

TWEED SHIRE COUNCIL

**ELECTRICAL
DESIGN
SPECIFICATION**

EL06

**CORROSION PROTECTION FOR ELECTRICAL
AND MECHANICAL EQUIPMENT STRUCTURES**

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CORROSION PROTECTION FOR ELECTRICAL AND MECHANICAL EQUIPMENT STRUCTURES

1 CITATION

This document is named “Tweed Shire Council, Electrical Design Specification EL06 - Corrosion Protection for Electrical and Mechanical Equipment Structures”

2 ORIGIN OF DOCUMENT, COPYRIGHT

This document was originally produced for Tweed Shire Council. This document is copyright to Tweed Shire Council.

3 VERSIONS

VERSION	AMENDMENT DETAILS	CLAUSES AMENDED	DATE ISSUED (The new version takes effect from this date)	Authorised by the Director of Engineering Services
1.1	Original version		1 November 2005	

4 SCOPE OF SPECIFICATION

This Specification details the requirements for the provision of protective coatings to equipment and structures, including preparation and treatment of surfaces, supply of coating materials, inspection, application of coating materials, handling and transportation of equipment, and re-instatement of damaged coatings.

Equipment and structures subject to this Specification shall include mechanical and electrical equipment of proprietary and specific manufacture, steel structures including static and mobile mechanised devices, pipework and conduits.

5 REFERENCED STANDARDS

5.1 Australian Standards

The following Standards are referenced within, and shall be read in conjunction with, this Specification. In the event of conflict, this Specification shall take precedence.

AS1192	Electroplated coatings, Nickel and chromium.
AS1214	Hot-dip galvanised coatings on threaded fasteners (ISO metric coarse thread series)
AS1345	Identification of the contents of piping, conduits and ducts.
AS1627.0 to.9	Metal Finishing - Preparation and pre-treatment of surfaces.

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AS1789	Electroplated zinc (electrogalvanized) coatings on ferrous articles (batch process)
AS1897	Electroplated coatings on threaded components (metric coarse series).
AS3894.1	Site testing of protective coatings - Non-conductive coatings - Continuity testing - High voltage (brush) method.
AS3894.3	Site testing of protective coatings - Determination of dry film thickness.
AS4680	Hot-dipped galvanised (zinc) coatings on fabricated ferrous articles.

6 GENERAL

All coating materials used shall be of the type and quality described herein and shall have Australian Paint Approval Scheme (APAS) approval for the relevant application.

Colours for top coats shall be as specified or if not specified as agreed by the Purchaser.

All work shall to be carried out to accepted standards of good practice by competent tradesmen and to the satisfaction of the Council.

A schedule of and data sheets for alternative manufacturers equivalent products of the protective coating systems proposed to be used on the surfaces of all main parts of the equipment shall be submitted for the approval of the Council. If requested by the Council, sample panels of any proposed coating system shall also be supplied.

7 HEALTH AND SAFETY

Statutory health and safety requirements shall be followed at all times and environmental regulations observed. Site safety, health and work procedures shall be followed for any work which is carried out on the construction sites.

Attention must be paid to all warning labels attached to the coating and related product containers and the relevant technical data literature. Procedures are to be in place to comply with these directions.

Scaffolding and other equipment must be erected and maintained by qualified persons.

Eye or face protection shall be worn by all operators to comply with the relevant authority requirements.

First aid equipment including eye wash bottles is to be located adjacent to the material pump.

Adequate ventilation must be provided at all times to remove solvent vapours from the area.

Spark proof equipment and tools are to be used.

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Spray and blast cleaning equipment must be earthed to eliminate any electrostatic charge.

"No Smoking" and "Flammable Liquid" signs must be displayed and suitable fire fighting equipment must be readily available at the work place.

8 SURFACE PREPARATION

8.1 General

All surface defects, including cracks, laminations, deep pitting, weld splatter, slag, burrs, fins and sharp edges shall be removed.

All edges and corners shall be ground to a minimum radius of 2 mm.

Surface contaminants, such as oil, grease, dirt and loose particles, must be removed in accordance with AS1627.1 using a suitable solvent or oil emulsifier/alkaline degreaser as recommended by the coating manufacturer.

Care shall be exercised to protect and prevent damage or contamination of partially or entirely completed portions of the work, machinery, equipment, and adjacent areas from overspray, abrasive and other possible damage likely to occur as a result of the work, by the erection of screens, barriers, boardings, dropsheets, etc.

