

AEROSPACE STANDARD

SAE AS7109

REV.
A

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Superseding AS7109

(R) Nadcap Requirements for Coatings

1. SCOPE:

This SAE Aerospace Standard (AS) establishes the requirements for suppliers of coatings services to be accredited by Nadcap in accordance with AS7003. The requirements contained herein may be supplemented by additional requirements specified by Nadcap Coatings Task Group. Using the audit checklist (PRI AC7109) will ensure that accredited Coatings suppliers meet all of the requirements in this standard and all applicable supplementary standards.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this standard to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Telephone: (724) 776-4841, Web address: <http://www.sae.org>.

AS7003	Nadcap - Program Operation
AS7109/1	Nadcap - Requirements for Thermal Spray
AS7109/2	Nadcap - Requirements for Vapor Deposit
AS7109/3	Nadcap - Requirements for Cementation Processes
AS7109/4	Nadcap - Requirements for Stripping
AS7109/5	Nadcap - Requirements for Coating Evaluation Laboratory Practices

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TO PLACE A DOCUMENT ORDER:

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SAE WEB ADDRESS:

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2.1 (Continued):

AS7109/6	Nadcap - Requirements for Plating of Coated Parts
AS7109/7	Nadcap - Requirements for Heat Treating for Suppliers of Coatings

2.2 PRI Publications:

Available from Performance Review Institute, 161 Thornhill Road, Warrendale, PA 15086-7527, Telephone: (724) 772-1616, Web address: <http://www.pri.sae.org>.

AC7109	Nadcap - Audit Criteria for Coatings
NOP-002	General Task Group Operating Procedure

2.3 ANSI Publications:

Available from ANSI, 25 West 43rd Street, New York, NY 10036-8002, Web address: <http://www.ansi.org>.

ANSI INCSL Z540.1	Calibration Laboratories and Measuring and Test Equipment General Requirements
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2.4 ISO Publications:

Available from ISO, 1, rue de Varembe, Case postale 56, CH-1211 Geneva 20, Switzerland, Telephone: +41 22 749 01 11, Web address: <http://www.iso.org>.

ISO 10012-1	Quality Assurance Requirements for Measuring Equipment - Part 1: Metrological Confirmation System for Measuring Equipment
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3. QUALITY SYSTEMS:

Current approvals related to quality systems, as addressed in NOP-002, must be identified.

The Nadcap Coatings Task Group recognizes all quality systems approvals, as addressed in NOP-002. If the supplier has been audited and approved by Nadcap or any other Nadcap recognized agency addressed in NOP-002, then no further assessment for quality systems will be required. Although specific audit criteria for evaluation of the general quality system are not included within the text of this checklist, the requirements of NOP-002 approved quality systems do form a part of the standard used in the Nadcap Coatings Accreditation program. As such, auditors may identify and record nonconformances related to the quality system. These nonconformances must be addressed by the supplier in order to obtain Nadcap Accreditation.

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3.1 Organization:

3.1.1 Technical/engineering personnel shall be technically competent in the supplier's coating processes and available to support production processes.

3.2 Contract Review and Process Planning:

3.2.1 Procedures shall require the supplier to determine if OEM approval is required prior to use of specific materials and processes.

3.2.2 Procedures shall assure that the supplier verifies they have the required approvals prior to performing the process.

3.3 Job Documentation:

3.3.1 Procedures shall require that documentation (e.g., traveler) detailing each operation accompanies each job.

3.3.2 Detailed work instructions shall be available in each work area.

3.4 Drawings, Documentation, and Changes:

3.4.1 The supplier shall have a procedure, including appropriate marking of shop job documents, which assures that fixed process changes are made only after receipt of required approvals from the cognizant organization.

3.4.2 The supplier shall properly maintain fixed process approval records.

3.5 Product Identification and Traceability:

3.5.1 Individual products or batches shall have a vendor-unique identification for traceability that is recorded by the supplier.

3.5.2 Test and/or evaluation samples shall be clearly marked to maintain traceability to the parent product.

3.6 Sampling Plans:

3.6.1 When sampling plans for inspection or testing are permitted and a sampling plan is not specified, selection of statistically significant samples shall conform to the following:

- a. There shall be a procedure that includes the number of parts in the lot and the number in the sample for the specific test or inspection.
- b. Procedures shall specify the frequency and method of sampling.

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3.6.2 Records shall demonstrate that samples are taken in accordance with the specified sampling plan or the above.

3.7 Statistical Quality Control and Analysis:

3.7.1 Statistical process control (SPC) methods shall be implemented when required by customer contract.

3.7.2 The following SPC methods shall be employed when SPC is required by the customer:

- a. Procedures shall define the means to identify the following:
 1. The key parameters that affect final product quality
 2. Statistical determination of their capability (e.g., Cp, Cpk)
- b. The determination of which significant process parameters affect final product quality based on analysis of production or experimental test results.
- c. The statistical distribution of each significant process parameter shall be determined and corrective action taken when observations indicate an out-of-control condition.
- d. Records of key parameters affecting final product quality shall indicate stability or improvement.
- e. There shall be a documented system of statistical monitoring of key coating parameters.

4. TESTING AND GENERAL PROCESS INSPECTION AND TRAINING:

4.1 For specific test methods and lab systems, AS7109/5 shall apply.

4.2 Preventative Maintenance of Equipment (Process and Laboratory Equipment):

4.2.1 Procedures shall require maintenance at a specified frequency or condition by qualified personnel (employees or vendors) in accordance with specifications and customer requirements.

4.2.2 There shall be records that indicate that maintenance is performed in accordance with the procedures.

4.3 Test Materials and Specimens:

4.3.1 There shall be a procedure that specifies the control and identification of test materials and specimens, as well as when and where they are to be used.