

# Fiberboard Crease Bending Test —SAE J119 JAN82

SAE Standard  
Completely Revised January 1982

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Report of the Nonmetallic Materials Committee, approved September 1969, completely revised January 1982.

1. **Scope**—This test method is designed to determine the suitability of a painted or unpainted fiberboard for application involving creasing and bending. The specific purpose of the test is to determine whether a given material, properly creased, can be bent along the impressed crease without objectionable failure on the surface of the bend.

2. **Equipment Required**

2.1 Press with adequate tonnage to crease the test specimen to the desired configuration.

2.2 Matched male and female die sections, selected for the caliper of sample to be tested and for the desired end result (see Section 4).

3. **Test Specimen**

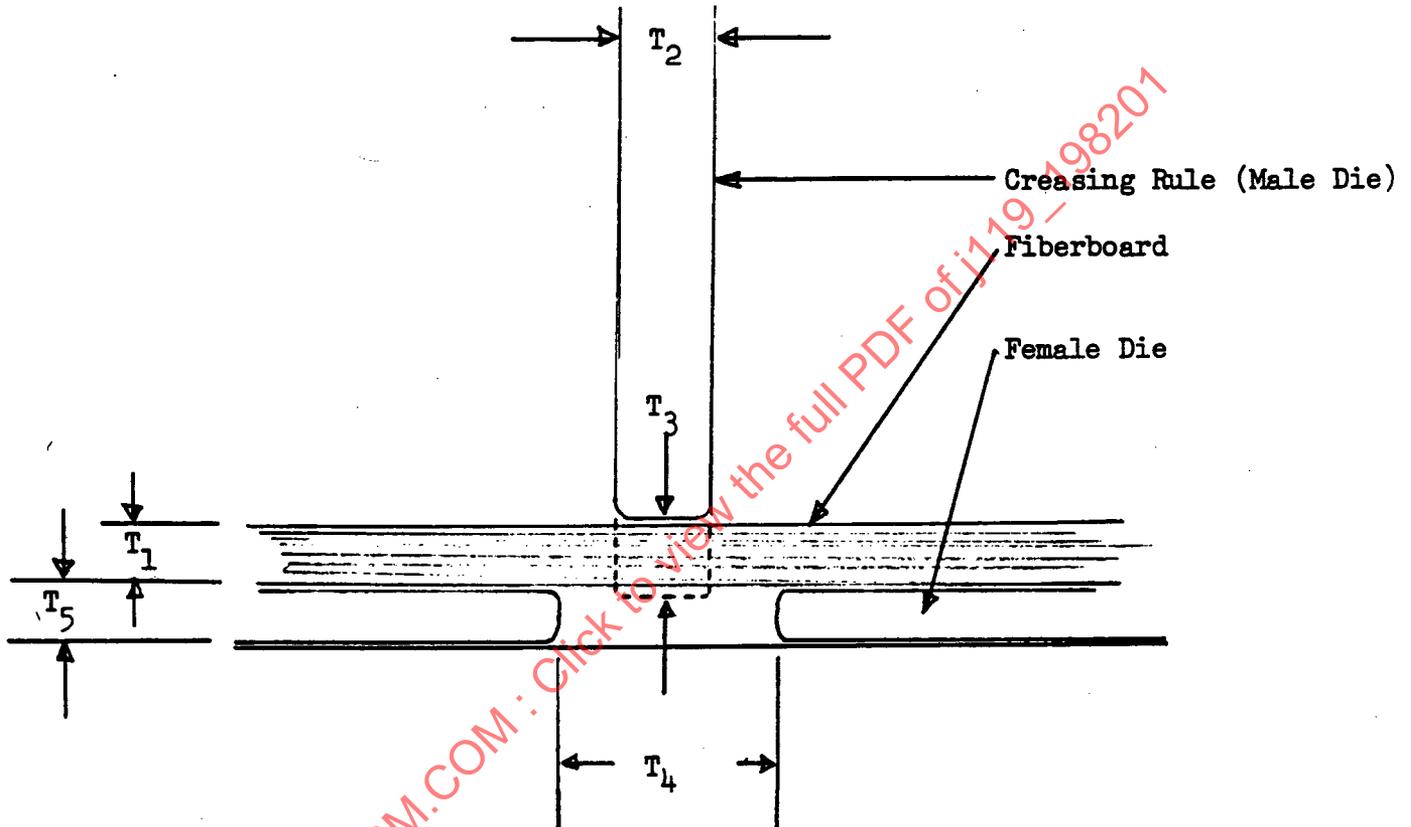
3.1 **Size**—Minimum of 100 × 300 mm or as determined by the size of the test die.

