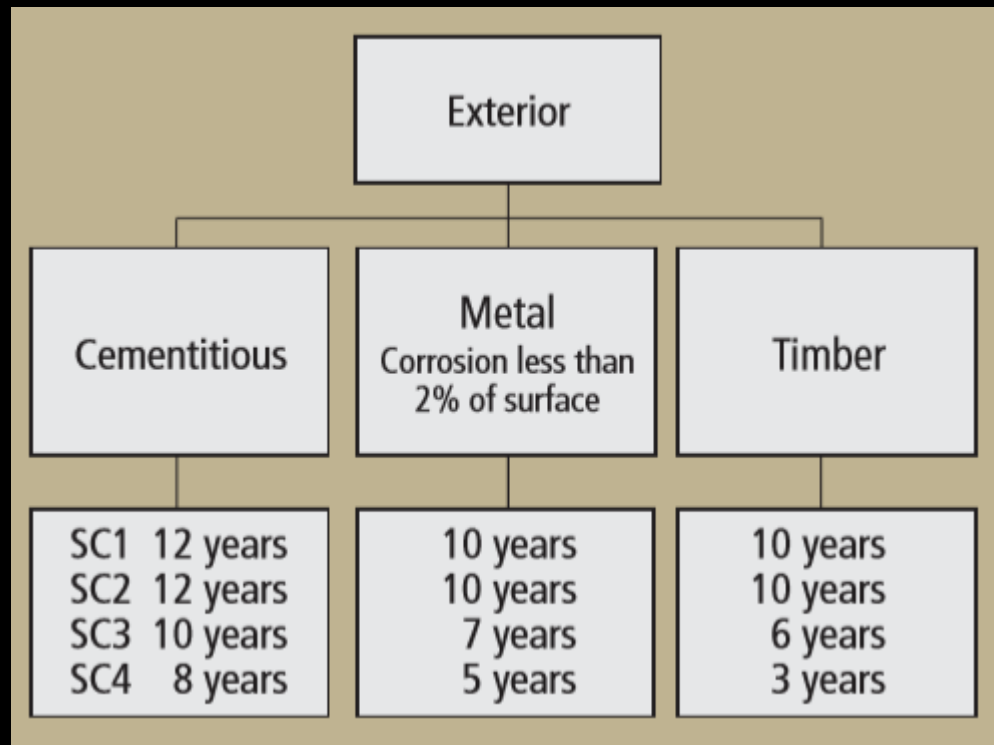
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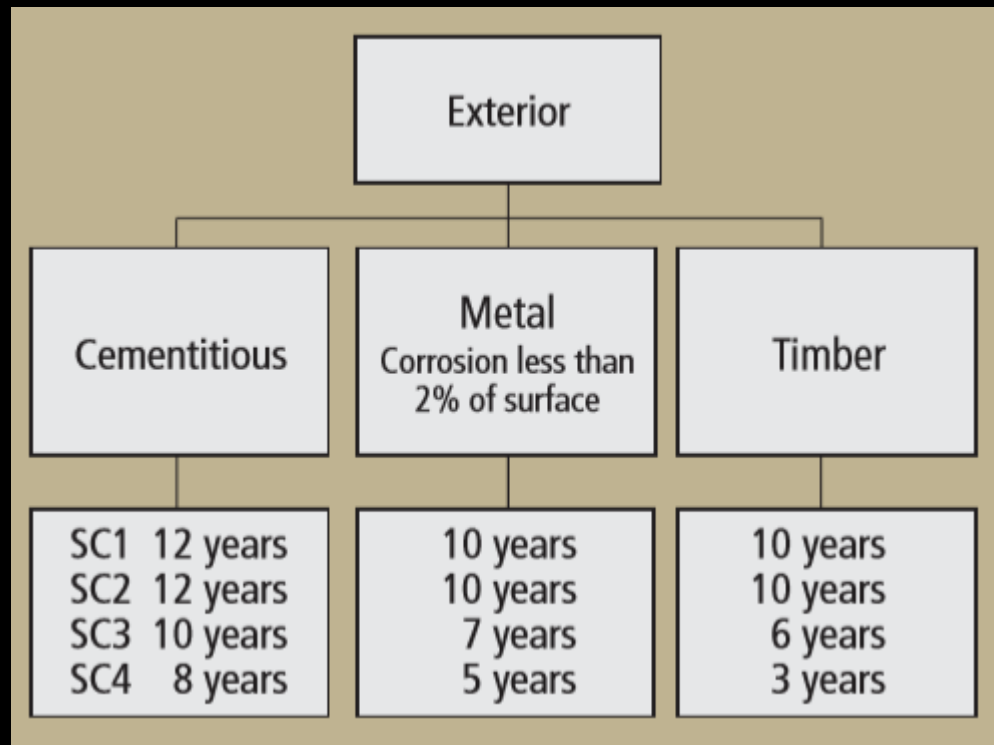
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# Paint Guarantees/Warranties

