

TECHNICAL STANDARD

**SURFACE PREPARATION AND PROTECTION
OF STEELWORK USING SOLVENTLESS
ULTRA HIGH BUILD EPOXY
(AMERON AMERCOAT CC703/2)**



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APPROVAL TO DEVIATE FROM THIS STANDARD

Approval may be granted by the Asset Owner to deviate from the requirements as stipulated in this Standard if the functional requirements (e.g. Asset Life) for the asset differs from those stated in the Standard, but is assessed as still being acceptable by the Asset Owner's nominated representative.

Any approval to deviate from the stated requirements of this Standard will not be seen as creating a precedent for future like project. Any request to deviate from this Standard must be carried out on a project by project basis where each alternate proposal will be individually assessed on its own merit.

CHANGES TO THIS STANDARD

The following lists the major changes to the April 2004 edition and published in the September 2004 edition of TS 13:

1. Reformatted from DS to TS (Departmental Standard to Technical Standard), and updated referenced Australian Standards.
2. Conversion to a technical standard by removal of contractual conditions (to be included in the contract that references this standard).

No changes in the 2007 edition.

The following lists the major changes to the January 2007 edition and published in the March 2011 edition of TS 13:

1. Includes specific requirement for PCCP level 5 contractor for lead paint removal.
2. Modified minimum allowable radius of edges of substrate from 1.5 mm up to 2 mm.
3. Includes the use of NACE certified inspectors for coating inspection work.

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REFERENCED DOCUMENTS

AS 1627:	Metal finishing - Preparation and pretreatment of surfaces
AS 3894:	Site testing of protective coatings
AS/NZS 4020:	AS/NZS 4020: ..Testing of products for use in contact with drinking water
APAS Document D - 184:	Guidelines to Specification, Supply and Quality Assurance

SECTION 1: SCOPE

This Technical Standard (TS) details the surface preparation, application and repair of Ameron Amercoat CC703/2 solventless ultra-high build epoxy coating system used for long life protection of steelwork exposed to potable water, sewage and burial in soil. This Technical Standard shall be read in conjunction with the Manufacturer's Specifications and technical bulletins. Products shall be applied in accordance with the Manufacturer's instructions where details are not included in this Technical Standard.

SECTION 2: COATING CONTRACTOR & QUALITY ASSURANCE

The Contractor shall be certified under the 'Painting Contractor Certification Program' for the appropriate class of work or an approved equivalent. For lead removal work the Contractor shall be a PCCP level 5 certified Contractor. The Contractor shall submit, to SA Water's Representative, documentation in accordance with their Quality Assurance Plan. However the minimum requirement for Quality Assurance shall be completion of AS 3894.10, AS 3894.11 and AS 3894.12, 'Site testing of protective coatings' equipment and inspection reports. All quality control records shall be available for inspection by SA Water's Representative.

2.1 SA Water's Representative

SA Water's Representative in this Technical Standard will be nominated by SA Water.

SECTION 3: INSTRUCTIONS ON SUPPLY OF MATERIALS

Australian Paint Approvals Scheme (APAS) 'Record of Supply' shall be obtained when the product is purchased. The purchaser shall request an APAS 'Record of Supply' from the manufacturer at the time paint is ordered. A 'Manufacturer's Certificate of Test' can then be obtained if problems in the application of the coating subsequently occur.

Information and procedures concerning Records of Supply and Certificate of Test are detailed in APAS Document D-184 'Guidelines to Specification, Supply and Quality Assurance' (www.apas.gov.au).

Returns as required by APAS Document D-184 instructions shall be completed by the manufacturer and submitted to SA Water's Representative by the Contractor for forwarding to the Material Sciences Unit.

SECTION 4: SAFETY AND ENVIRONMENT

The Contractor shall conduct the operations (including blast cleaning and coating application) in accordance with the standards of safety laid down in *the South Australian Occupational Health, Safety & Welfare Act* and all regulations thereunder.

All operations shall be conducted in accordance with the *Environmental Protection Act*.

All operations conducted outside the state of South Australia shall meet all local safety and environmental requirements. Contractors are responsible for obtaining all necessary approvals and disposal of all waste.

SECTION 5: SURFACE PREPARATION

5.1 General

The fabricator shall ensure that all joints are fully welded and sealed, sharp edges and corners are ground off to a radius not less than 2 mm and all weld spatter and irregularities are removed.

The coating Contractor shall, before commencing coating application, inspect the surfaces to be coated and if the coating Contractor considers that there are any imperfections that may render the coating unsatisfactory, the Contractor shall notify SA Water's Representative. Commencement of work on the coating shall indicate unconditional acceptance of the surface to be coated.

All surfaces shall be free from mill scale, rust, weld spatter, oil, grease, soil, moisture and any other matter likely to impair the adhesion of the coating.

5.2 Removal of Oil and Grease

Oil and grease shall be removed from all steelwork using an alkali degreasing process or solvent washing as approved by SA Water's Representative and in accordance with AS 1627.1 "Part 1: Cleaning using liquid solvents or alkaline solutions".

5.3 Abrasive Blast Cleaning

5.3.1 Surface Preparation

All surfaces to be coated shall be dry abrasive blast cleaned to class Sa 3 finish in accordance with AS 1627.4 "Part 4: Abrasive blast cleaning". The surface profile shall be a coarse profile grade with profile height between 70 and 100 microns in accordance with Table A of AS 3894.5 "Method 5: Determination of surface profiles" and shall be determined in accordance with this standard. Abrasive materials used shall be in accordance with AS 1627.4, be free from contamination, contain less than 100 milligrams per kilogram sodium chloride and contain less than 30 milligrams per kilogram copper.

