AUSTRALIAN STANDARD
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AS 1301.429s — 89
Tentative Standard — January 1961
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Revised — April 1989

FLAT CRUSH RESISTANCE OF CORRUGATED BOARD

This Standard describes the procedure for measuring the crushing resistance of the arch structure of corrugated board when subjected to loads applied perpendicular to the surface of the board and under conditions which restrain lateral motion of the facings. This test may be used on single-wall or single-face corrugated board, but cannot be adapted to measuring the crushing resistance of double-wall corrugated board (Note 6.1).

The flat crush test evaluates the resistance of the flutes in corrugated board to a crushing force applied perpendicular to the surface of the board. Although not directly correlating with compression tests on corrugated fibreboard containers, it is a combined measure of the effect of some of the factors involved in the operation of fabricating the board, and of the material used to form the corrugations. Low flat crush values may reflect poor formation of the corrugations, substandard materials, or damage to the corrugations after they are formed. Such damage may occur in subsequent manufacturing operations in the container plant (such as crushing under printing dies) or through careless storage and handling by the container user. For this reason, great care should be exercised in selecting flat crush test pieces to be sure that they reflect the conditions to be evaluated, and that causes of low test results are properly interpreted.

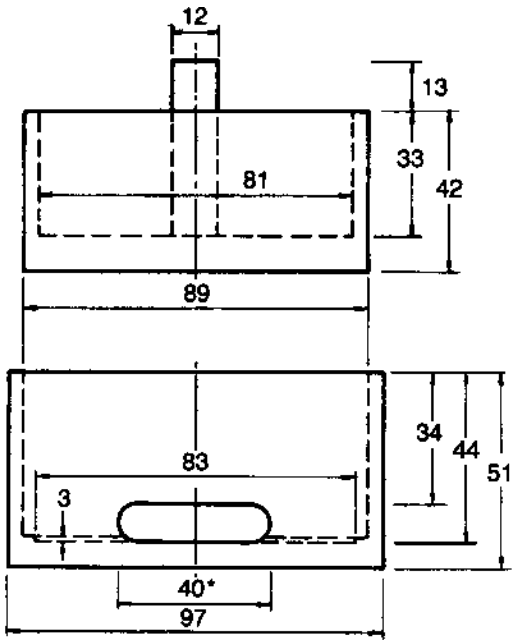
This method requires the use of a test piece holder to prevent lateral movement of the upper portion of the test piece during compression. If under these conditions the flutes of the collapsed test piece exhibit sideways collapse, this is to be taken as a property of the board and results of such tests are to be included in the average value reported.

1. APPARATUS

1.1 Motor driven crush testing machine as described in AS 1301.449.

1.2 Test piece cutter which can cut through the corrugated arch structure with the required accuracy leaving clean-cut edges which are at right angles to the facings, and which are free from frayed or crushed corrugations. A circular device having a razor blade as the cutting edge is recommended.

1.3 Test piece holder consisting of an assembly of a type similar to that shown in Fig. 1, with the following recommended dimensions. The outer sleeve is 89 mm internal diameter closed at the base with a 7 mm flat bottom. A flange 3 mm wide and 1 mm high runs around the inside bottom of the sleeve and emery cloth (grade 00) covers the surface within this flange. Two vent holes, 40 mm long and 10 mm wide, are cut into opposite sides of the sleeve with the bottom of the vent at the same height as the inside bottom surface. The piston is about 89 mm in diameter, such that it slides neatly in the sleeve without friction. The circular wall of the piston is about 41 mm high and a central rod 12 mm in diameter is fixed to the inside bottom surface and protrudes 13 mm above the top of the circular wall. The outer bottom surface of the piston, which is covered by emery cloth grade 00 (Note 6.2), and the inner bottom surface of the sleeve are subject to the same parallelism requirements as the platen surfaces described in AS 1301.449. The parallelism of the platens in this method is not essential but the bottom platen must be horizontal. Stainless steel is recommended as the material of construction for both piston and sleeve. Test piece holders of other designs are permitted providing they perform the same function as the one described.



* Length around curve
DIMENSIONS IN MILLIMETRES

Fig. 1 Test Piece Holder

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