8.2 Abrasive Blast Cleaning

Surfaces shall be dry abrasive blast cleaned to a white metal finish in accordance with AS1627.4, the required "Class" as detailed in the particular painting system.

The maximum surface profile height shall be 40 microns peak-to-valley, or less if required by coating manufacturer, but not more than the specified minimum dry film thickness of the primer. The surface profile shall be determined by a Keane-Tator Surface Profile Comparator for grit blasted surfaces.

Acceptable materials for the abrasive blast are:

- (a) Metallic: chilled iron grit. The abrasive shall be angular, free from dust and foreign matter. The maximum particle size shall not be larger than that passing through a 1.18mm test sieve.
- (b) Non-metallic (silica free): ilmenite, aluminium oxide, zircon, rutile, garnet, copper slag or crushed hard non-silica containing rocks (eg. diorite). Abrasives shall be hard and free from clay. Salt contamination shall not exceed 50 parts per million. The particle size shall be such that not more than 10% passes a 1.3mm Australian Standard sieve and not more than 10% is retained on a 1.18mm Australian Standard sieve. Contractors shall note the limits placed on any radioactive substances in blast cleaning materials. Where copper slag is used, the surface shall be finished by a final clean-up blast using ilmenite or other approved material to remove traces of copper slag left on the surface.

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Immediately after blasting operations and before coating, all surfaces shall be air blown with clean dry air (adequate driers and oil mist filters shall be used in air lines) and vacuum cleaned to remove all blast products and abrasives from the entire surface, giving particular attention to corners, intersections and horizontal areas where settlement of dust is most likely to occur.

All free oil and moisture shall be effectively removed from the air supply lines of all blasting equipment, using adequate and approved filters and driers. Free oil and moisture content in the air shall each not exceed 0.5mg/cubic metre of free air.

8.3 Power Tool Cleaning

The cleaning of metal surfaces with power tools shall comply with the requirements of AS1627.2.

8.4 Hand Tool Cleaning

The cleaning of metal surfaces with hand tools shall comply with the requirements of AS1627.7.

8.5 Post Cleaning

Cleaned surfaces shall be kept free of all contamination before coating or galvanising, and shall not be touched by bare hands or other bare parts of the body. Any area inadvertently touched by bare parts of the body shall be immediately cleaned again.

All items of metal work to be painted or galvanised shall be so treated not more than two hours after surface preparation of each item has been completed.

Any uncoated surfaces which have been subjected to conditions which might induce condensation of water thereon, or which have been left longer than the above specified two hours after blast cleaning, shall be again blast cleaned before being coated.

9 PAINTING

9.1 Handling and Storage

All coating materials shall be delivered to the site of application in the original unopened containers bearing the manufacturer's labels and instructions, and thereafter stored in cool shaded places.

9.2 Application

All painting and coating operations shall be performed in a neat, thorough, workmanlike manner.

All paint and coating materials shall be in a thoroughly mixed condition at the time of application, and may only be thinned in accordance with the manufacturer's instructions.

Effective controls shall be established to preclude operations in unsuitable weather conditions. Work shall not be performed:

- on surfaces wetted or likely to become wetted after blasting and before coating;
- on surfaces where the surface temperature is less than 3°C above the dew point of the surrounding air;
- when the wet bulb temperature in the immediate vicinity shows a difference of <7% from the dry bulb temperature (standard wet and dry bulb thermometer);

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- when the extremes of surface metal temperature exceed 30°C or are lower than 10°C.

9.3 Prime Coating

The first coat shall be applied as soon as possible after cleaning the surface, but in any case not longer than two hours after cleaning.

The coating shall be applied so as to produce a smooth, even coating free of lumps, ripples, sags, runs, air holes and other defects and imperfections, and shall be allowed to dry or harden to the paint manufacturer's requirements before the succeeding coat is applied.

10 RE-INSTATEMENT OF DAMAGED COATINGS

Coatings shall be fully inspected and marked-up to clearly identify damaged areas.

Re-instatement of the coating shall be in accordance with the manufacturer's recommendations.

10.1 Single Pack Coating Systems on Steel Work

10.1.1 Surface Preparation

All weld, slag and splatter on surfaces that have not been adequately protected shall be removed, and any high points on site welds shall be ground smooth.

Oil, grease, dirt or other contaminants shall be removed from the surface with a high pressure water blast (where practical) or with a water/detergent solution.

Corroded areas shall be cleaned back to bright metal, sharp edges shall be feathered back and the existing coat lightly sanded. Dust off prior to painting.

