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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 Material 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.

Score quality test

1. Scope

This procedure describes a qualitative method for evaluating the relative quality of scores in corrugated containers.

2. Significance

2.1 Set-up and case sealing of a corrugated KD box on production equipment will depend on various factors, one of which is the quality of both panel and flap scores found on the corrugated box.

2.2 It is the purpose of this procedure to provide a consistent means for determining the relative quality of scores in corrugated containers. This procedure determines the force required to break scored and unscored board, and by calculating an abstract ratio (in %) of the force required to break the scored board to that of unscored board, relative information on the quality of the score can be ascertained. By comparing this abstract tested ratio to an established range of ratios based on materials that perform well, a pass/fail criteria can be determined by each manufacturer.

2.3 This method will not determine score spring-back force or board memory that may exist, nor does it measure forces required to bend entire flaps or panels.

2.4 This procedure is intended to provide information on score quality for a given combined board and is intended for single wall and double wall board. It may be used for triple wall, but with less reliability.

3. Apparatus¹

3.1 A device capable not only of applying a force at a constant speed of 0.8 mm/sec (0.031 in./sec), but also allowing a minimum of 12.7 mm (0.5 in.) travel, or a sufficient amount of travel to ensure a maximum 90° bend of the test sample.

¹Names of suppliers of testing equipment and materials for this method may be found on the Test Equipment Suppliers List in the bound set of TAPPI Test Methods, or may be available from the TAPPI Quality and Standards Department.

3.1.1 A *U-shaped channel* having an internal width of 27 mm (1.063 in.), an internal depth of 22 mm (0.87 in.), a wall thickness of 1.6 mm (0.063 in.), and an edge radius of 0.25 mm (0.01 in.), with an overall length of 102 mm (4.0 in.) (see Fig. 1).

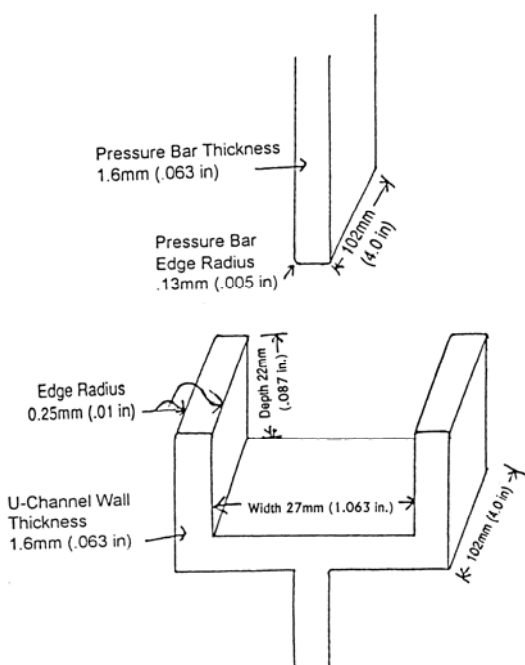


Fig. 1. Dimensions of test devices.

3.1.2 A *pressure bar* having a thickness of 1.6 mm (0.063 in.), and an edge radius of 0.13 mm (0.005 in.), with an overall length of 102 mm (4.0 in.) (see Fig. 1).

3.2 *Force gauge or load cell* capable of measuring and indicating the applied force to within $\pm 1\%$ or 2.5N (0.56 lbf) whichever is greater and must have sufficient capacity so that all readings can be maintained in the middle half of the scale.

3.2.1 Force gauge or load cell should be attached to the stationary (non-moving) member of the device.

4. Test specimens

4.1 From each test unit of a sample obtained in accordance with TAPPI T 400 "Sampling and Accepting a Single Lot of Paper, Paperboard, Containerboard, or Related Products," test specimens should be free of defects and will include all unbroken scores, in both the machine and cross-machine direction.

NOTE 1: Samples should be taken at least 12.7 mm (0.5 in.) from any cut edge to eliminate any crushing influence.

4.2 Both scored and unscored test samples should be cut at least 25.4 mm (1.0 in.) in width (length of score) and of sufficient length to allow enough board present to test a scored and unscored area from the same test sample (see Fig. 2). If there is insufficient sample length to perform the unscored bend test, obtain an unscored board specimen, cut to the same sample width as the scored specimen, from other unused sections of the board sample.