

Specification for

Anodic Oxide Coatings

On Wrought Aluminium

For External

Architectural

Applications

Preface:

The origin of this anodising specification was New Zealand Standard NZS3503, which was withdrawn and was not replaced by Standards New Zealand.

Standards New Zealand agreed to the publication of the original text as the “WANZ Voluntary Specification for Anodic Oxide Coatings On Wrought Aluminium For External Architectural Applications” and, accordingly, that document was the joint copyright of Window Association of NZ (Inc) and Standards NZ.

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Specification for
**Anodic Oxide Coatings On Wrought Aluminium
For External Architectural Applications**

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1. SCOPE

This Standard specifies requirements for clear and coloured anodic oxide coatings on aluminium for external architectural applications, excluding die castings and aluminium panel cladding systems.

2. REFERENCES

The following Standards are referenced in this Specification:

AS/NZS 1734	Wrought aluminium and aluminium alloy flat sheet, coiled sheet and plate for general engineering purposes.
AS/NZS 1866	Wrought aluminium and aluminium alloy, extruded rod, bar, solid and hollow shapes for general engineering purposes.
BS 6000	Guide for the selection of an acceptance sampling system, scheme or plan for inspection of discrete items in lots.
BS 6001-1	Sampling procedures for inspection by attributes. Sampling schemes indexed by acceptable quality limit (AQL) for lot-by-lot inspection.
BS 6001-2	Sampling procedures for inspection by attributes. Specification for sampling plans indexed by limiting quality (LQ) for isolated lot inspection.
BS 6161-7	Methods of test for Anodic oxidation coatings on aluminium and its alloys – Part 7: Accelerated determination of light fastness of coloured anodic oxidation coatings using artificial light”.
NZS 3604	Amendment 1 (Corrosion Maps) “Timber Framed Buildings”.

3. DEFINITIONS

For the purposes of this New Zealand Standard the following definitions apply:

- 3.1 PURCHASER. The person(s) who issues to the Anodiser the information given in clause 4.
- 3.2 ALUMINIUM. Wrought aluminium and aluminium alloys suitable for anodising in accordance with this Standard. Note: See clause 5.
- 3.3 ANODISED ALUMINIUM. Aluminium with an anodic coating consisting mainly of aluminium oxide, produced by an electrolytic oxidation process during which the aluminium acts as the anode.
- 3.4 CLEAR ANODISED ALUMINIUM. * Aluminium with a substantially colourless, translucent anodic oxide coating.
- 3.5 COLOUR ANODISED ALUMINIUM. Aluminium with an anodic oxide coating that is coloured either during anodising or by subsequent processing.
- 3.6 SIGNIFICANT SURFACE. That part of the surface on which the specified finish is required.
- 3.7 SEALING OF ANODIC OXIDE COATINGS. A hydration treatment carried out after anodising to reduce porosity and absorptivity of the coating.
- 3.8 NORMATIVE: The sections of this Standard identified as “Normative” are requirements of this Standard. Not fulfilling the Normative requirements would mean non-compliance with this Standard.
- 3.9 INFORMATIVE: The sections of this Standard identified as “Informative” are included for general information and guidance but conformance with it is not required for compliance with this Standard.

*Sometimes referred to as 'natural' or 'silver' Anodised aluminium.

4. INFORMATION TO BE SUPPLIED TO THE ANODISER

4.1 The following information shall be supplied in the instructions to the Anodiser.

- a. The number of this New Zealand Standard, i.e. WENZ SFA 3503-02:2004 and the thickness grade required (see table 1).
- b. The specification of the aluminium (see clause 5).
- c. The extent of the significant surface(s) (see clause 6).
- d. The surface texture(s) required (see clause 7).
- e. Sampling requirements for acceptance (see clause 10).

