Designation: D 4204 – 00

Standard Practice for Preparing Plastic Film Specimens for a Round-Robin Study[1]

This standard is issued under the fixed designation D 4204; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope *

1.1 This practice covers the preparation of test sets of plastic film specimens for subsequent use in an interlaboratory round-robin study to evaluate the precision of a test method.

NOTE 1—There is no similar or equivalent ISO standard.

2. Referenced Documents

2.1 *ASTM Standards:*

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method[2]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *film specimen*—one piece of a sample obtained by cutting across the width of the sample and to a length such that one test specimen can subsequently be prepared.

NOTE 2—For any sample in a laboratory, n_1 test specimens are tested to produce a single test result in a short-time period, while replicate test results are obtained over a longer time period. Thus, there are within-laboratory components of variability for both short-term and long-term testing. This practice calls these within-day and between-day components of variability, inasmuch as round-robin protocols often specify that replicate test results be obtained on different days.

3.1.2 *sample*—a quantity of film of a width appropriate to the test method under study and of a length sufficient to yield the total number of film specimens needed for the planned round-robin study.

3.1.3 *test result*—the value (usually, the arithmetic average) of the property derived from one test unit.

3.1.4 *test set*—a group of several film specimens, in a number greater than that specified for a test unit.

3.1.5 *test specimen*—the unit, usually of specified dimensions, that is to be cut from one film specimen and tested, to produce one value of the property, or properties, by the test method under study.

3.1.6 *test unit*—a specified number of film specimens from which an equal number of test specimens is to be prepared and tested in a short-time span to yield one test result for each property.

3.2 *Symbols:*

RR = round-robin study,
p_1 = number of laboratories participating in the RR,
q = number of samples to be used in the RR,
r = number of replicate test results to be obtained on different days by each laboratory for each sample in the RR (Note 1),
n_1 = specified number of film specimens in a test unit,
n_2 = number of additional film specimens in each test set,
p_2 = number of additional "latent" laboratories provided for in the specimen preparation procedure,
L_1 = film-specimen length appropriate for preparing one test specimen,
L_2 = length of film from a sample from which can be obtained $(p_1 + p_2)$ film specimens; $L_2 = (p_1 + p_2)(L_1)$,
SD = component standard deviation for a single source of variability for one given sample,
S_1 = SD for within-laboratory within-day variability of a test value,
S_2 = SD for within-laboratory between-day variability of a test result,
S_3 = SD for between-laboratory variability of a test result,
S_4 = SD for within-sample variability,
S_r = within-laboratory standard deviation of a single test result for one given sample on any day, and
S_R = between-laboratory standard deviation of a single test result for one given sample on any day.

4. Significance and Use

4.1 This practice is intended to assist task groups participating in a round-robin study with the preparation of test sets of film specimens from film samples in the form of rolls on a cardboard core.

4.2 This practice assumes that the essential features of the round-robin protocol have already been established by following the guidance of Practice E 691. In particular, it is assumed

[1] This practice is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.19 on Film and Sheeting.

Current edition approved March 10, 2000. Published June 2000. Originally published as D 4204 – 82. Last previous edition D 4204 – 95.

[2] *Annual Book of ASTM Standards,* Vols 06.03 and 14.02.

*A Summary of Changes section appears at the end of this standard.