



Engineering Material Specification

Material Name

Specification Number

STEEL TUBING - ZINC/ALUMINUM COATED

ESA-M1A270-A

1. SCOPE

The material defined by this specification is a hot dipped zinc/aluminum alloy coated low carbon steel tube.

2. APPLICATION

This specification was released originally to provide corrosion protection for low carbon steel tubing for use in transmission oil cooler lines.

3. REQUIREMENTS

3.1 BASE MATERIAL

The base material shall be low carbon steel butt welded tube which conforms to one of the following specifications:

- . SAE J 526 - Welded Low Carbon Steel Tubing
- . ESF-M1A80-EA - Uncoated Steel Tubing, Type 3 Construction

3.2 COATING COMPOSITION

The tube shall be coated with a zinc 5% aluminum-Mischmetal alloy per ASTM B 750.

3.3 COATING ADHESION

There shall be no chipping away of the coating from the steel tube when the coating is scratched with a knife blade held at an angle of 90° to the surface.

3.4 COATING COVERAGE

The external surface of the tube shall have no uncoated areas. The lack of coating on the tube shall be determined by the following test.

Test Method: Apply a 5% solution of copper sulfate and distilled water to a section of tubing approximately 300 mm in length by wiping with a cotton swab. Allow the tube to stand for 30 s minimum. The development of a copper color on the tube surface indicates the absence of coating and shall constitute a failure.

Date	Release No.	Release/Revision
1987-02-26	RD-165900-C6	Revised
1984 06 13	CE02-610178-C	Released

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3.5 COATING WEIGHT, min 36 g/m²
(ASTM A 90)

3.6 CORROSION RESISTANCE, min 360 h
(FLTM BI 3-1, ASTM D 610)

The tube must show no more than 1% red rust over any 25.4 mm length when compared to ASTM D 610, Plate No. 6.

3.7 STATISTICAL PROCESS

Suppliers must conform to the requirements of Ford Quality System Standard Q-101. A mutually acceptable Control Plan as described therein is required for material/source approval. Appropriate statistical tools must be used to analyze process/product data so that variation in the final product is continuously reduced.

3.8 SUPPLIER'S RESPONSIBILITY

All materials supplied to this specification must be equivalent in all characteristics to the material upon which approval was originally granted.

Prior to making any change in the properties, composition, construction, color, processing or labelling of the material originally approved under this specification, whether or not such changes affect the material's ability to meet the specification requirements, the Supplier shall notify Purchasing, Toxicology and the affected Materials Engineering activity of the proposed changes and obtain the written approval of the Materials Engineering activity. Test data, test samples and a new code identification are to be submitted with the request.

Substance restrictions imposed by law, regulations or Ford, apply to the materials addressed by this document. The restrictions are defined in Engineering Material Specification WSS-M99P9999-A1, unless a different suffix (e.g., A2 or A3) is specified on the engineering document for the application.

4. APPROVAL OF MATERIALS

Materials defined by this specification must have prior approval by the responsible Materials Engineering activity. Suppliers desiring approval of their materials shall first obtain an expression of interest from the affected Purchasing, Design and Materials Engineering activity. Upon request, the Supplier shall submit to the affected Materials Engineering activity its own laboratory report to the specification (test results, not nominal values), the material designation and code number, and test specimens for Ford evaluation. Upon approval, the material will be added to the Engineering Material Approved Source List.

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