



Resene

Engineered Coating Systems

Paint Systems for Steel

**Guide to the protection of iron and steel
against exterior atmospheric corrosion
by the use of protective coatings**

Equivalent to AS/NZS 2312.1:2014

Part 1: Paint coatings

November 2015
Version 2

Notes:

1. This document must be read in conjunction with the full AS/NZS 2312.1 Standard
2. Refer to Section 1.6 Durability Considerations & Section 2 Classification of Environments of the AS/NZS 2312.1 Standard when using this document.
3. Criteria for determination of when first maintenance (major) is required is given in Section 8.3 of the above-mentioned standard.
4. Information given in this publication is intended as a guide only and represents data, which is believed to be reliable based on current knowledge.
5. Variation in environment, microclimate, changes in procedures of use, or extrapolation of data may cause unsatisfactory results.
6. No warranty of product or system performance is expressed or implied.
It is stressed that the durability range within the Standard is not a 'guarantee time'. Durability is a technical consideration that can help the owner set up a maintenance programme. It is also noted that the 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.

Classification of Environments

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

<p style="text-align: center;"><u>Micro-Environments</u></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;"><u>Category C1: Very Low</u></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;"><u>Category C2: Low</u></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;"><u>Category C3: Medium</u></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;"><u>Category C4: High</u></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;"><u>Category C5: Very High</u></p> <p style="text-align: center;">(C5-I: Industrial C5-M: Marine) & CX-Extreme</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 <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><u>Category T: Inland Tropical</u> has been omitted in this list. Please refer to the Standard if required.</p>	<p style="text-align: center;">Important Note :</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;">November 2015</p>

To obtain the full AS/NZS 2312.1 Standard contact www.standards.co.nz

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 μm	Atmospheric corrosivity category					
		Product	Nom DFT μm	Product	Nom DFT μm	Product	Nom DFT μm		C1 Very Low	C2 Low	C3 Med.	C4 High	Very High	
													C5-I Ind	C5-M Mar
ACRYLIC - Latex, Single Pack														
ACL1	St3	Galvo One	40	Hi-Glo Sonyx 101 Lumbersider Enamacryl Lustacryl	40 40 40 40 40	Hi-Glo Sonyx 101 Lumbersider Enamacryl Lustacryl	40 40 40 40 40	120 120 120 120 120	15+	5-15	2-5	-	-	-
ACL3	Sa 2½	Zincilate 11 or ArmourZinc 120	75	Armourcote 510	125	Hi-Glo Sonyx 101 Lumbersider	40	240	*	25+	15-25	10-15	5-10	5-10
ACL4	Sa 2½	Armourcote 510	250	Hi-Glo Sonyx 101 Lumbersider	40	-	-	290	25+	15-25	10-15	5-10	2-5	2-5
ACRYLIC - Two Pack, Solvent-Borne														
ACC1	St3	Armourcote 510	125	Imperite I.F. 503	50	-	-	175	25+	10-25	5-10	2-5	-	-
ACC2	Sa 2½	Armourcote 220	75	Imperite I.F. 503	50	-	-	125	25+	15-25	10-15	5-10	2-5	2-5
ACC4	Sa 2½	Armourcote 220	75	Armourcote 515/510	125	Imperite I.F. 503	50	250	*	25+	15-25	10-15	5-10	5-10
ACC5	Sa 2½	Zincilate 11 or ArmourZinc 120	75	Armourcote 515/510	125	Imperite I.F. 503	50	250	*	25+	15-25	10-15	5-10	5-10
ACC6	Sa 2½	Zincilate 11 or ArmourZinc 120	75	Armourcote 510	200	Imperite I.F. 503	50	325	*	25+	25+	25+	5-10	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 1
November 2015

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 μm	Atmospheric corrosivity category						
		Product	Nom DFT μm	Product	Nom DFT μm	Product	Nom DFT μm		C1 Very Low	C2 Low	C3 Med.	C4 High	Very High		
													C5-I Ind	C5-M Mar	
ALKYD															
ALK1	St3 / Sa 2	Steel Fab	40	-	-	-	-	40	5+	0-5	-	-	-	-	
ALK3	St3 / Sa 2	Armourcote 210	75	Super Gloss	40	-	-	115	15+	5-15	2-5	-	-	-	
ALK6	St3 / Sa 2	Steel Fab	40	Mica Bond	40	Micabond	40	120	25+	10-25	5-10	2-5	-	-	