## Protective Coatings

**Resene**   
Construction Systems

  
**Altex**  
Yacht & Boat Paint

  
**carboline**<sup>®</sup>  
Coatings - Linings - Fireproofing

**Resene**  
*Automotive & Light Industrial*

# Overview

**Protective Coating systems are referenced as equivalent systems to the AS/NZS 2312 standards**

**They show clearly the “Durability Period” which is expected time to first major maintenance (repaint)**

**A regular maintenance programme should be carried out from year 1 to ensure durability periods are achieved**



# Paint Systems for Mild Steel

Equivalents to AS/NZS 2312.1:2014



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**Resene**   
Construction Systems

  
**Altex**  
Yacht & Boat Paint

  
**carboline**<sup>®</sup>  
Coatings - Linings - Fireproofing

**Resene**  
  
Automotive & Light Industrial

# Common Mild Steel Paint Systems & Durability periods

## 2 pack Epoxy/Urethane system (blast prep)

### Resene Engineered Coating Systems Equivalent to AS/NZS 2312.1 PAINTING SYSTEMS FOR STEEL

Coating System Details									Durability - Years to first maintenance						
System Designation	Surface Preparation	1st Coat		2nd Coat		3rd Coat		Total Nom DFT $\mu\text{m}$	Atmospheric corrosivity category						
		Product	Nom DFT $\mu\text{m}$	Product	Nom DFT $\mu\text{m}$	Product	Nom DFT $\mu\text{m}$		C1 Very Low	C2 Low	C3 Med.	C4 High	Very High		
														C5-I Ind	C5-M Mar
<b>INORGANIC ZINC SILICATE</b>															
IZS1	Sa 2½	Zincilate 11	75	-	-	-	-	75	25+	25+	15-25	10-15	2-5	5-10	
IZS4	Sa 2½	Zincilate 11	125	-	-	-	-	125	25+	25+	25+	15-25	5-10	10-15	
<b>POLYURETHANE - Two Pack, Solvent Borne</b>															
PUR1	St3	Armourcote 510	125	Uracyl 403	50	-	-	175	*	10-15	5-10	2-5	-	-	
PUR2	Sa 2½	Armourcote 220	75	Uracyl 403	50	-	-	125	25+	10-25	5-10	2-5	-	-	
PUR3	Sa 2½	Armourcote 220	75	Armourcote 510	125	Uracyl 403	50	250	*	25+	15-25	10-15	5-10	5-10	
PUR4	Sa 2½	Zincilate 11 or ArmourZinc 120	75	Armourcote 510 or Armourcote 515	125	Uracyl 403	50	250	*	25+	15-25	10-15	5-10	5-10	
PUR5	Sa 2½	Zincilate 11 or ArmourZinc 120	75	Armourcote 510	200	Uracyl 403	50	325	*	25+	25+	25+	15-25	15-25	

\*While this system would have very high durability in this atmospheric category, it is unlikely that it would be economic.

NOTE: Some colour finishes may need a thicker coat to achieve opacity.

LEGEND: St 3 = Power Tool cleaning (See AS1627.3)

Sa 2½ = Abrasive Blast Cleaning - Class 2½ (see AS1627.4)