10.1.2 Coating

1st Coat: Spot prime bare steel with Polyurethane primer containing zinc phosphate, to a minimum dry film thickness of 75 µm (eg. Dulux Luxaprime Zinc Phosphate).

2nd and Subsequent coats: To be applied in accordance with the original coating specification.

10.2 Two Pack Coating Systems on Steel Work

10.2.1 Surface Preparation

Where practical rusted areas shall be prepared to meet the minimum requirements of AS1627.4 - Class 2.5. The existing coating surface shall be whip blasted to remove all loose and flaking paint.

Where whip blasting can not be performed the following alternative procedure may be used for surface preparation:

- Wash down the surface with a water/detergent solution.
- Scrape off all loose and flaking paint.
- Wire brush, power grind back rusted areas.
- Feather back sharp paint edges.

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- Lightly sand existing coating.
- Dust off prior to painting.

10.2.2 Coatings

1st Coat	Spot Prime bare steel with Polyamide cured epoxy blast primer, to a minimum dry film thickness of 25 µm (eg. Dulux LUXEPOXY 66).
2nd Coat:	(Shop coat) High solids epoxy mastic, to a minimum dry film thickness of 200 µm (eg. Dulux Amerlock 400).
3rd and Subsequent coats:	To be applied in accordance with the original coating specification.

11 QUALITY CONTROL

The following quality control procedures are to be performed daily, or greater frequency as required, and the results of the tests permanently recorded.

11.1 Abrasive Blast Cleaning

Australian Standard AS1627.6 shall be used as a guide for assessing the respective degree of surface cleanliness. All surfaces must be tested.

Note: The "Near White Metal Standard" is AS1627.4, Class 2.5.

11.2 Profile

The profile or Anchor Pattern shall be measured using a Clemtex Anchor Pattern Standard or approved equivalent standard. All surfaces shall be tested with reference to AS3894.3.

11.3 Wet Film Thickness

A comb type Wet Film Gauge is to be used continuously during application to minimise the possibility of low dry film thicknesses.

All surfaces shall be tested with reference to AS3894.3.

11.4 Dry Film Thickness

All surfaces shall be tested to determine the dry film thickness with reference to AS3894.3.

The thickness of each individual coating and the thickness of the coating system shall be recorded using a Elcometer 300 thickness gauge producing a permanent (hard copy) printout for each item or structural member.

Instruments shall be calibrated in accordance with AS1580.108.1 using non-magnetic shims on polished steel.

Defects are to be marked with school grade chalk, spirit pen, adhesive inspection labels or masking tape: crayon and paint are not acceptable.

11.5 Identification

The following shall be recorded:

- Batch numbers of all coatings;

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- Item numbers coated with each batch;
- Time and date each item was coated.

11.6 Pinholes

The dry, fully cured coating shall be checked for pinholes and holidays in accordance with AS3894.1.

All testing carried out shall be documented and shall be available upon request.

11.7 Handling and Packaging

Suitable precautions shall be taken in bundling, packing, crating and lifting to ensure that the protective treatment is not damaged during handling, transporting and installation. Soft slings shall be used unless adequate lifting lugs/eye bolts have been provided.

12 PROTECTIVE TREATMENT SYSTEMS

Where brand names are used in this specification, approved equal paints may be used subject to approval by the Purchaser. Refer Clause 6 above.

12.1 Summary Table

System	Application	Paint - DFT
1	Structural Steel Work Indoors	Luxepime Zn Phosphate Primer 75µm
2	Structural Steel Work Exposed	Luxepime Zn Phosphate Primer 150µm High Gloss Enamel - 25µm (Opt)
3	Electrical Machines	Luxepoxy 66 – 25µm Durapon P14 - 75 µm Acrathane If - 50 µm
4	Electrical Panels	Durapon P14 - 75 µm Acrathane If - 50 µm
5	Mechanical Equipment - Internally Wetted	Amerlock 400gf - 400 µm
6	Steel or Cast Iron Pipe Work External Surfaces - Indoors	Amercoat 385P - 75 µm Amercoat 385 - 75 µm High Gloss - 25 µm(Opt)
7	Steel or Cast Iron Pipe Work External Surfaces - Outdoors	Amercoat 385P - 125 µm Amercoat 385 - 125 µm High Gloss - 25 µm(Opt)
8	Steel/Cast Iron Pipes External Surfaces - Buried	Fusion Bonded Low Density Polyethylene
9	Mechanical Equipment Internal/External Surfaces	Fusion Bonded Epoxy
10	Steel/Cast Iron Pipes Internal Surfaces	Cement Mortar Lined