4.2 Where appropriate the following additional information shall be supplied:

- a. The preferred position and size of the contact mark(s) (see clause 6).
- b. The type of anodising process to be used.
- c. Any upper limit of anodic oxide coating thickness.
- d. Textural tolerances by agreed samples (see clause 7)
- e. The colour required and colour tolerances, defined by agreed samples (see clause 8)
- f. Any temporary protection required (see clause 13)

5. SELECTION OF ALUMINIUM

The purchaser shall consult with the aluminium supplier and with the Anodiser regarding the material to be supplied in order to ensure that the agreed finish can be achieved.

Alloys most commonly used for general architectural anodising are 1200, 6060 and 6063 as specified in AS/NZS1866; 5005 and 5251 as specified in AS/NZS1734.

Special alloys have been developed for use with integral colour anodising processes and these may be required in order to produce specific coloured finishes.

When a uniform appearance is required with sheet materials, it is essential to specify an anodising quality grade of aluminium.

6. SIGNIFICANT SURFACE(S)

The significant surface(s) shall be specified to the Anodiser and, if necessary, shall be marked on drawings or samples; in some cases there may be different requirements for the finish on different parts of the significant surface(s).

It is important to the purchaser that the position(s) and maximum size(s) of the contact mark(s) shall be agreed with the Anodiser.

7. SURFACE TEXTURE

The type of surface texture to be produced on the aluminium before anodising shall be specified to the Anodiser. Where appropriate, acceptable limits of variation of final surface finish on the significant surface(s) (see clause 9) shall be agreed between the purchaser and the Anodiser on the basis of agreed samples anodised to the requirements of this New Zealand Standard.

NOTE 1. Different surface textures may be obtained by a variety of treatment processes. The work may be mechanically polished to obtain a smooth or a bright surface. Under some circumstances chemical or electrochemical brightening may be employed in conjunction with special aluminium to obtain a very bright finish (See clause 5). More usually, the work, either polished or unpolished, is subjected to a chemical etching procedure to provide a range of textures with varying degrees of gloss from light satin to fully matt, according to the type of etch used. Alternatively, the texture may be produced mechanically by brushes, abrasive belts or wheels to give a range of matt finishes which are lined or directional, in contrast with the essentially non-directional etched finishes. Mechanical finishes have good reproducibility and are less dependent on metal structure and composition than chemical pretreatments.

Very rough surfaces, either chemically or mechanically produced, are best avoided because they tend to hold dirt and have an adverse effect on durability.

NOTE 2. The provision of agreed samples is a useful guide in production but it should be recognized that they are of limited value in assessing surface finish, since different forms and sizes of material may respond to preparation treatments in slightly different ways.

8. COLOUR

The colour of the anodised work shall be agreed between the purchaser and the Anodiser. When appropriate, the acceptable limits of colour variation shall be defined by agreed samples (see clause 9).

NOTE 1. Colour anodised aluminum may be produced by the following methods:

- (a) by impregnating anodic oxide coatings with organic dyes
- (b) by impregnating anodic oxide coatings with inorganic pigments by simple immersion or by double decomposition
- (c) by electrodepositing coloured inorganic compounds into anodic oxide coatings
- (d) by anodising in special electrolytes. This method is usually referred to as integral colour anodising*
- (e) by using special aluminium alloys where the alloying elements are responsible for producing coloured effects in the anodic oxide coating
- (f) by combination of the above methods.

*Sometimes referred to as 'self-colour' or 'hard colour' anodising.

NOTE 2. The light fastness of colour-anodised aluminium shall comply with BS6161-7. Advice should be sought from the Anodiser.

NOTE 3. The metal composition, form and surface texture, as well as the viewing angle, will exert a profound effect on the subjective impression of colour. Matching of adjacent components is difficult. Co-operation between the metal supplier, the Anodiser and the purchaser is necessary to keep variations within acceptable limits.

9. VISUAL INSPECTION AFTER ANODISING

Inspection of installed product shall be performed at a distance of not less than two metres as per Appendix G.

The supplier and the customer shall agree and document the acceptable variations in the finished work by reference to a range of standard samples.