DFT = Dry Film Thickness in Microns

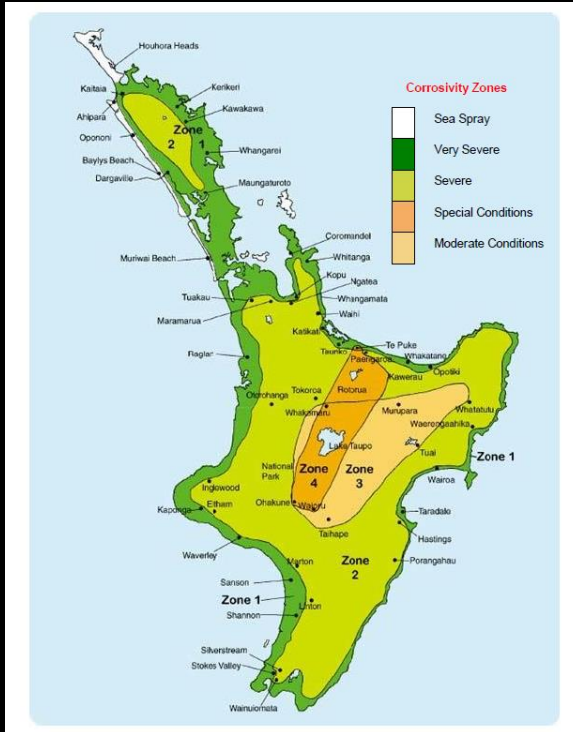
Chart 4  
December 2014

# Classification of Environments

## As per Section 2 - AS 2312.1 and based on ISO 9223 corrosivity categories

<p style="text-align: center;"><b><u>Micro-Environments</u></b></p> <p>In addition to climatic effects, the local environmental effects (microclimate) produced by the erection of a structure or installation of equipment needed to be taken into account. Such on-site factors require additional consideration because a mildly corrosive atmosphere can be converted into an aggressive environment by microclimatic effects. For example, a significant acceleration of corrosion rate can occur in the following circumstances:</p> <p>1/ At locations where the metal surface remains damp for an extended period, such as where surfaces are not freely drained or are sheltered from sunlight.</p> <p>2/ On unwashed surfaces, i.e. surfaces exposed to the atmospheric contaminants, notably coastal salts and pollution, but protected from cleansing rain.</p> <p>Other microclimatic effects which may accelerate the corrosion rate of the deterioration of its protective coating include acidic or alkaline fallout, industrial chemicals and solvents, airborne fertilizers and chemicals, prevailing winds which transport contamination, hot or cold surfaces and surfaces exposed to abrasion and/or impact etc. It is very difficult, if not impossible, to predict accurately the aggressiveness of a given environment and a certain amount of educated judgment is required to assess its influence on coating life.</p>	<p style="text-align: center;"><b><u>Category C1: Very Low</u></b></p> <p>Most commonly found inside heated or air conditioned buildings with clean atmospheres. They may also be found in semi-sheltered locations remote from marine or industrial influence and in unheated or non-air conditioned buildings. The only external environments in Australia or New Zealand are some alpine regions although generally these environments will extend into category C2.</p> <p style="text-align: center;"><b><u>Category C2: Low</u></b></p> <p>This category includes dry, rural areas as well as other regions remote from the coast or sources of pollution. Most (but not all) areas of Australia or New Zealand beyond 50km from the sea are in this category. Unheated buildings where some condensation may occur, such as warehouses and sports halls, can be in this category, however proximity to the coast is an important factor.</p> <p style="text-align: center;"><b><u>Category C3: Medium</u></b></p> <p>This category covers coastal areas with low salinity. The extent of the affected area varies with factors such as winds, topography and vegetation. Along ocean front areas with breaking surf and significant salt spray, it extends from about 1km inland to between 10 to 50 km inland, depending on the strength of prevailing winds and topography. Such regions are also found in urban and industrial areas with low pollution levels, however these areas are uncommon.</p>
<p style="text-align: center;"><b><u>Category C4: High</u></b></p> <p>This category occurs mainly on the coast. Around sheltered bays, Category C4 extends up to 50m inland from the shoreline. In areas of rough seas and surf, it extends from about 200-300m to 1km inland. As with other categories the extent depends on winds, wave action and topography. Industrial regions may also fit into this category and this category extends inside the plant where it is best considered as a microenvironment. Damp, contaminated interior environments such as occur with swimming pools, dye works, paper plants, foundry's, smelters and chemical plants may also extend into this category.</p>	<p style="text-align: center;"><b><u>Category C5: Very High</u></b></p> <p style="text-align: center;"><b>(C5-I: Industrial C5-M: Marine) &amp; CX-Extreme</b></p> <p>This category is common offshore and on the beachfront in regions of rough seas and surf beaches. The region can extend inland for several hundred metres and in some areas it can extend more than 1/2km from the coast. This category may also be found in aggressive industrial areas, where the environment may be acidic with pH of &lt;5. For this reason, Category C5 is divided into Marine and Industrial for purposes of coating selection. Some of the damp and/or contaminated interior environments in category C4 may occasionally extend into this category. In addition there is an additional Category CX Extreme, for severe surf and off shore. If this is encountered the user should seek professional advice.</p>
<p><b><u>Category T: Inland Tropical</u></b> has been omitted in this list. Please refer to the Standard if required.</p>	<p style="text-align: center;"><b>Important Note :</b></p> <p>If a site is considered to be in more than one category, then a selected coating should be capable of resisting the most severe of the environments involved.</p>
<p>Note: For a full, more detailed description please refer to the above mentioned Standard</p>	<p style="text-align: right;"><b>October 2017</b></p>

# Environmental Category maps



Description	ISO 9223	Old AS/NZS 2312	Govt Building Code Corrosion ZONES	Typical Exterior Environment
Very low	C1	A	Zone 3	Few alpine areas
Low	C2	B	Zone 3	Arid/rural/urban
Medium	C3	C	Zone 2	Costal
High	C4	D	Zone 1	Sea-shore (calm)
Very High - Industrial	C5-I	E-I	Zone 4	Chemical plants / volcanic
Very High - Marine	C5-M	E-M	Zone 1	Sea-shore (surf)
Sea Shore / Surf extreme	CX	-	Sea Spray	Sea-shore (severe surf)
Inland Tropical	T	F	n/a	Non-costal tropics