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System	Application	Paint - DFT
11	Steel/Cast Iron Pipes Internal Surfaces	Amerlock 400 - 400 µm
12	PVC or ABS PIPES	Low Sheen Acrylic 50 µm
13	Minor Metallic Pipe Work	Luxepoxy 4 White Primer 30 µm High Gloss Enamel 50 µm
14	Stainless Steel Pipe Work	
15	Hot Dipped Galvanising	
16	Electroplated Metal Coatings	

12.2 System 1: Structural steel - Mild

- Applicability:** This system is for the painting of structural steelwork in mildly corrosive conditions.
- Surface Preparation:** The surface shall be cleaned and degreased to AS1627.1 and abrasive blast cleaned to AS1627.4 Class 2.5 as per this Specification. Alternative methods of cleaning may be used where abrasive blast cleaning is not possible subject to approval by the Council.
- 1st Coat:** Polyurethane primer containing zinc phosphate, to a minimum dry film thickness of 75 µm (eg. Dulux Luxaprime Zinc Phosphate).

12.3 System 2: Structural Steel - Damp

- Applicability:** This system is for the painting of structural steelwork in exposed or damp conditions which can be abrasive blast cleaned.
- Surface Preparation:** The surface shall be cleaned and degreased to AS1627.1 and abrasive blast cleaned to AS1627.4 Class 2.5 as per this Specification.
- 1st Coat:** Polyurethane primer containing zinc phosphate, to a minimum dry film thickness of 75 µm (eg. Dulux Luxaprime Zinc Phosphate).
- 2nd Coat:** Polyurethane primer containing zinc phosphate, to a minimum dry film thickness of 75 µm (eg. Dulux Luxaprime Zinc Phosphate).
- 3rd Coat:** (If specified for cosmetic purposes) High gloss alkyd enamel to a minimum dry film thickness of 25 µm (eg. Dulux High Gloss Enamel).

12.4 System 3: Electrical Machines

- Applicability:** This system is for to the painting of motors and mechanical equipment.
- Surface Preparation:** The surface shall be cleaned and degreased to AS1627.1 and abrasive blast cleaned to AS1627.4 Class 2.5 as per this Specification.
- 1st Coat:** Two pack preweld primer (Dulux Luxepoxy 66), to a minimum dry film thickness of 20 - 25 µm. If the surface has been left to stand, welded or handled, the effected areas shall be cleaned and degreased, welded areas spot blasted and stripe coated with pre weld primer, prior to applying subsequent coats.
- 2nd Coat:** Two pack zinc phosphate epoxy primer, to a minimum dry film thickness of 50 - 75 µm (Dulux Durapon P14).

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3rd Coat: Two pack high gloss epoxy acrylic, to a minimum dry film thickness of 50 µm (Dulux Acrathane IF).

12.5 System 4: Electrical Switchgear Cubicles

Applicability: This system is to provide a high gloss, high quality system for electrical equipment and panels, free from defects and able to withstand transport, handling and installation. The system is designed to be applied over zinc annealed mild steel and shall provide at least a 25 year life without recoating.

Surface Preparation: Degrease to AS 1627.1. After bending, welding, drilling and punching the surface shall be lightly abraded with fine wet and dry paper where required.

1st Coat: Pre-heat work prior to powder application. Use 'degassing' grade polyester powder only. Check for correct curing by solvent testing. Adjust pre-heat and line speed to ensure full cure.

12.6 System 5: Mechanical Equipment (Internal cast iron surfaces)

Applicability: Internal wetted surfaces of cast iron mechanical equipment (eg. pumps, valves)

Surface Preparation: The surface shall be cleaned and degreased to AS1627.1 and abrasive blast cleaned to AS1627.4 Class 2.5 as per this Specification. Where abrasive blast cleaning is not possible alternative methods of cleaning may be approved by the Council.

1st Coat: Polyamide Epoxy Mastic containing glass, to a minimum dry film thickness of 400 µm (eg. Dulux AMERLOCK 400GF). Depending on the method of application additional coats may be necessary to achieve the specified DFT.

12.7 System 6: Steel or cast iron - External Surfaces - Indoors

Applicability: This system is for the painting of the external surfaces of new steel or cast iron pipes and equipment installed indoors.

Surface Preparation: The surface shall be cleaned and degreased to AS1627.1 and abrasive blast cleaned to AS1627.4 Class 2.5 as per this Specification.

