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AEROSPACE STANDARD

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Requirements for Accreditation of Testing Laboratories for Organic Coatings

FOREWORD

The primary aim of this document is to assist both accreditation bodies and laboratories in achieving a uniform approach to testing and reporting of results for chemical efficiency and performance testing of organic coatings. These interpretations of ISO/IEC 17025 have been produced to better facilitate mutual recognition of test results across economic boundaries as well as for testing for domestic requirements only.

1. SCOPE:

1.1 Purpose:

This document provides interpretation of ISO/IEC 17025 and establishes additional requirements for accreditation of testing laboratories for evaluating organic coatings.

1.2 Field of Application:

ISO/IEC 17025 is the basis of most laboratory accreditation activities. Its clause numbering has been used in this document. Interpretation has been provided only where relevant.

Laboratories seeking recognition of their test reports outside of their own economy should meet the requirements of ISO/IEC 17025, this document, the applicable regulatory codes or rules of the destination economy, and the applicable standards of the destination economy.

To assist manufacturers, importers and regulatory authorities in recognizing that a report is from an appropriately accredited laboratory, test reports should bear the accreditation body's approved form of endorsement or logo.

TO PLACE A DOCUMENT ORDER: (724) 776-4970 FAX: (724) 776-0790 SAE WEB ADDRESS: http://www.sae.org

1.3 Safety - Hazardous Materials:

While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary measures to ensure the health and safety of all personnel involved.

2. REFERENCES:

2.1 Applicable Documents:

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been canceled and no superseding document has been specified, the last published issue of that document shall apply.

2.1.1 SAE Publications: None

2.1.2 ISO Publications: Available from American National Standards Institute, Inc., 11 West 42nd Street, New York, NY 10036-8002.

ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories (Dated Dec. 16, 1999)

3. TECHNICAL REQUIREMENTS:

The following requirements are interpretations of specific paragraphs of ISO/IEC 17025, and additions to ISO/IEC 17025.

3.1 Management:

Specific interpretations shall be in accordance with Table 1.

3.2 Technical:

Specific interpretations shall be in accordance with Table 2.

3.3 Future Revisions of ISO/IEC 17025:

Use of a specific issue of ISO/IEC 17025 is for clarity. Future revisions of ISO/IEC 17025, when published may be used providing paragraphs correspond in kind to those of the issue listed in 2.1.2.

TABLE 1 - Specific Interpretations - Management, ISO/IEC 17025

ISO 17025 Paragraph	Interpretation
4.3 Document Control	
4.3.1	Laboratories testing for a number of economies will need to give particular attention to their view of client requests to ensure that differences in standards and regulatory requirements are taken into account. Care must be taken to ensure that there is a clear understanding by both the laboratory and client for which economy the testing is to be performed. This must be appropriately documented in the test plan. Should the client request any deviations from the relevant standard or specification, these must be clearly defined and documented. The client must also be made aware that the resulting test reports will clearly identify such deviations.
4.6 Purchasing Services and Supplies	
4.6.1	It is essential that supplies of the consumables applicable for a particular economy be obtained from a common source for all laboratories if at all possible.
4.6.2	Where practical, new supplies of consumables must be evaluated in appropriate reference instruments. Supplies of consumables must be subject to regular review to ensure that old stocks or batches are discarded when beyond recognized shelf life limits or are degraded, as demonstrated by a standard test.

TABLE 2 - Specific Interpretations - Technical, ISO/IEC 17025

ISO 17025 Paragraph	Interpretation
5.2 Personnel	
5.2.1	Chemical efficiency and performance testing requires expertise in a broad range of measurement disciplines. While extensive expertise in all of these is not expected, staff performing such tests must have been trained to a level which permits them to evaluate all aspects of the testing processes. For a laboratory performing tests on a range of products, this expertise would typically include the following measurements: Energy — Liquid flow Gas flow — Mass Photometry — Chromatography Spectrophotometry — Mass Spectrometry Temperature — Temperature Rise Water Hardness In particular it is necessary for testing staff to understand the limitations of and uncertainties associated with the various measurement techniques used in their laboratories. While it may be difficult (or impossible) to determine combined uncertainties for different parameters, it is still necessary for staff to have an adequate understanding of the relative importance of the various uncertainties associated with the measurements as a means of evaluating the adequacy of the measurement processes used. For high precision measurements of some parameters, a high level of expense measurement and uncertainty analysis is essential.

