



WIRE, SILICON BRONZE, BRAZING

WSB-M4A177-A

1. SCOPE

The material defined by this specification is a silicon bronze (copper silicon) brazing wire.

2. APPLICATION

This specification was released originally for material used as a consumable electrode in combination with inert gas shielding with argon, helium, or mixtures of the two. The specification number is released as a part number for Ford purchasing to obtain braze wire.

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

Lead	0.02 max
Iron	0.50 max
Tin	0.2 max
Zinc	0.4 max
Aluminum	0.01 max
Manganese	0.5 - 1.5
Silicon	2.8 - 3.0
Other	0.50 max
Phosphorus	0.05 max
Copper	Remainder
Total other	0.50

Materials meeting these requirements comply with the composition requirements in:

- AWS A 5.7 ER CuSi-A
- ISO 24373 - Cu 6560 (CuSi3Mn1)

Note: The limits listed above are derived from the more restrictive standard (AWS or ISO) for each element. The only Ford specific requirement is the lowering of the allowable silicon content from 4 to 3% to improve paint adhesion and corrosion performance of the weld area on painted parts. Reduced silicon content also promotes lower porosity in laser brazed joints.

Date	Action	Revisions	Rev. 4
2012 09 12	Revised	Editorial comment added	A. Wexler, NA
2012 06 27	Re-activated	Still used for purchase	A. Wedemühl, NA
1990 06 28	NB00E10040016003	Released	R Moore, NA, N. Riley, EAO



3.3 SURFACE FINISH

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

3.4 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** These brazing wires should have a nominal diameter random wound and/or precision wound (level layer), as specified on the purchase order.

5. SUMMARY OF REVISIONS

2012 09 12 Added comment about lower porosity in laser brazed joints to 3.2.

2012 06 27 Re-activated, as specification was still used by Purchasing. Moved Size requirement to General Info. Revised composition limits to include both AWS and ISO limits.

2012 03 13 In-activated specification. No Ford replacement