

AUSTRALIAN STANDARD

Prepared by the Appita Testing Committee. Endorsed as Part of AS 1301 by the Standards Association of Australia—February 1986. Endorsed as suitable for use in New Zealand by the Standards Council of New Zealand.

Appita P406m—86

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 Revised— February 1986

BENDING QUALITY OF PAPERBOARD

This Standard is designed to give a measure of the bending quality of paperboards; the results obtained give an indication of the creasing requirements of a paperboard during its conversion.

A paperboard of good bending quality can be folded through 180° without rupture along the outside of the fold without first creasing the sheet. Paperboards of average quality can be folded satisfactorily if they are first creased in an appropriate manner. The severity of creasing required to obtain a rupture-free fold is taken as a measure of bending quality. The quality is designated by a whole number lying within the range 10 (highest quality) to 1 (lowest quality).

1. APPARATUS

1.1 Bending quality instrument. The instrument consists of a number of pairs of metal dies, each pair being mounted separately in a hand press (Fig. 1). The length of a die is 75 mm, the overall width 25 mm, and the depth approximately 6 mm. The cross section of the dies is shown schematically in Fig. 2.

A series of seven pairs of dies comprises one group. A paperboard having a bending quality of 10 requires no creasing, hence no die is required; paperboards of quality 9 and 1 are so close to the extremes of good and bad quality that these dies are omitted from the series. There are seven groups (i.e. 49 pairs of dies) in the complete instrument, the groups being designed to test paperboard of different thickness ranges (Note 5.1).

On the face of the male die in a pair is a creasing rule, in the female die is a groove. The dies are mounted in the press so that the rule and groove mate accurately. The rule and groove are designed to produce varying degrees of shearing or creasing in the paperboard under test. The instrument must be constructed so that the shear angle (Note 5.2) is within 1° of that specified.

Certain dimensions of the dies, together with the corresponding shear angles, are given in Table 1 (Note 5.3).

The pairs of dies are each permanently mounted in individual hand presses. No attempt, other than by one authorised to do so, should be made to adjust the position of one die with respect to the other .

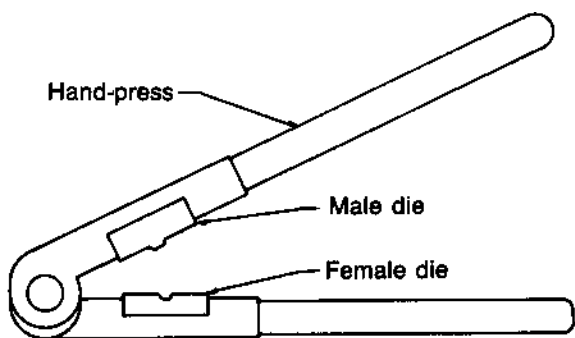


Fig. 1 BENDING QUALITY INSTRUMENT

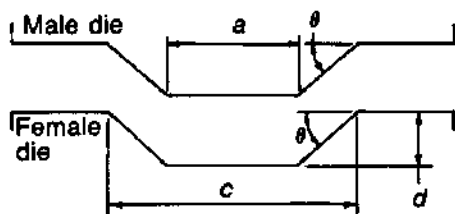


Fig. 2 CROSS SECTION OF DIES

TABLE 1
DIMENSIONS OF DIES FOR BENDING QUALITY INSTRUMENT

Group	A	B	C	D	E	F	G
Board thickness μm							
minimum	305	341	391	496	596	726	876
maximum	340	390	495	595	725	875	1130
* Width of male rule (a) mm	0.705	0.705	0.705	0.705	0.705	1.059	1.412
* Width of female groove (c) mm	1.412	1.519	1.722	1.925	2.179	2.837	2.651
* Depth of female groove (d) mm							
Bending quality							
Shear angle							
8	20°	0.124	0.135	0.152	0.170	0.193	0.249
7	30°	0.191	0.203	0.231	0.259	0.292	0.381
6	40°	0.257	0.274	0.312	0.348	0.396	0.516
5	50°	0.330	0.353	0.401	0.450	0.508	0.660
4	60°	0.409	0.439	0.498	0.556	0.627	0.818
3	70°	0.495	0.531	0.602	0.673	0.762	0.993
2	80°	0.594	0.635	0.721	0.808	0.914	1.191
							1.529

* Complete dimensions and tolerances given on working drawings.