SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

SAE AS7110/8

REV. C

Issued 1995-03
Revised 2003-12

Superseding AS7110/8B

Nadcap
Requirements for Diffusion Welding

1. SCOPE:

   This Aerospace Standard (AS) is to be used to supplement AS7110, and/or any Nadcap recognized quality system. In addition to the requirements contained in AS7110, the requirements contained herein shall apply to suppliers seeking Nadcap accreditation for diffusion welding.

2. REFERENCES:

2.1 SAE Publications:

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

AS7110 Nadcap - Requirements for Welding/Brazing

3. REFERENCE REQUIREMENTS:

3.1 Applicable customer specifications shall be available at the facility.

4. MATERIALS/MATERIAL CONTROL:

4.1 The marking, input, and stop-off materials called out in detailed procedures shall be used.

4.2 Sufficient trim material shall be provided so that test samples for all routine microstructural and mechanical property testing can be obtained without destruction of parts.

4.3 The process control specimen shall represent the production configuration and process.

4.4 Sample structures shall be approved by the purchaser, when required.

TO PLACE A DOCUMENT ORDER:
Tel: 877-606-7323 (inside USA and Canada)
Tel: 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: custsvc@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

4.5 Material parameters and properties shall be as specified on the drawing.

4.6 The incoming material grain size shall conform to customer requirements.

4.7 Tooling, lubricant, and other material used during processing shall be compatible with the base material.

5. EQUIPMENT CONTROL:

5.1 Part thermocouples shall be calibrated by a documented procedure, to meet customer requirements.

5.2 Hot presses and furnaces shall be qualified and controlled in accordance with applicable customer specification.

6. QUALIFICATION OF WELD PROCEDURES/SCHEDULES:

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

6.2 Welding procedure qualification records shall be maintained in accordance with applicable customer specifications, when required.

6.3 All other welding processes used for assembly shall be performed by qualified personnel in accordance with qualified procedures and using qualified equipment if required.

7. PROCESS CONTROL:

7.1 Cleaning:

7.1.1 Sufficient stock thickness allowances shall be made to perform post-bonding chemical cleaning.

7.1.2 Parts shall be cleaned by the detailed procedure.

7.1.3 Surfaces of the part details and representative test specimens shall be properly cleaned and free from contaminants such as oxides, scale, oil, dirt, ink, or other surface conditions that are detrimental to the welding process.

7.2 Stop-off Application:

7.2.1 When used, stop-off shall be applied to the part by detailed procedure.

7.2.2 Provisions shall be made to prevent application of stop-off in areas to be welded.

7.2.3 Stop-off shall prevent unintentional welding and it shall be effective.

7.2.4 The stop-off shall meet all customer requirements.

7.3 Furnace Loading:

7.3.1 Parts shall be loaded in accordance with the detailed procedure.

7.4 Thermocouples:

7.4.1 The proper type and number of thermocouples shall be placed in the proper locations in order to measure weld temperatures of the parts and the tool-face temperature by detailed procedures.

7.5 Atmosphere:

7.5.1 Inert gas measurements shall be made in accordance with the detailed procedure, when used.

7.5.2 The vacuum measurements shall be made in accordance with the detailed procedure, when used.

7.6 Thermal Cycle:

7.6.1 The pressure, temperature, and soak times shall conform to the detailed procedures.

7.6.2 The method of determining soak time shall conform to the detailed procedure.

7.6.3 The cooling time and/or rate after soak shall conform to approved requirements.

7.6.4 Furnace charts shall be traceable to part serial or lot numbers processed.

8. INSPECTION AND ACCEPTANCE CRITERIA:

8.1 Parts shall be visually inspected for bonding in the required areas, surface discoloration, or other visual limits by detailed procedures.

8.2 When required, test samples and mounts shall be prepared by the detailed procedure.

8.2.1 When required, test samples shall be traceable to individual parts throughout the processing.