SAE The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE STANDARD

SAE AS7110/1

Issued 1995-03

Submitted for recognition as an American National Standard

NATIONAL AEROSPACE AND DEFENSE CONTRACTORS ACCREDITATION PROGRAM REQUIREMENTS FOR TORCH BRAZING

1. SCOPE

This Aerospace Standard (AS) is to be used to supplement AS7110. In addition to the requirements contained in AS7110, the requirements contained herein shall apply to suppliers seeking NADCAP accreditation for torch brazing.

2. REFERENCES

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AS7110 National Aerospace and Defense Contractors Accreditation Program (NADCAP) Requirements for Welding

3. REFERENCE REQUIREMENTS

3.1 Applicable customer specifications shall be available at the facility.

4. MATERIALS/MATERIAL CONTROL

4.1 There shall be written procedures to assure that filler metals meet the contract requirements.

4.2 There shall be written procedures to assure that fluxes meet the contract requirements and that they are suitable for their intended use.

4.3 Written procedures shall identify filler metal-flux combinations when these are not specified in contractual documents.

4.4 There shall be a procedure to monitor and control the shelf-life of braze materials.

4.5 There shall be documented evidence that the procedure is being followed.

5. EQUIPMENT CONTROL

5.1 The torch brazing equipment shall be capable of producing brazed joints that meet specifications and customer requirements.

5.2 Automated equipment shall be qualified in accordance with applicable customer specifications, if required.

6. QUALIFICATION OF BRAZING PROCEDURES

6.1 Brazing procedures/schedules shall identify those parameters specified by applicable customer specifications.

6.2 Operators shall be able to demonstrate their ability to set-up neutral, reducing, and oxidizing flame.

7. PROCESS CONTROL

7.1 Preparation of Joints

7.1.1 Mating surfaces and adjacent areas of all parts to be joined shall be thoroughly cleaned to remove all oil, grease, paint, dirt, or any other foreign substance.

7.1.2 Burrs shall be removed to assure proper fit-up and flow of filler metal.

7.1.3 Clearances between mating surfaces shall be in accordance with specification requirements.

7.1.4 Non-self-fixturing parts shall be held in position by fixtures or clamps.

7.1.5 Parts shall be adequately supported during brazing.

7.1.6 On closed assemblies, vent holes shall be located and drilled as specified.

7.1.7 For joints having one end inaccessible to visual inspection, filler metal shall be placed at the blind end when it is practical to do so.

7.1.8 If parts are tack welded and/or staked, the tacking or staking process shall be authorized by drawing or purchase order when required.

7.1.9 If parts are tack welded, the tack process shall be performed by qualified personnel using qualified procedures if required.

7.2 METHODS AND PROCEDURES

7.2.1 Parts shall be preheated with a neutral or slightly reducing flame.

7.2.2 Parts shall be preheated uniformly.

7.2.3 Braze technique shall be adequate to assure that parts are not heated to a temperature higher than necessary to provide a satisfactory joint.

7.2.4 Filler metal shall be introduced into one end of the joint or in a groove provided for in one of the mating surfaces.

7.2.5 Adequate flow through shall be verified by evidence of braze filler on both sides of the joint if accessible.

7.2.6 Filler metal shall be used in compliance with contract specifications.

7.3 Post Brazing Treatment

7.3.1 Assemblies shall be cooled in such a manner that no cracks occur and internal stress and distortion is minimized.

7.3.2 Flux shall be removed immediately after brazing and cooling by a method which is not injurious to base and filler metal.

7.3.3 A procedure for a test shall be used to determine that flux has been adequately removed.

7.3.4 If performed, post braze heat treatment shall be limited to a temperature below the solidification temperature of the brazing alloy.

7.3.5 There shall be a practice to prevent the post brazing passivation of stainless steel parts.