



Standard Practice for Rubber—Preparation, Testing, Acceptance, Documentation, and Use of Reference Materials¹

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1. Scope

1.1 Materials used on an industry-wide basis as reference materials are vitally important to conduct product, specification, and development testing in the rubber and carbon black industry. This practice describes the steps necessary to ensure that any candidate material, that has a perceived need, can become a Reference Material. The practice sets forth the recommendations on the preparation steps for these materials; on the testing that shall be conducted to permit acceptance of any candidate material and on how the documentation needed for the acceptance shall be recorded for future use and review.

1.2 This practice shall be administered by ASTM Committee D11 in consultation on all matters with Committee D24.

Important sections of this practice are as follows:

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1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

E 122 Practice for Calculating Sample Size to Estimate, With a Specified Tolerable Error, the Average for a

Characteristic of a Lot or Process²

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method²

E 826 Practice for Testing Homogeneity of Materials for the Development of Reference Materials³

3. Significance and Use

3.1 Reference materials are vitally important in product and specification testing, in research and development work, in technical service work, and in quality control operations in the rubber and carbon black industries. They are especially valuable for referee purposes.

3.2 *Categories, Classes, and Types of Reference Materials (RM):*

3.2.1 Reference materials are divided into two categories:

3.2.1.1 *Industry Reference Materials (IRM)*—Materials that have been prepared according to a specified production process to generate a uniform lot; the parameters that define the quality of the lot are evaluated by a specified measurement program.

3.2.1.2 *Common-Source Reference Materials (CRM)*—Materials that have been prepared to be as uniform as possible but do not have established property (parameter) values; the knowledge of a common or single source is sufficient for certain less critical applications.

3.2.2 Industry reference materials (IRMs) are divided into additional classes and types according to the method of evaluating the lot parameters and according to the production process for generating the lot material. These are explained more fully (refer to Annex A3 and Annex A4 for more details on the discussion in Section 3).

3.2.3 The following lot parameters are important for reference material use:

3.2.3.1 *Accepted Reference Value (AR Value)*—An average IRM property or parameter value established by way of a specified test program.

3.2.3.2 *Test Lot Limits (TL Limits)*—These are limits defined as ± 3 times the standard deviation of individual IRM test results across the entire lot for the property or parameter(s) that define lot quality; the measurements are conducted in the laboratory of the organization producing the IRM.

¹ This practice is under the jurisdiction of ASTM Committee D11 on Rubber and is the direct responsibility of Subcommittee D11.20 on Compounding Materials and Procedures.

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² *Annual Book of ASTM Standards*, Vol 14.02.

³ *Annual Book of ASTM Standards*, Vol 03.05.