Indicative variations may include, but are not limited to, colour variation, brightness and die lines.

NOTE 1. It is sometimes possible to observe, on close inspection or from certain viewing angles, variations in brightness, banding, streaming and other visual effects on the significant surfaces. These seldom impair the performance of the anodised aluminium and, as such, should not be grounds for rejecting the product on a performance basis.

NOTE 2. The provision of agreed samples is a useful guide in production but it should be recognized that they are of limited value in assessing final appearance, since different forms and sizes of material may respond to processing in slightly different ways.

NOTE 3. Anodic treatment can accentuate the effect of any lack of homogeneity or differences in metallurgical condition of the aluminium. This means that some non-uniformity of appearance may be encountered on different areas of the component and/or different batches of material to the same specification or where certain welding processes have been used.

10. SAMPLING

The manufacturer shall have a sampling plan that can be provided to the customer on request. If the customer requires a different level of assurance, the following sampling plans are recommended:

BS 6001-1

BS 6002-2

BS 6000 (Guidance)

11. THICKNESS OF ANODIC OXIDE COATING

11.1 TESTING PROCEDURE

It is recommended that the thickness of the coating on a significant surface be determined for compliance with the specified value by the method given in Appendix A. In cases of dispute the microsection method as described in the Qualanod Standard shall be the referee method.

11.2 AVERAGE MEASURED THICKNESS

The average measured thickness of the anodic oxide coating shall be the mean of at least 5 measurements taken at evenly spaced points over the significant surface(s) and shall be not less than the value listed in Table 1, appropriate to the grade when measured by one of the methods given in Appendix A.

11.3 MINIMUM LOCAL THICKNESS

At no point on the significant surface shall the measured thickness be less than 80 percent of the specified average thickness except in the agreed contact mark areas [see 4.2 (a)].

11.4 UPPER LIMIT OF THICKNESS

The upper limit of thickness is not specified but, where necessary, the purchaser and the Anodiser shall agree to an upper limit*.

Anodising above 35µm is not recommended for Architectural Aluminium.

Table 1 MINIMUM COATING THICKNESS*

NZS 3604 Corrosion Zone		Minimum Thickness Microns	Suggested Thickness Microns
Sea Spray	Typically within 500m of the sea or within 100m of tidal estuaries. Predominantly the West coast of the South Island and the West coast of the top half of the North Island. This zone also includes all off shore islands.	25	25
1	Coastal areas that are not deemed "Sea Spray" but are still close to the coast, this includes most of Auckland.	20	25
2	Inland Coastal areas that would normally lie between Coastal and hill country.	12	20
3	Inland New Zealand, typically hill country where rainfall is plentiful.	12	12
4	Geothermal areas. Other areas to be included in this zone would be, Swimming pools/Polluted and high corrosion risk areas.	25	25
Notes			
1	All exterior Black minimum 20 micron - application specific.	20	25
2	All Bright Anodised maximum 20 micron to avoid dulling of finish.	12	Application specific

*Anodic oxide coatings produced by the sulphuric acid process having a thickness in excess of 35 microns may prove difficult to seal to comply with those tests specified in clause 12. Thermal crazing of such anodic oxide coatings may also occur.

12. SEALING

All anodic oxide coatings shall be sealed to meet the requirements of this Specification.

The referee method for testing efficacy of sealing shall be the chromic solution test given in Appendix D.

For sealing to be satisfactory, the loss in mass per unit area shall not exceed 0.30 mg/cm² of anodised surface tested. The test pieces shall be of the same material and anodised under the same conditions as the significant surface(s) of the product.

For production control purposes, the following additional tests are recommended:

(a) ADMITTANCE MEASUREMENT METHOD.

When the anodic oxide coating is tested by the admittance method given in Appendix C, the admittance value shall be less than $500/T$ μS , where T is the thickness of the anodic coating in micrometres (microns).

