SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

AS7110/5	REV. D

Issued 1995-03
Revised 2003-12
Cancelled 2007-03

Superseding AS7110/5C

Nadcap
Requirements for Fusion Welding

RATIONALE

AS7003 at Revision C removed the requirement for AS standards. The Nadcap Weld Task Group have revised their checklists and per AS7003 have not re-written associated standards. The AS standards, therefore, require cancellation.

CANCELLATION NOTICE

This document has been declared "CANCELLED" as of March 2007. By this action, this document will remain listed in the Numerical Section of the Aerospace Standards Index.

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

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

SAE AS7110/5

REV. D

Issued 1995-03
Revised 2003-12
Cancelled 2007-03

Superseding AS7110/5C

Nadcap
Requirements for Fusion Welding

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 fusion 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. FILLER MATERIAL/FILLER MATERIAL CONTROL:

4.1 There shall be a documented filler material control system that addresses the following:

4.2 Ordering:

4.2.1 Purchasing instructions shall specify filler material specification, size and identification requirements.

4.2.2 Low hydrogen electrodes shall be procured in hermetically sealed containers.

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

4.3 Receiving:

4.3.1 Certifications shall accompany the weld filler material.

4.3.2 The filler material shall meet the specification requirements.

4.3.3 The marking on bare welding wire or rod shall comply with the requirements of applicable customer specifications, or other methods acceptable to the cognizant engineering organization.

4.3.4 Filler material containers shall be stamped with material release stamp or other positive identification prior to placing material in storage crib.

4.3.5 Receiving inspection tests shall be performed as specified by customer.

4.4 Storage:

4.4.1 After low hydrogen electrodes are removed from hermetically sealed containers, they shall be stored in an oven at a temperature to prevent moisture contamination.

4.4.2 Bare wire and rod shall be stored in a clean, dry environment.

4.4.3 If used, SAW flux shall be stored in a clean, dry environment.

4.4.4 Filler material shall be segregated by specification number in the storage crib in such a manner to prevent co-mingling of different sizes or filler material specification numbers.

4.4.5 Access to storage crib shall be limited to authorized personnel.

4.5 Release to Shop:

4.5.1 If requisition cards are used to remove filler material from storage, they shall be filled out properly.

4.5.2 The crib attendant shall verify that the wire being released from storage match the type required for the job.

4.6 Control in Shop:

4.6.1 The exposure of low hydrogen electrodes after removal from containers or ovens shall be suitably limited based on electrode classification.

4.6.2 There shall only be one chemical composition of filler material within the welder's or welding operator's immediate work zone at one time.

4.6.3 If filler material identification markings are lost, missing, or destroyed, the material shall be scrapped.

4.6.4 Weld wire rods shall be wiped with a suitable solvent and clean cloth before use.

4.6.5 The disposal of filler material stubs shall be addressed in a procedure.

4.6.6 After welding, filler material stubs shall be discarded according to disposal procedures.

4.7 Identification:

4.7.1 Each covered electrode shall have a distinguishable color code, type designation, or classification number marking.

4.7.2 Filler material shall be properly identified.

4.7.3 Welding flux containers shall be properly identified.

4.7.4 The heat and lot number shall be marked on the filler material container for positive traceability.

4.7.5 Filler material identification charts shall be clearly posted in the shop, when used.

4.8 Traceability:

4.8.1 If required, the heat number of the filler material shall be traceable to the component that was welded with that filler material.

4.9 Gases:

4.9.1 The gases used shall be in compliance with customer requirements.

4.9.2 If alternate specification gases are used, there shall be written authorization from the customer.

5. EQUIPMENT CONTROL:

5.1 The welding equipment shall meet the customer's requirements.

5.2 Equipment shall be qualified in accordance with applicable customer specifications if required.

5.3 Furnaces shall be provided with a suitable means to control the temperature, if used.

5.4 Furnace control temperature tolerances shall be within ± 25 °F (14 °C), unless otherwise specified, if used.

5.5 Written procedures shall require preventive maintenance of equipment and tooling at a specified frequency.

5.6 Records shall indicate that maintenance is performed on equipment and tooling in accordance with the procedures and appropriate standards.

6. QUALIFICATION OF WELD PROCEDURES/SCHEDULES:

6.1 Welding procedures/schedules shall be qualified in accordance with applicable customer specifications.

6.2 Preheat and interpass temperatures shall be included in the qualified schedule/procedure, if used.

6.3 Filler material requirements shall be specified on drawings or weld procedures/schedules.

6.4 When used, weld starts and run-off tabs shall be composed of the same alloy as the detail parts and welded with the same filler material as required by the part.

6.5 When required, stress relief of weldments shall be performed in accordance with welding procedure or drawing.

7. PROCESS CONTROL:

7.1 Fixtures, backing materials and hold-down bars shall be kept clean and free from contaminants during use.

7.2 If required, surface finish requirements of fusion faces shall be as specified on drawings or in the welding procedure.

7.3 All faying surfaces shall be free from slag, visible surface oxides, scale, protective finishes, oils, grease, dirt, or other foreign materials.

7.4 Welders and welding operators shall identify their work by interim marking adjacent to the weld joint or by marking a sign-off sheet.

7.5 For automatic/semi-automatic welding, qualified weld settings shall be monitored and maintained within ± 10%, unless otherwise specified.

7.6 When required for automatic and semi-automatic welding, the reproducibility of qualified machine settings shall be verified with sample.