



WELDING WIRE, MIG/MAG WELDING

WSS-M4A182-A

1. SCOPE

The materials defined by this specification are coiled, copper coated steel wire electrodes used for gas shielded arc welding. This specification is based on the classification by chemical composition for ISO 14341 Grade 3Si1.

2. APPLICATION

This specification was released originally to create a part number for material used as a consumable electrode in combination with gas shielded MIG/MAG welding of steels.

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 CHEMICAL COMPOSITION

(Inductively coupled plasma emission spectroscopy)

Weight percent

Carbon	0.06 - 0.14
Silicon	0.70 - 1.00
Manganese	1.30 - 1.60
Phosphorus	0.025 max
Sulfur	0.025 max
Nickel	0.15 max
Chromium	0.15 max
Molybdenum	0.15 max
Vanadium	0.03 max
Copper	0.35 max*
Aluminum	0.02 max
Titanium + Zirconium	0.15 max
Iron	Balance

* Copper content of steel plus coating must be below 0.35%

Note: All ranges and limits are according to ISO 14341: 2011 -A-G 3Si1

Date	Action	Revisions	Rev. 1
2012 06 27	Revised	Updated EN to ISO standard	A. Wedepohl, NA
2006 01 23	Activated		Toennessen, EU



3.3 COATING

The wire shall be supplied with a copper coating for corrosion protection. No deterioration shall be seen when kept in a moderately dry storage area for a period of not less than 6 months. The weight of the copper coating layer is limited by the total copper weight-% limit given in paragraph 3.3. The coating shall have a good adhesion so as to prevent flaking and clogging of the conduit harness and torch tip.

3.4 SURFACE FINISH AND APPEARANCE

Wire furnished to this specification shall have a smooth finish, free from compounds or other materials detrimental to the quality of the welding and/or the welding equipment.

3.5 WELDING PERFORMANCE

This specification is a material specification only and does not cover the application specific performance requirements given in engineering specifications for the welding process, engineering drawings or manufacturing control plans. Performance requirements and appropriate validation tests will be agreed and approved by the responsible product design and manufacturing engineering activities.

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 DOCUMENT ORIGIN

This document was originally compiled to address the fact that consumable welding electrodes add material to the product and must be classified as being a production material if applicable.

4.2 DIMENSIONS, TOLERANCES AND ASSOCIATED ITEMS

Wire diameter, coil and/or container type and size are indispensable part of the purchase order. All dimensions and tolerances needed to specify these will be provided by manufacturing engineering according to the specific requirements of the process and the welding facilities.

5. SUMMARY OF REVISIONS

2012 06 27 Replaced EN 440 3Si1 with ISO 14341 3Si1. Removed dimensional requirement citing purchase order.