NOTE. This test may give anomalous results with some colour-anodised aluminium or when certain additives are used in the sealing process.

(b) IMMERSION IN PHOSPHORIC/CHROMIC ACID SOLUTION.

When the sample is tested by the method given in Appendix D, the loss in mass per unit shall not exceed 0.30 mg/cm^2 .

13. TEMPORARY PROTECTION OF ANODISED ALUMINIUM

Where appropriate, the temporary protection to be employed shall be agreed between the purchaser and the Anodiser.

Recommendations for the temporary protection of anodised aluminium are given in Appendix F.

14. MAINTENANCE OF ANODISED ALUMINIUM

The durability of anodised aluminium depends upon the care taken in its maintenance, particularly in industrial and marine environments.

Recommendations for the maintenance of anodised aluminium are given in Appendix E.

APPENDIX A

THICKNESS MEASUREMENT WITH AN EDDY CURRENT INSTRUMENT (NORMATIVE)

A.1 PRINCIPLE

The method is non-destructive. It involves the production of eddy currents in the metallic substrate and the measurement of the reaction of those eddy currents on a test head placed on the anodised surfaces.

The strength of this reaction is related to the gap between the test head and the metal surface, i.e. the thickness of anodic oxide coating.

The instruments are only suitable for accurate determination on flat or cylindrical surfaces; any other curvature will give only approximate readings.

When the material to be tested has a curvature beyond the limit of the instrument, flat test pieces, representative of the material in both composition and surface texture and anodised under the same conditions as the product, shall be provided.

A.2 APPARATUS

No limitations are placed on the type of apparatus, provided that it is based upon the principle given above, that it can be satisfactorily calibrated, and that it is used in accordance with the manufacturer's instructions.

It is desirable, in practice, to use one of the instruments that have been developed for this purpose. In most instruments, the reaction in the metal is metered directly on a scale reading.

Each type of instrument has its own degree of sensitivity to the variations set out in the manufacturer's chart; specific calibration methods are normally supplied. Particular care needs to be taken to observe recommended 'warming up' times.

A.3 CALIBRATION:

The test equipment shall be calibrated in accordance with the instrument manufacturer's instructions.

APPENDIX B

SEALING ASSESSMENT BY THE ACIDIFIED SULPHITE SOLUTION TEST (NORMATIVE)

B.1 TEST SAMPLES

If the samples are actual work-pieces, it is desirable that the total area should not be less than 75mm x 50mm.

B.2 REAGENTS

All reagents shall be of a recognized analytical quality.

B.2.1 ACIDIFIED SODIUM SULPHITE SOLUTION

10 g of sodium sulphite (anhydrous) in 1 litre of distilled or demineralized water to which glacial acetic acid (20ml/l) has been added to give pH 3.6 to pH 3.8 followed by addition of 5N sulphuric acid (10ml/l to 15ml/l) to give pH 2.5 at room temperature.

B.2.2 NITRIC ACID SOLUTION

Nitric acid (d=1.42), 50% by volume aqueous solution.

B.3 PROCEDURE

- (a) Measure the area of the test sample in square centimeters, excluding cut edges or other uncoated surfaces.
- (b) Remove any surface bloom from the sample to be tested by rubbing with a dry cloth. (If samples are heavily finger marked or are in any way greasy, they should be wiped over with a suitable organic solvent).
- (c) Immerse the clean test sample in the nitric acid solution at a temperature of $20 \pm 2^\circ\text{C}$ for 10 min.
- (d) Rinse thoroughly in running water and then in distilled or demineralized water. Dry and weigh the sample to an accuracy of 0.1mg.
- (e) Immerse the sample for 20 min in the acidified sodium sulphite solution maintained at a temperature of 90°C to 92°C . (Care shall be taken that the solution temperature does not at any time exceed 92°C or else the sulphur dioxide in the solution will be lost).
- (f) Rinse thoroughly in distilled or demineralized water, dry and reweigh.

