

SALT SPRAY TESTING AND EVALUATION OF FASTENER FINISHES

1. SCOPE:

This procedure is used to test and evaluate the resistance of fastener surface finishes to laboratory salt spray testing.

2. REFERENCES:

2.1 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM B 117
ASTM D 610

3. APPARATUS:

3.1 Salt Spray Cabinet:

The salt spray cabinet and operating conditions shall meet the requirements of ASTM B 117 except as noted herein.

3.2 Sample Holders:

Sample holders shall be made of an inert corrosion resistant material such as acrylic, polyvinyl chloride or similar material. The holder size and thickness depends upon the size and number of fasteners being tested. No wood shall be used in the construction of sample holders as the sap acidity can affect the corrosion result.

The research data, analysis, conclusion, opinions and other contents of this document are solely the product of the authors. Neither the Society of Automotive Engineers, Inc. (SAE) nor the United States Council for Automotive Research (USCAR) certifies the compliance of any products with the requirements of nor makes any representations as to the accuracy of the contents of this document nor to its applicability for purpose. It is the sole responsibility of the user of this document to determine whether or not it is applicable for their purposes.

Copyright ©1996, USCAR
All rights reserved.

Printed in U.S.A.

QUESTIONS REGARDING THIS DOCUMENT: (724) 772-8545 FAX (724) 776-0243
TO PLACE A DOCUMENT ORDER: (724) 776-4970 FAX (724) 776-0790

SALT SPRAY TESTING AND EVALUATION OF FASTENER FINISHES

4. TEST PROCEDURE:

4.1 Sample Preparation:

All samples to be tested shall have been properly prepared by the usual manufacturing process required for that particular finish. Prior to salt spray testing, the parts shall be washed in a mild noncorrosive, phosphate-free detergent solution (approximately 20 mL detergent to 15 L of water) at $21\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$ for 10 to 15 s, rinsed in tap water and then blown dry with compressed air. The detergent shall have a pH of 8.2 to 9.2 (LiquiNox Detergent, Fisher Catalog item 04-322-15B or equivalent).

4.2 Sample Assembly:

Assemble samples to a Sample Holder designed for the configuration of the fastener.

4.2.1 External Threaded Fasteners: Fasteners shall be mounted on the sample holder such that the test solution will not drip onto fasteners below when the sample is positioned as shown in Figure 1.

4.2.2 Internal Threaded and Other Types of Fasteners: For samples such as nuts, washers, and clips, place the samples on a glass or plastic rod or hang by nylon thread of suitable length to hold parts without contacting each other. The rods or nylon thread shall then be supported in the cabinet such that the solution will not drip from one sample onto another.

4.3 Sample Position:

Place the holder and samples in the salt spray cabinet with the primary axis of the fasteners at $25^{\circ} \pm 3^{\circ}$ from the vertical.

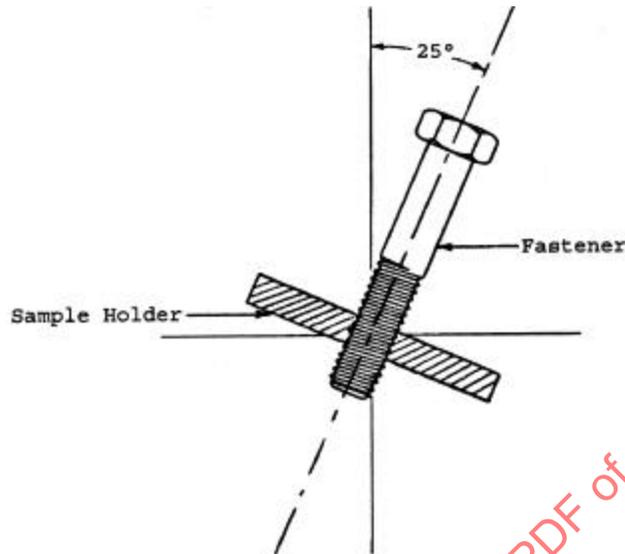


FIGURE 1 - Sample Position

4.4 Final Preparation:

At the end of the specified test time, remove the samples from the cabinet, rinse in clean running water not warmer than 38 °C to remove salt deposits from the surface and then blow dry with compressed air.

5. EVALUATION:

Nonthreaded surfaces are to be evaluated and shall meet the following requirements after the specified test time.

5.1 White Corrosion (Usually Present with Finishes Containing Zinc):

- a. The coating shall show no evidence of blistering, peeling, or loss of adhesion.
- b. No specimen shall exhibit white corrosion exceeding 1% per ASTM D 610, grade 6.

5.2 Ferrous Corrosion (Base Metal):

- a. The coating shall show no evidence of blistering, peeling, or loss of adhesion.
- b. No specimen shall exhibit a ferrous corrosion spot larger than 1.5 mm in diameter.
- c. No specimen shall exhibit ferrous corrosion exceeding 0.1% per ASTM D 610, grade 8.