Transport Roads & Maritime Services

NSW GOVERNMENT

# Test method T1403

## Salt spray (fog) testing

**NOVEMBER 2012**

# Revision Summary

| Ed/Rev Number | Clause Number | Description of Revision | Authorisation | Date |
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| | | Reformatted and Revision Summary Added | D.Dash | June 2001 |
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Note that Roads and Maritime Services is hereafter referred to as 'RMS'.

The most recent revision to Test method T1403 (other than minor editorial changes) are indicated by a vertical line in the margin as shown here.

# Test method T1403

# Salt spray (fog) testing

## 1. Scope

This test method sets out the recommended practice for operating the Salt Spray (Fog) Apparatus. The procedure is derived from the American Society for Testing and Materials Standard Designation B117-64.

## 2. Apparatus

(a) The Apparatus required for salt spray (fog) testing consists of a fog chamber, a salt solution reservoir, a supply of suitably conditioned compressed air, one or more atomising nozzles, specimen supports, provision for heating the chamber and the necessary means of control

(b) The material of construction is such that it will affect the corrosiveness of the fog by being subject itself to corrosion

(c) The ceiling or cover is constructed in such a manner that accumulated drops of solution will not drop on the specimens

(d) The chamber is constructed in such a manner that drops of solution which accumulate on the specimens shall not be returned to the reservoir for respraying

(e) Test panels consisting of mild steel 70mm by 150mm by up to 3mm thick when coated. The test panels unless otherwise stated are freshly blast cleaned with Ilmenite Sand (containing 80% of particles between 212μm and 106μm) to a standard equivalent to the Australian Standard Ck9.4 Class 3. The cleaned samples are stored in neutral, dehydrated carbon tetrachloride until required for use

## 3. Preparation of Test Panels

(a) Remove the panels from the store container; dry with absorbent paper by blotting and not by rubbing. Carefully heat on a clean hotplate to dry off all the solvent

(b) Coat the plates after cooling to ambient temperature by the appropriate method recommended for materials under test

(c) At the same time prepare a control panel using a material system whose behaviour under service conditions is known. This control panel is placed in the fog chamber with the materials under test

(d) The edges of the panels may be sealed with a solventless epoxy coating if this is appropriate to the system being evaluated

(e) Cure the test panels and the control sample as prescribed for the material system in question, taking into account any ageing treatment appropriate for the particular coating system to approach a fully cured condition before the test is commenced

## 4. Salt Solution

Salt solution is prepared by dissolving 5 ± parts by weight of salt "Analytical" grade sodium chloride in 95 parts of distilled water or water not containing more than 200 PPM of total solids. The sodium chloride used must be substantially free of nickel and copper salts and contain on the dry basis not more than 0.1 per cent of sodium iodide and not more than 0.3 per cent of total impurities. The pH value of the salt solution is such that when atomised at 35°C the collected solution is in the pH range of 6.5 to 7.2

## 5. Air Supply

The compressed air supply to the nozzle or nozzles for atomising the salt solution must be free of oil and extraneous matter and maintain a pressure of 70 to 170 kPa

## 6. Conditions in the Salt Spray Chamber

(a) Keep the exposure zone of the salt spray chamber at a temperature of 35°C ± 2°C. Record the temperature in the exposure zone at least twice a day at least 7 hours apart (except on non-working days) when the Salt Spray test is not interrupted

(b) Place at least two clean fog collectors within the exposure zone so that no drops form the test specimens or other sources are collected. Place the collector in the proximity of test specimens, one nearest to any nozzle and the other farthest form all nozzles. The fog must be that, for each 8000mm of horizontal collection area, there is collected in each collector form 1.0 to 2.0ml of solution per hour based on an average run of at least 16 hours

(c) Baffle the nozzle or nozzles so that none of the spray can impinge directly on the test specimen

## 7. Continuity of Test

Unless otherwise specified the test must be continuous for the duration of the entire test period. Continuous operation implies that the chamber is closed except for short daily interruptions necessary for inspection, rearrangement, removal of test specimens etc. Operations are so scheduled as to keep these interruptions to a minimum.

## 8. Procedure

(a) Mount the test specimens in the specimen supports and place in the fog chamber

(b) Positions the test panels in the salt spray chamber during test so that the following conditions are met:

(i) Unless otherwise stated support or suspend the specimens between 15 and 30 degrees from the vertical and preferably parallel to the principal direction of horizontal flow of the fog through the chamber, based upon the dominant surface being tested

(ii) Do not allow the specimens to contact each other or any metallic material, or any material capable of acting as a wick

(iii) Place each specimen so as to permit free settling of fog on all specimens

(iv) Do not allow salt solution from one specimen to drip onto another specimen

(c) Expose the specimens until definite breakdown occurs or for a mutually agreed period

(d) At the end of the test period remove the samples and inspect according to the following methods of Australian Standard 1580

(i) 481.1 Assessment of individual defects of exposed film

(ii) 482.2 Assessment of blistering of paint film

(iii) 481.3 Assessment of visible rusting

(iv) 481.4 Assessment of corrosion of an underlying iron or steel surface

***Note 1*: Rusting at the edges and along the lower end of the panel fitting into the support should be specifically referred to as distinct from general rusting.**

***Note 2*: Rate the overall rating and the ratings for specific characteristics from 10 (no change) to 0 (complete failure).**

## 9. Reporting

Include the following in the report:

(a) Type of apparatus used

(b) Any variation from specified conditions

(c) Results of tests in accordance with the assessment outlined above