NOTE 1. Unless very large parts are to be tested, the bath shall be made up freshly for each test. Samples of convenient shape, which have been cut from a larger piece, may be tested satisfactorily as there is no significant attack on cut edges; however, samples having large uncoated areas should be avoided.

NOTE 2. Some organically dyed coatings may give high mass losses in this test and acceptance levels may have to be agreed between the purchaser and the Anodiser.

NOTE 3. Excessively porous coatings may be removed in the nitric acid pre-dip and a very low mass loss may then be recorded in the sulphite solution. If this is suspected it is essential that the mass loss in the nitric acid be checked also.

APPENDIX C

SEALING ASSESSMENT BY ADMITTANCE MEASUREMENT (NORMATIVE)

C.1 GENERAL

This test is intended to give a quick non-destructive assessment of the quality of sealing of anodic films. The readings obtained are dependent on anodic oxide coating thickness as well as quality of sealing and this should, therefore, be taken into account in the assessment. The pretreatment method of anodising used and the alloy all have an effect on admittance readings but this effect is generally small. All types of anodised component may be tested provided that there is sufficient area (about 20mm diameter ring) and that a coating thickness measurement in the test area is possible.

This test may give incorrect results with dyed or pigmented coatings or when certain sealing additives are used. A fail of this test should not be accepted as absolute and a re-test should be performed as per the default test method described in Appendix D.

C. 2 DEFINITION

The admittance, Y , is the effective conductivity and is expressed in siemens. It is also defined as the reciprocal of the impedance, which is the effective resistance to the passage of alternating current at a specified frequency.

C. 3 APPARATUS

Apparatus is required which will measure the admittance value in microsiemens at 1 kHz. The apparatus shall preferably have several measuring ranges to measure admittance values in the range of 5 μ s to 300 μ s.

It should be equipped with two electrodes, one with a contact screw by which a connection can be made with the basis metal of the sample and, the other, a pencil-like probe. Self-adhesive rubber rings are often used as electrolytic cells; these usually have an internal diameter of 13mm and a thickness of about 5mm. Such a cell has an internal area of 133mm². Other means of retaining the electrolyte in contact with an accurately defined area of the anodic oxide coating may be used.

C. 4 ELECTROLYTE

An aqueous solution containing 35 g/l Potassium Sulphate, K_2SO_4 .

C. 5 PROCEDURE

The test shall not be applied until the work has cooled to room temperature, which shall be recorded, and the test should be applied within 48 hours of sealing. It is also essential that all components and test solutions be at room temperature. The specimens for testing are first thoroughly degreased at the place of measurement using suitable organic solvents.

One electrode is then screwed onto the sample so that it makes good electrical contact with the basis metal. The rubber ring forming the electrolytic cell is stuck onto the sample surface at the place of measurement; it is essential that perfect adhesion be obtained so that the electrolyte does not leak under the ring. If the shape of the specimen alters the area of the surface enclosed by the ring, the modified area shall be determined. The electrolytic cell is filled with the potassium sulphate electrolyte and the other electrode probe is dipped into this electrolyte and the admittance value read off on the instrument. After measurement of the admittance value, the anodic oxide coating thickness is measured in the same area.

It is essential that fresh electrolyte and new rubber rings be used for each measurement carried out. Measurements can be made on sloping or vertical surfaces by putting a cotton wool plug in the cell and soaking

this thoroughly with the potassium sulphate solution. When freshly produced anodic oxide coatings are tested, a slow increase in the admittance value is observed. This should come to a stop within 10 min.

C.6 INTERPRETATION

An admittance value of less than $500/T \mu\text{S}$, where T is the thickness of the anodic oxide coating in micrometres, shall be regarded as a criterion of satisfactory sealing. This relationship is fully satisfactory in the thickness range of $5\mu\text{m}$ to $30\mu\text{m}$.

