



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. Used with a second sacrificial or barrier layer, it continues to be used for brake lines, fuel lines, hydraulic power steering lines, and transmission oil cooler lines.

3. REQUIREMENTS

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.2 BASE MATERIAL

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

- SAE J526 - Welded Low Carbon Steel Tubing
- SAE J527 – Brazed Double Wall Low-Carbon Steel Tubing

3.3 COATING COMPOSITION

The tube shall be coated with a zinc 5 % aluminum-Mischmetal alloy per ASTM B750.

3.4 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.

3.5 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.

3.6 COATING WEIGHT
(ASTM A 90)

36 g/m² min or
5 µm thickness min

6.83 g/m² coating weight = 1.00 µm coating thickness

Date	Action	Revisions	Rev. 3
2015 06 12	Revised	See Summary of Revisions	T. Covert, NA
2002 11 14	Revised	Rev para 4.1 with Cr6+ free statement and 3.2	B. Burnside
1984 06 13	CEO2-610178-C	Released	K. Gribble





3.7 CORROSION RESISTANCE (FLTM BI 103-01, ASTM D610)

360 h min

The tube must show no more than 1 % red rust over any 25.4 mm length when compared to ASTM D610, Plate No. 6.

4. GENERAL INFORMATION

The information given below is provided for clarification and assistance in meeting the requirements of this specification. Contact gmfs@ford.com for questions concerning Engineering Material Specifications.

4.1 ZINC/ALUMINUM COATED STEEL TUBE (used with a top coating for all applications.)

For brake and fuel lines with a polymer coating read WSS-M21P30-A1.

For hydraulic steering and transmission lines with aluminum rich paint read WSS-M21P26-A.

5 SUMMARY OF REVISIONS

2015 05 21	Revised	Added details to application section. Added coating thickness to coating weight in 3.6. Reformatted and removed Special Finishes 4.1. Added referencing specs to 4.1.
2002 11 14	Revised	Rev para 4.1 with Cr6+ free statement and 3.2
2002 09 24	Revised	Updated and renumbered
1987 02 26	RD-165900-C6 Revised	