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SUBJECT
CATEGORY _____ Physical Properties _____

RELATED
METHODS _____ See "Additional Information" _____

CAUTION:

This Test Method may include safety precautions which are believed to be appropriate at the time of publication of the method. The intent of these is to alert the user of the method to safety issues related to such use. The user is responsible for determining that the safety precautions are complete and are appropriate to their use of the method, and for ensuring that suitable safety practices have not changed since publication of the method. This method may require the use, disposal, or both, of chemicals which may present serious health hazards to humans. Procedures for the handling of such substances are set forth on Safety Data Sheets which must be developed by all manufacturers and importers of potentially hazardous chemicals and maintained by all distributors of potentially hazardous chemicals. Prior to the use of this method, the user must determine whether any of the chemicals to be used or disposed of are potentially hazardous and, if so, must follow strictly the procedures specified by both the manufacturer, as well as local, state, and federal authorities for safe use and disposal of these chemicals.

Creasing of Flexible Packaging Material Paper Specimens for Testing

(Five-year review of Standard Practice T 512 sp-21)

1. Scope

This standard practice describes a creasing procedure for tests requiring creased specimens of flexible packaging materials made of paper or paper-based materials. In most instances, it is advantageous to compare the results of the creased specimens with those of uncreased specimens. This standard practice is not applicable to board grades (those exceeding 0.25 mm [0.01 in.] in thickness).

2. Significance

The diagonal creasing procedure more realistically simulates the manner of creasing during converting operations than the static loading devices.

3. Apparatus

3.1 *Creasing surface or bedplate*, consisting of a flat, rectangular plate; e.g., a piece of machined, smooth, metal plate with a flatness of 0.13 mm (0.005 in.) within 300 mm (12 in.), approximately 6 mm (0.25 in.) thick or an

equivalent piece of plate glass. The width and length are required to be at least 25 mm (1 in.) longer than the specimen size.

3.2 *Creasing roller*, weighing $2.04 \text{ kg} \pm 0.04$ ($4.5 \pm 0.1 \text{ lb}$) with a rubber cover approximately 6 mm (0.25 in.) thick and having a Shore A Durometer hardness of 75 ± 5 . The dimensions of the roller are $95 \pm 5 \text{ mm}$ (3.75 in.) diameter and $45 \pm 5 \text{ mm}$ (1.75 in.) wide. A handle is so attached at the axis of the roller that it can be used without additional pressure being applied by the operator.

NOTE 1: If a glass plate is used, it is advisable to have a size at least 200 mm (8 in.) square to prevent the edges from being chipped by the roller used in creasing the specimen.

4. Sampling and test specimens

From each test unit of the material obtained in accordance with TAPPI T 400 “Sampling and Accepting a Single Lot of Paper, Paperboard, Containerboard, or Related Product,” cut square specimens of the number and size required for the applicable test and with the principal directions parallel to the cut edges.

NOTE 2: Unlike static loading procedures (e.g., TAPPI T 465 “Static Creasing of Paper for Water Vapor Transmission Tests”) where a weight and two plane surfaces are used to make the crease, the effectiveness of the creasing is independent of the size of the specimen or the length of the crease.

5. Procedure

5.1 Condition the specimens in an atmosphere in accordance with TAPPI T 402 “Standard Conditioning and Testing Atmospheres for Paper, Board, Pulp Handsheets, and Related Products.”

5.2 While wearing latex gloves, make two diagonal creases on each specimen as follows: bring two of the opposite corners of the specimen together, thus inducing a fold along a diagonal; place the specimen on the creasing surface, and, while holding the corners, place the creasing roller on one end of the fold and roll it once along the fold, taking care not to apply additional pressure (see 3.2) at a rate of $25 \pm 12 \text{ mm/s}$ (1 in./s) to form a crease. Unfold the specimen, then lightly refold it along the other diagonal, but with the reverse side folded in, and again crease it with the roller. Finally unfold the test specimen.

5.3 The specimens are now ready to be tested for the penetration of or permeability to grease, gases, or other fluids.

6. Precision

A precision statement is not applicable to this standard practice.

7. Keywords

Creasing, Flexible packaging, Paper, Samples, Sample preparation

8. Additional information

8.1 Effective date of issue: To Be Assigned.

8.2 The 1981 version included an explanation of the relationship to other creasing methods.

8.3 This method was first published in 1969 as a Suggested Method and became an Official Method in 1975. In 1996, it was reclassified as a Standard Practice.

8.4 Related methods: ASTM F119 “Grease Penetration of Flexible Barrier Materials (Rapid Method),” American Society for Testing and Materials, Philadelphia, PA; TR 14, Flexible Packaging Association; MIL-B-121E, Military.

Your comments and suggestions on this procedure are earnestly requested and should be sent to the TAPPI Standards Department.