1st Coat: Polyamide cured epoxy primer containing zinc phosphate, to a minimum dry film thickness of 75 µm (eg. Dulux Amercoat 385P).

2nd Coat: Polyamide cured epoxy to a minimum dry film thickness of 75 µm (eg. Dulux Amercoat 385).

3rd Coat: High gloss alkyd enamel to a minimum dry film thickness of 25 µm (eg. Dulux High Gloss Enamel).

12.8 System 7: Steel or cast iron - External surfaces - Exposed outdoors

Applicability: This system is for the painting of the external surfaces of exposed steel or cast iron pipes and equipment installed outdoors.

Surface Preparation: The surface shall be cleaned and degreased to AS1627.1 and abrasive blast cleaned to AS1627.4 Class 2.5 as per this Specification.

1st Coat: Polyamide cured epoxy primer containing zinc phosphate, to a minimum dry film thickness of 125 µm (eg. Dulux Amercoat 385P).

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2nd Coat: Polyamide cured epoxy to a minimum dry film thickness of 125 µm (eg. Dulux Amercoat 385).

3rd Coat: (If required for colour coding) High gloss alkyd enamel to a minimum dry film thickness of 25 µm (eg. Dulux High Gloss Enamel).

12.9 System 8: Steel pipe - External surfaces - Buried

Applicability: This system is for the protection of the external surfaces of buried steel pipes.

Surface Preparation: The surface shall be cleaned and degreased to AS1627.1 and abrasive blast cleaned to AS1627.4 Class 2.5 as per this Specification. Where abrasive blast cleaning is not possible the Superintendent may approve alternative methods of cleaning.

Method: Fusion bonded low density polyethylene coatings of pipe and fittings shall be in accordance with AS 2518. Unless specified otherwise, the minimum coating thickness to be applied shall be a "normal" coating as specified in Table 4.1 of AS 2518. The safe exposure period for storage purposes shall be 18 months in accordance with Clause 6.1 of AS 2518.

Pipes and fittings shall be tested in accordance with Section 4 of AS 2518. Electric flaw detection test shall be done using a pulse type flaw detector incorporating a visual and an audible signalling device. In the event of an electrical flaw being detected it shall be repaired in accordance with Section 5 of AS 2518. Apart from repairs resulting from destructive testing, the number of repairs shall not exceed three per pipe or fitting.

The coating applicator shall provide a certificate to show that the polyethylene and the coating system meet the requirements of AS 2518. The certificate shall include results of tests performed in accordance with Table 4.2 of AS 2518.

The ends of pipes to be site welded shall be cut back to permit welding without heat causing damage to the coating. The coating shall be cut back square to the end of the pipe section and shall be tapered over 5 mm minimum.

12.10 System 9: Steel or cast iron equipment - Fusion bonded epoxy

Applicability: This system is for the protection of the external surfaces of steel or cast iron equipment installed either indoors or outdoors with fusion bonded epoxy.

Surface Preparation: The surface shall be cleaned and degreased to AS1627.1 and abrasive blast cleaned to AS1627.4 Class 2.5 as per this Specification.

1st Coat: Thermosetting Epoxy Powder, to a minimum dry film thickness of 500 µm applied in accordance with the manufacturer's recommendations (eg. Dulux NAP-GARD 7-2501).

12.11 System 10: Steel or cast iron pipes - cement mortar lining

Applicability: This system is for the cement mortar lining of the internal surface of steel or cast iron pipes and specials.

Method: All pipes and specials shall be lined with Portland cement mortar to a finished thickness as specified. Cement shall comply with AS 3972 Type SR. Materials for lining, methods of application and curing of the lining shall be in accordance with AS 1281. In the lining of pipes and specials, the

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Contractor may use a mixture of Portland cement and fly ash blended in proportions not exceeding 10% by weight of fly ash and approved by the Superintendent. The Contractor shall not incorporate any admixture into the cement mortar without the approval of the Council.