All surfaces may be initially wet blasted followed with final dry blasting after all moisture has dissipated. If corrosion inhibitor is used in the wet blast process, no residual corrosion inhibitor shall remain on prepared surfaces. Water used during the cleaning process shall be potable and shall not contain more than 500 milligrams per litre of total dissolved salts.

5.3.2 Coating

All work shall be coated on the same day as it is cleaned and while the surface remains class Sa 3 finish. Coatings shall not be applied if the steel temperature is less than 3°C above dew point. Use of dehumidification or other equipment which alter the atmospheric conditions, particularly in enclosed tanks, may be acceptable to SA Water's Representative.

The Contractor shall not apply the coating until the surface preparation has been inspected and approved by SA Water's Representative. If rust producing salts, chlorides or any other surface contamination judged to be detrimental to coating performance are detected, surfaces shall be further prepared to remove all such contamination to the satisfaction of SA Water's Representative. Testing for such contamination shall be performed in accordance with AS 3894.6 "Method 6: Determination of residual contaminants". The maximum permissible level of chloride shall be 21 milligrams per square metre. This equates to 3.5 micrograms per square centimetre of sodium chloride. (Refer to Clause 7.2.)

SECTION 6: APPLICATION OF COATING

6.1 Material

Ameron Amercoat 703/2 (for application up to 2.5 millimetres thick) in Off White which is approved for potable water in accordance with AS/NZS 4020 "Testing of products for use in contact with drinking water" shall be used. Coating materials shall be mixed and applied in accordance with the manufacturer's written instructions. Proportioning and mixing of part cans is not permitted without the approval of SA Water's Representative.

Strict attention shall be paid to the shelf life and onsite storage conditions, which must meet the manufacturer's recommendations.

6.2 Application

The surface temperature of the steel to be painted shall be at least 3°C above dew point. Coating shall not be applied to any surface that will have a temperature less than 10°C or more than 55°C during the cure period.

Coating shall be applied as soon as SA Water's Representative has approved the surface preparation

Application shall be by airless spray in a single coat with several wet-on-wet passes. High-pressure airless spray equipment shall be suitable for proper application of the product. Thinning of the product (if necessary) in excess of the recommended maximum of 3% will not be permitted. Only Ameron Thinner 667

shall be used for this purpose. SA Water's Representative may, under special circumstances, approve brush application for small areas.

The finish shall be generally smooth and free from protuberances.

6.3 Thickness and Continuity

The minimum dry paint film thickness shall be as follows:-

- steel surfaces exposed to potable water – 1 000 microns (1.0 mm)
- steel surfaces exposed to sewage and waste water - 1 200 microns (1.2 mm)
- steel pipelines and other buried structures – 1 500 microns (1.5 mm)

Note average thickness would be expected to be somewhat more due to the expected roughness of the finished surface.

The dry film thickness shall be measured in accordance with AS 3894.3 "Method 3: Determination of dry film thickness" or as approved by SA Water's Representative. Measurement of the coating thickness shall be delayed until a Barcol Hardness of 60 is achieved. Measurements prior to this time may be made with the aid of a calibration shim beneath the measuring probe, provided the surface is relatively smooth.

High voltage continuity testing shall be conducted in accordance with AS3894.1 "Method 1: Non-conductive coatings - Continuity testing - High voltage ('brush') method."

SECTION 7: INSPECTION

7.1 General

The work shall be monitored and inspected by an Australasian Corrosion Association (ACA) or National Association of Corrosion Engineers (NACE) Accredited Coating Inspector who will be engaged by the South Australian Water Corporation. For surface preparation and coatings, SA Water's Representative would usually be the Coating Inspector. To allow for inspection, 48 hours notice shall be given to SA Water's Representative prior to commencement of any surface preparation or application of coating. Subsequently SA Water's Representative shall be kept informed with at least 48 hours notice of future work schedules for surface preparation and painting.

Inspectors will not be available outside normal accepted industry working hours, unless specifically agreed to by the inspector.

7.2 Before Coating

The Contractor shall not apply any coating until the surface preparation has been inspected and approved by SA Water's Representative. SA Water's Representative may, at his/her discretion, perform any tests relating to surface preparation or contamination. If testing is required, the test areas shall be prepared again in accordance with Clause 5.3 after the testing is complete.

7.3 AFTER COMPLETION OF COATING

SA Water's Representative will inspect the coating as soon as practicable after completion to ensure compliance with the Technical Standard.

Areas that have been inadequately or unsatisfactorily coated shall be treated in accordance with Section 5 and 6 or Section 8 as directed by, and to the satisfaction of SA Water's Representative.

7.4 Re-inspection

Should surface preparation or applied coating prove to be unsatisfactory in the view of SA Water's Representative and require rework and subsequent inspection, the cost of such inspection will be charged to the Contractor and such costs will be deducted from the contract price.

SECTION 8: REINSTATEMENT OF CURED COATING

Damaged and defective areas shall be abraded by dry abrasive blast cleaning, power disc sanding till bright steel is exposed or as approved by SA Water's Representative. Edges of the coating shall be feathered back by the same means for approximately 20 millimetres. Coating shall be re-applied in accordance with Section 6, however no coating shall extend beyond the edge of the prepared area.