If the area of the electrolytic cell is not 133mm^2 , then the correct admittance value can be calculated from the following formula:

$$Y_2 = \frac{133 Y_1}{A}$$

where

Y_1 is measured admittance value;

A is the area on which it is measured.

Instruments are normally calibrated for a measuring temperature of 25°C , but if measurements are taken at other temperatures, the correct admittance value can be determined from the following formula:

$$Y_A = \frac{Y_B}{\alpha}$$

where

Y_A is the required admittance value for a temperature of 25°C .

Y_B is the measured admittance value at a temperature t.

α is the correction factor to be used based on the values given below.

Temperature $n^\circ\text{C}$, t	10	12.5	15	17.5	20	22.5	25	27.5	30
Correction Factor α	0.70	0.75	0.80	0.85	0.90	0.95	1.0	1.05	1.10

C.7 INSTRUMENTS

Commercial instruments are available and care shall be taken with their calibration and the parameters which they measure.

APPENDIX D

METHOD OF ASSESSING SEALING BY IMMERSION IN PHOSPHORIC /CHROMIC ACID SOLUTION (NORMATIVE)

D.1 PRINCIPLE

The method involves immersing the sample in a phosphoric/ chromic acid solution under stated conditions of time and temperature. The degree of attack is assessed by the loss in mass of the sample and is indicative of the quality of the sealing.

D.2 TEST SOLUTION

The solution shall be made up as follows:

Chromic acid CrO₃, 20g
Ortho phosphoric acid (d = 1.75), 35 ml
Distilled or deionized water to make 1 litre.

The test solution may be used repeatedly but it shall be discarded after 2 g of anodic oxide coating per litre of solution has been dissolved.

Care shall be taken to avoid bimetallic contact with the sample under test or contamination of the test solution by the introduction of heavy metals.

D.3 TEST SAMPLE

The test sample shall have an area of approximately 100cm² of anodised surface and shall weigh not more than 200g.

D. 4 TEST PROCEDURE

- (a) Measure the area of the sample in square centimeters, excluding cut edges or other uncoated surfaces. (The solution does not attack bare metal, hence it is unnecessary to take bare surfaces into account).
- (b) Weigh the test sample to an accuracy of 1.0mg.
- (c) Immerse the test sample for 15 min in the test solution maintained at a temperature of $38 \pm 1^\circ$ and contained in a suitable non-metallic vessel.
- (d) Rinse thoroughly in distilled or demineralized water, dry and reweigh.

APPENDIX E

MAINTENANCE OF ANODISED ALUMINIUM (INFORMATIVE)

Regular cleaning is essential if the finish of anodised aluminium is to be preserved over the years. Deterioration of the anodic oxide coating can occur, mainly as a result of grime deposition and subsequent attack by moisture, particularly when it is contaminated with sulphur compounds. Deposited grime retains the contaminated moisture on the anodised surface permitting attack to proceed and, thereby, damaging the anodic oxide coating, which cannot be renewed in situ.

The frequency with which cleaning should be carried out will range from monthly to six monthly intervals according to the degree of contamination of the service environment. Aggressive environments may require more frequent cleaning. It is recommended a maintenance plan is agreed with the supplier. The aim of the cleaning operation should be to remove grime deposited on the surface without damage to the anodic oxide coating.

The cleaning method to be adopted depends on the degree of deterioration that may already have occurred and the scale of the operation. Hand rubbing is often used for small work but large expanses, as in multistorey buildings, call for carefully controlled methods of loosening adherent deposits.

The anodised aluminium should be washed down with warm water containing a suitable wetting agent or with a mild soap solution. Fibre brushes may be used to loosen attached grime but the use of emery, sand paper, steel wool or other abrasive materials, and acid or alkaline cleaners, should not be permitted as they damage the anodic oxide coating. It is essential to rinse thoroughly after cleaning, using copious applications of clean water, particularly where cavities are present. Greasy deposits may be cleaned off using a soft cloth dipped in white spirit. After cleansing, the anodised aluminium may be treated with a good quality wax polish.