TABLE 2 - Specific Interpretations - Technical, ISO/IEC 17025 (Continued)

ISO 17025 Paragraph	Interpretation
5.2.5	Laboratory management must ensure that staff involved in tests which require a visual examination have adequate visual acuity and normal color vision. Color vision and visual acuity testing and documentation by a licensed, degreed ophthalmologist or optometrist must be available on file for inspection. Records of checks on vision and internal proficiency tests must be retained. Laboratory management must participate in internal proficiency tests with other testing staff to ensure consistency. (See 5.9)
5.3 Accommodation and Environmental Conditions	
5.3.1	Power supplies must be suitably conditioned where noise or voltage fluctuations on the main supply would have an impact on the measured performance of the test equipment. Where practical, the power supply for the instrumentation should be suitably isolated from that used for the test equipment. The use of isolation transformers for susceptible instrumentation is required.
5.3.3	Test facilities must provide for adequate isolation of the test instrumentation from the test environment where it may compromise the reliability of the test results.
5.3.5	Cleanliness of workbenches should be such that items such as soil swatches are not additionally soiled. Cotton gloves, chemical resistant or similar hand coverings that are required by OSHA or authoritative health and safety regulatory agencies shall be supplied to and used by analysts.
5.4 Test and Calibration Methods and Method Validation	

TABLE 2 - Specific Interpretations - Technical, ISO/IEC 17025 (Continued)

ISO 17025 Paragraph	Interpretation
5.4.2	In general, the level of detail contained in standards is insufficient to ensure repeatability and reproducibility. Documented test procedures or work instructions will normally be required to ensure that the requirements of the standards can be applied within the laboratory context. In North America laboratory practices shall follow as closely as possible the guidance outlines in the US EPA published common Good Laboratories Practices (cGLP) (40 CFR PART 160) or the equivalent guides in Canada and Mexico. Documented test procedures or work instructions must, where possible, meet the exact requirements of the standards. In some instances, laboratories testing products to a range of national, regional or international standards may choose to develop generic test procedures. Such generic procedures must, however, clearly identify where reference to a particular national or regional difference has to be applied. Deviations from standards or specifications must be avoided unless there is a clear allowance for this in the regulatory framework of the destination economy. In instances where standards are unclear or lack detail, laboratories must make all reasonable efforts to ensure that any interpretations made are consistent with those of other laboratories and regulatory authorities. The relevant standards writing body should be the first contact. Other laboratories accredited for the same test should also be consulted. Attendance at relevant meetings where such interpretations are discussed is strongly encouraged. Regulatory approval for particular interpretations must also be sought where appropriate or required. Records of all interpretive decisions must be retained. These should include the rationale for the interpretation and be signed by the responsible official of the laboratory. (Where a standard does not adequately define the testing methods or contains ambiguities which would make it impossible to consistently apply the requirements, an accreditation body may refuse accreditation against such a standard.)

TABLE 2 - Specific Interpretations - Technical, ISO/IEC 17025 (Continued)

ISO 17025 Paragraph	Interpretation
	Where particular operator techniques may have an effect on the test results (such as positioning and application method of thermocouples for temperature measurement, or application of soil to plates), test procedures must fully describe these to a level where another operator could reasonably be expected to replicate the technique. Photographs or diagrams may be useful aids. Where visual examination forms a part of the testing, test procedures must incorporate detailed protocols and criteria for evaluation of the test outputs such that different testing officers can achieve consistency.
5.5 Equipment	
5.5.2	Standards usually provide a range of specifications for the test instrumentation and auxiliary equipment rather than defining particular types or models. New and innovative technologies may, however, provide for improved measurements, while instrumentation must meet all of the requirements of the applicable standard wherever possible. Instruments having specifications which differ from those of the standard method may be considered for use provided that the laboratory can demonstrate equivalence quantitatively. Appendix 2 provides guidance on the calibration of the major items of equipment used in energy efficiency testing.
5.6 Measurement Traceability	
5.6.1	All measuring instruments must meet the requirements of the accreditation body for deliberation traceability and if specified, those of the relevant regulatory authority.