12.12 System 11: **Steel or cast iron pipework - internally painted**

- Applicability: This system is for the internal painting of steel or cast iron pipes used for raw or treated fresh water.
- Surface Preparation: The surface shall be cleaned and degreased to AS1627.1 and abrasive blast cleaned to AS1627.4 Class 2.5 as per this Specification.
- 1st Coat: High solids epoxy mastic, to a minimum dry film thickness of 200 µm (eg. Dulux Amerlock 400)
- 2nd Coat: (Shop coat) High solids epoxy mastic, to a minimum dry film thickness of 200 µm (eg. Dulux Amerlock 400)

12.13 System 12: **PVC or ABS pipework**

- Applicability: This system is for the painting of PVC and ABS pipes and fittings.
- Surface Preparation: Clean surface with methylated spirits, isopropanol or warm water and detergent. Abrade with nylon pad, steel wool or P800 wet and dry paper.
- Method: 1st Coat: Low sheen Acrylic, to a minimum dry film thickness of 25 µm (eg. Dulux Weathershield Low Sheen Acrylic for exterior plastics).
- 2nd Coat: As per 1st coat.
- 3rd Coat: (If required for colour coding) High gloss alkyd enamel to a minimum dry film thickness of 25 µm (eg. Dulux High Gloss Enamel).

12.14 System 13: **Minor metallic piping systems (external surfaces)**

- Applicability: This system is for the painting of the external surfaces of minor pipe work manufactured from Aluminium, Copper, Brass or Galvanised steel.
- Surface Preparation: Degrease with an approved degreasing agent and abrade with nylon pad, steel wool or P800 wet and dry paper to remove the oxide layer.
- 1st Coat: Epoxy primer, to a minimum dry film thickness of 30 µm applied immediately after degreasing (eg. Dulux Luxepoxy 4 White Primer). For galvanised surfaces Dulux Galiron is an approved alternative.
- 2nd Coat: High gloss alkyd enamel to a minimum dry film thickness of 25 µm (eg. Dulux High Gloss Enamel).
- 3rd Coat: As per 2nd coat

12.15 System 14: **Water handling equipment (Stainless steel surfaces)**

Stainless steel shall be passivated in accordance with the following procedure:

- The surface of the stainless steel shall be thoroughly degreased by solvents and if necessary rubbed down with a fine grade abrasive cloth or pumice stone.
- The item to be passivated shall be treated by swabbing with a nitric acid solution.

Application Notes:

- Simple equipment correctly used is adequate: a plastic bucket, hand brush and rubber gloves.

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- Acid concentration shall be from 15% minimum to 30% maximum. A solution containing 25% nitric acid at 38oC will passivate stainless steel in 10 minutes.
- The area being treated shall be scrubbed with the brush until the acid film completely covers the surface.
- The reaction of the solution should produce fierce gassing for some minutes after application. The solution shall remain on the surface for a minimum of 10 minutes to a maximum of 15 minutes after gassing has ceased. At this stage passivation is complete.
- After passivation, the items shall be thoroughly hosed with clean water. Solvents or alkalis must not be used to neutralise the acid.

12.16 System 15: Hot dip galvanising

Following completion of all welding, cutting, drilling and grinding operations steel and iron work to be galvanised shall be degreased, pickled, washed, fluxed and dried before being hot-dip galvanised in accordance with AS1650 to achieve a minimum zinc thickness according to the following table:

Steel Thickness	Minimum Coating Mass (g/m ²)	Equivalent Thickness (µm)
<1 mm	300	42
1-5 mm	450	63
>5 mm	600	85

Note: Care shall be taken to prevent hydrogen damage (embrittlement) to high tensile and high carbon steels during the pickling process.

All bolts, nuts and washers shall be hot dip spun galvanised and the threads of nuts re-run after galvanising.

Remedial Work: Damage to galvanising shall be repaired by one of the following methods.

Small Fabrications	Damaged areas on small fabricated components including brackets which have been welded or cut following galvanising shall be re galvanised.
Large Fabrications	Damaged areas on large fabricated components which can not be readily removed for regalvanising shall be repaired by either applying a minimum dry film thickness of 75 microns of a Eutectic-Castolin zinc alloy by means of Tero Dyn system 2000 or equivalent in order to produce a metallurgically bonded deposit or CIG Comweld Galvanising Bar applied in accordance with the manufacturers instructions.
Sheet Metal	Damaged areas on thin sheet metal products including cable trays shall be degreased, wire brushed and coated with two coats of single pack Zinc Rich Primer (eg. Dulux Zinc Rich 1P)

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12.17 System 16 - Metal Coatings

12.17.1 Electroplating

Electroplating shall be either:

- nickel plus chromium plating,
- cadmium plating or
- zinc plating

as stated in the nominating specification.

Each plating type shall comply with the following relevant Standard:

- AS1192 Electroplated coatings, Nickel and chromium.
- AS1789 Electroplated coatings, Zinc on iron or steel.
- AS1897 Electroplated coatings on threaded components (metric coarse series).