Emulsion cleaners or proprietary chemical agents may attack the anodic oxide coating and they should never be used, except in consultation with companies specialising in the cleaning of anodised aluminium.

APPENDIX F

HANDLING AND TEMPORARY PROTECTION DURING TRANSPORTATION AND INSTALLATION (INFORMATIVE)

Special care is necessary in the handling, transportation and installation of anodised products, as extrusion or as fabricated items, in order to avoid surface damage.

They shall not be allowed to rub or slide against each other and significant surfaces shall be well protected during transportation, storage and stacking by the use of suitable containers. Wrapping with stout paper, cardboard or other protective media is often a convenient means of protection, but the wrapping shall not be allowed to get damp.

It is important to prevent attack on the anodic oxide coating by corrosive agents such as contaminated moisture, condensates, cement and plaster splashes. For this purpose, a suitable lacquer (e.g. methacrylate, cellulose acetate butyrate) strippable tape or a removable wax coating is recommended as protection. Tape and wax coatings shall be such that they can be easily removed after a considerable period of time without leaving significant residues. They are required to protect the anodised aluminium from building hazards, e.g. splashes of cement. After they have served this purpose they should be removed as soon as possible, except in the case of some lacquers, which may be allowed to weather away.

It is essential that anodized components be delivered to site and installed at as late a stage as possible in building operations in order to minimize the possibility of damage.

It is strongly recommended that the following notice should be affixed to each package of anodized aluminium dispatched to a building site.

“This material has an anodised finish and must be handled very carefully at all stages to avoid damage to the surface. Great care must be taken in storing or stacking while awaiting installation. The anodized surface may be permanently damaged by contact with wet cement or plaster”.

APPENDIX G

GUIDANCE ON VISUAL INSPECTION AFTER ANODISING (NORMATIVE)

Anodic treatment may accentuate the effect of any lack of homogeneity or differences in metallurgical condition of the aluminium. As a result, some non-uniformity of appearance may be encountered on different areas of a component and/or between different batches of material of the same specification, or where certain welding processes have been used.

With colour anodising in particular, the metal composition, form and surface texture, as well as the viewing angle, can have a profound effect on the subjective impression of colour. Co-operation between the metal supplier, the Anodiser and the purchaser is necessary to keep variations within acceptable limits.

It is also possible, on close inspection or from certain viewing angles, to observe variations in brightness, banding, streaking and other visual effects on the significant surfaces. These variations seldom impair the performance of the anodised coating.

It is important that the viewing distance be agreed to; for example, a distance of not less than two metres is required when viewing external architectural applications.

The samples to be used as colour, brightness and die line standards should, if possible, be duplicates of production components or, otherwise, be similarly shaped in order to facilitate comparisons with production components.

Anodised finishes are preferably matched in daylight, but not in direct sunlight.

Corrosion Zones

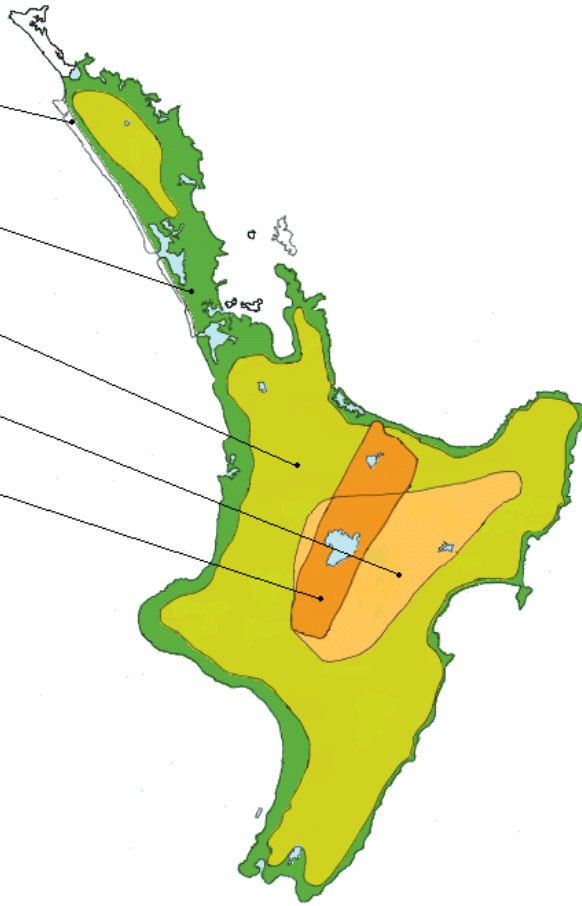
Sea spray zone includes all areas within 500m of the coastline and white areas of the map.