3.2 **Condition Prior to Testing**—See SAE J315 (Section 4) unless otherwise specified.

4. **Creasing Rule (Male Die Section)**

4.1 The thickness of the creasing rule ( $T_2$ ) is designated commercially by the printer's point system (1 point equals approximately 0.36 mm), Fig. 1.

**BRDA Disclaimer:** As is implied in the bulletin (BRDA Technical Bulletin 12), these procedures and the instrument(s) utilized were developed specifically for multiply folding boxboard manufactured by a continuous wet-forming process in a caliper range up to 0.040 in. Although the same principles may apply in the creasing and bending of laminated, single-ply, or convolute-formed paperboard, this caveat should be noted, especially as to caliper.



$T_1$  = Fiberboard Thickness

$T_2$  = Creasing Rule Thickness (Male Die)  
 $T_2$  may be obtained from chart in paragraph 4.3

$T_3$  = Penetration of Creasing Rule  
 $T_3 = T_1$

$T_4$  = Female Die Opening  
 $T_4 = T_2 + (2 \times T_1)$

$T_5$  = Female Die Thickness  
 $T_5 = T_1$

FIG. 1

4.2 Commercially available in either flat or round face and in the following thicknesses (round face rule should be used unless otherwise specified):

Standard Creasing Rule Thickness	Standard Creasing Rule Thickness
2 points	10 points
3 points	12 points
4 points	5 mm
6 points	6 mm
8 points	

4.3 For the normal range of bending fiberboards the following may serve as a guide in the selection of creasing rule:

Fiberboard Thickness mm	Creasing Rule
0.76	3-6 points
1.02	3-6 points
1.26	4-8 points
1.52	6-10 points
1.78	8-12 points
2.03	10 points 5 mm
2.28	12 points 6 mm

4.4 Penetration of the creasing rule ( $T_3$ ) should be such that it equals the thickness of the fiberboard, Fig. 1.

#### 5. Female Die Section

5.1 The female die opening ( $T_4$ ) may be determined by adding the

creasing rule thickness to twice the caliper of the test specimen, Fig. 1.

5.2 Depth ( $T_5$ ) should be equivalent to the caliper of the test specimen unless otherwise specified, Fig. 1.

5.3 Both female die section and creasing rule should extend beyond the edges of the test specimen.

#### 6. Procedure

6.1 Matched male and female die sections should be determined by the caliper of the test specimen (see paragraph 4.3) and mounted in press (see paragraph 2.1). Stops should be provided so that penetration of male creasing rule is as specified in paragraph 4.4.

6.2 Insert test specimen in die and crease with one stroke of press. Using separate specimens, crease both with the grain and across the grain and on one or both sides as specified.

6.3 The test die or dies should encompass the range of rule thicknesses recommended for the caliper of board being tested (see paragraph 4.3). Three or four rules of different thicknesses can be incorporated into the same die to aid in determining the proper rule thickness for creasing that board.

When using a die with multiple scores, the creases should not be closer than 76 mm on centers or less than 25 mm from the edges of the test specimen parallel to the creasing rule.

#### 7. Evaluation

7.1 The recommended practice is to bend sides of specimen away from male side of die. In actual practice, the design of the part may require bending both ways.

7.2 The specimen should be bent through an angle of 180 deg. The specimen should be bent not to exceed 180 deg with the parallel face kept the minimum distance of board thickness apart, unless otherwise specified. See Fig. 2.

7.3 The specimen should be usually evaluated after bending. The appearance of fractures on the fiberboard surface and/or the paint coating should be reported.

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