# AS/NZS 2312 Guarantee period statement

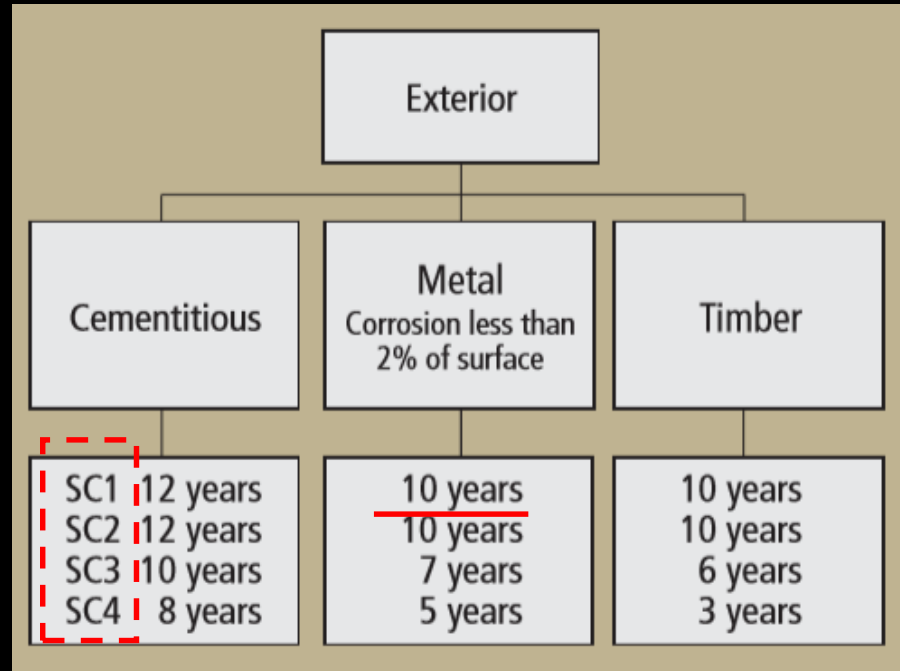
Durability is expressed in terms of coating life to first major maintenance, assuming that the coating has been applied according to the requirements of this and other appropriate Standards, and to the recommendations of the coating manufacturer.

*It is stressed that the durability range is not a 'guarantee time'. Durability is a technical consideration that can help the owner set up a maintenance programme. A guarantee time is a consideration that is the legal subject of clauses in the administrative part of a contract. The guarantee time is usually shorter than the durability range. There are no rules that link the two periods of time.*

A guarantee should be provided to protect against a fault in the coating product, or its application, which would generally manifest itself within a relatively short period of time. A guarantee of about one-quarter to one-third of the expected durability should be the maximum provided. Guarantees longer than this period will be costly and there may be problems in enforcing them. Furthermore, after a longer time period, it will be difficult to determine who is at fault and it may require a lengthy and costly court case to recover costs. An owner concerned about long-term durability of a coating system should consider taking out a maintenance contract.

Note that coating type is only one factor in determining the durability of a protective coating system. Surface preparation, application, procedures, design, local variations in environment and other factors will all influence the durability of coatings.

# Resene Promise of Quality Guarantee



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# Responsibility: Paint Manufacturer

## PRODUCT QUALITY

- Paint that is “fit for purpose” and manufactured to appropriate standards
- Technical Data Information
- Safety Data Information
- System specifications
- Advice & Support

Paint Manufacturer’s Guarantee covers:  
PRODUCT FILM INTEGRITY & ADHESION



# Responsibility: Tradesman

## WORKMANSHIP

- Substrate condition assessment
- Surface preparation
- Application methods & tools
- Product selection
- Adherence to specification
- Adherence to industry standard guidelines
- Environmental & climatic conditions
- QA documentation & Producer statements

Tradesman's Guarantee covers:  
WORKMANSHIP STANDARDS

## Paint problems almost always occur due to:

- **Poor substrate condition and/or design**
- **Poor surface preparation**
- **Incorrect application methods & tools**
- **Incorrect product selection**
- **Lack of adherence to specification**
- **Lack of adherence to industry standard guidelines**
- **Adverse environmental & climatic conditions**
- **High exposure levels**

**The leading cause of  
coating failure is:**

**Poor surface preparation**  
**(ie workmanship)**

## Summary:

**By far and away the most significant factors in the lifespan of a paint coating will relate to workmanship standards, substrate type and condition, adherence to specifications & Industry guidelines, & exposure levels & conditions**



Thanks for tuning in

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