ZONE 1

ZONE 2

ZONE 3

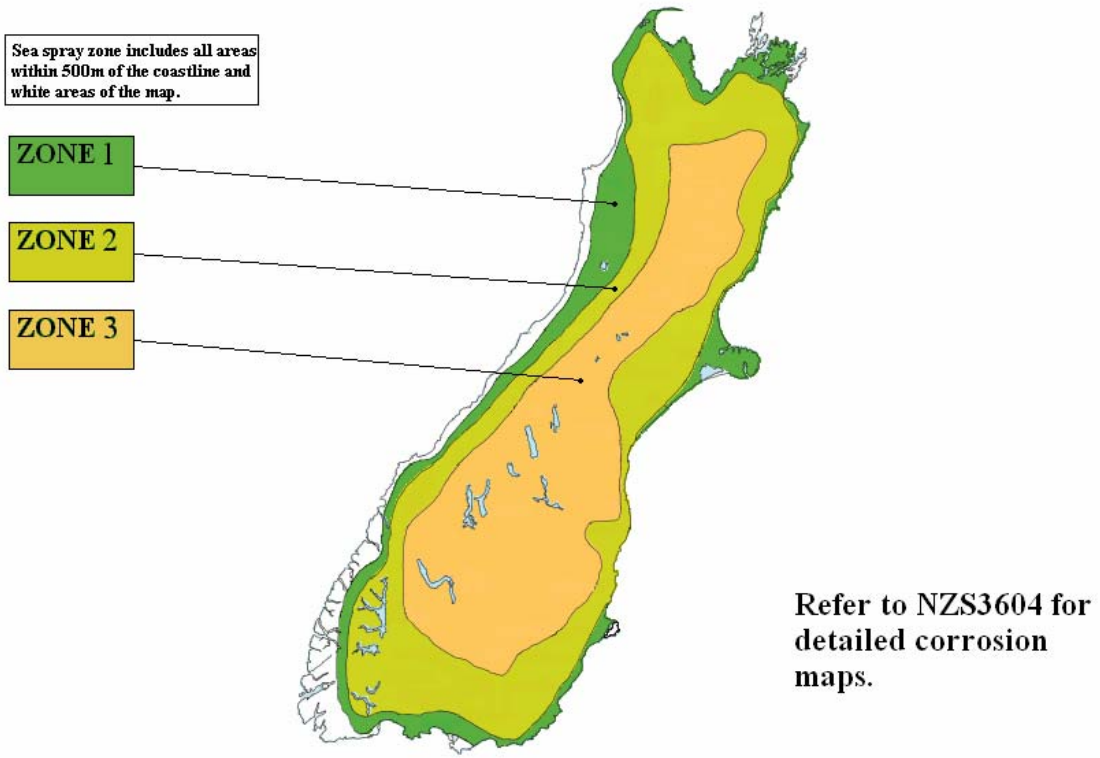
ZONE 4



Refer to NZS3604 for detailed corrosion maps.

Refer to Table 1 on page 7

Corrosion Zones



Refer to Table 1 on page 7

APPENDIX J (INFORMATIVE)

VERSION EDIT NOTES

End of Document

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