*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 2 & Sa 2½ = Abrasive Blast Cleaning - Class 2 & 2½ (see AS1627.4)

DFT = Dry Film Thickness in Microns

Chart 2
December 2014

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 μm	Atmospheric corrosivity category					
		Product	Nom DFT μm	Product	Nom DFT μm	Product	Nom DFT μm		C1 Very Low	C2 Low	C3 Med.	C4 High	Very High	
													C5-I Ind	C5-M Mar
EPOXY - High Build (DFT: 125 to 500 μm per coat)														
EHB3	Sa 2½	Armourcote 220	75	Armourcote 510	200	-	-	275	*	15-25	10-15	5-10	2-5	2-5
EHB4	Sa 2½	Zincilate 11 or ArmourZinc 120	75	Armourcote 510	200	-	-	275	*	25+	15-25	10-15	5-10	5-10
EHB5	Sa 2½	Armourcote 220	75	Armourcote 515 (MIOX)	125	Armourcote 515 (MIOX)	125	325	*	25+	15-25	10-25	10-15	10-15
EHB6	Sa 2½	Zincilate 11 or ArmourZinc 120	75	Armourcote 515 (MIOX)	125	Armourcote 515 (MIOX)	125	325	*	25+	25+	25+	10-15	15-25
EPOXY MASTIC - Surface Tolerant														
EPM2	St3	Alumastic or Armourcote 510	75	Alumastic or Armourcote 510	75	-	-	150	25+	10-25	5-10	2-5	-	-
EPM3	St3	Alumastic or Armourcote 510	200	Alumastic or Armourcote 510	200	-	-	400	*	15-25	10-15	5-10	2-5	2-5
<p>*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 2 & Sa 2½ = Abrasive Blast Cleaning - Class 2 & 2½ (see AS1627.4) DFT = Dry Film Thickness in Microns</p>														

Chart 3
December 2014

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 μm	Atmospheric corrosivity category					
		Product	Nom DFT μm	Product	Nom DFT μm	Product	Nom DFT μm		C1 Very Low	C2 Low	C3 Med.	C4 High	Very High	
													C5-I Ind	C5-M Mar
INORGANIC ZINC SILICATE														
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
POLYURETHANE - Two Pack, Solvent Borne														
PUR1	St3	Armourcote 510	125	Uracryl 403	50	-	-	175	*	10-15	5-10	2-5	-	-
PUR2	Sa 2½	Armourcote 220	75	Uracryl 403	50	-	-	125	25+	10-25	5-10	2-5	-	-
PUR3	Sa 2½	Armourcote 220	75	Armourcote 510	125	Uracryl 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	Uracryl 403	50	250	*	25+	15-25	10-15	5-10	5-10
PUR5	Sa 2½	Zincilate 11 or ArmourZinc 120	75	Armourcote 510	200	Uracryl 403	50	325	*	25+	25+	25+	15-25	15-25
<p>*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</p>														

Chart 4
December 2014

Resene Engineered Coatings Systems

Equivalent to AS/NZS 2312.1

PAINTING SYSTEMS FOR STEEL/GALVANISED STEEL

GENERIC PRODUCT

Acrylic Gloss (2 Pack)
Acrylic Latex - Satin
Acrylic Latex - Semi Gloss
Acrylic Latex - Gloss
Alkyd Primer - High Build
Alkyd Primer - Low Build
Alkyd Primer - Low Build
Alkyd Gloss
Alkyd / MIO
Epoxy - High Build
Epoxy Mastic
Epoxy MIO - High Build
Epoxy Primer (2 Pack)
Inorganic Zinc Silicate
Organic Zinc Primer
Polyurethane Gloss (2 Pack)

RESENE PRODUCT

Imperite I.F. 503
Lumbersider
Sonyx 101, Lustacryl
Hi-Glo, Enamacryl
Armourcote 210
Steel Fab
Galvo One
Super Gloss
Mica Bond
Armourcote 510, Armourcote 515
Alumastic, Armourcote 510
Armourcote 515 MIOX
Armourcote 220
Zincilate 11
ArmourZinc 120
Uracryl 403

For Corrosion Protection Systems and Coating Systems outside the scope of this document, please contact your Resene Engineered Coatings Consultant for further assistance and advice.

We can also assist you in selection of the most appropriate system within this document to best suit your requirements.

www.resene.co.nz

Our vision

To be respected as an ethical and sustainable company and acknowledged as the leading provider of innovative paint and colour technology.

Resene

the paint the professionals use



Resene

Engineered Coating Systems