AUSTRALIAN STANDARD
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AS 1301.403s-89
Recommended Practice—August 1961
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BURSTING STRENGTH OF PAPER

This Standard prescribes the procedure for the determination of bursting strength of paper by means of a burst tester. (References 7.1, 7.2, 7.3 and 7.4).

0. FIELD OF APPLICATION

This Standard is applicable to those flat paper sheet materials which have a mean bursting strength less than 1100 kPa. An alternative method for materials with bursting strength above 350 kPa (250 kPa for components of corrugated and solid fibreboard with combined bursting strength above 350 kPa) is prescribed in AS 1301.438.

In the absence of any instruction as to which of these two Standards should be used between 350 and 1100 kPa, all materials with bursting strength below 600 kPa shall be tested by this Standard and the remainder by AS 1301.438 except that all components of corrugated and solid fibreboard shall be tested by AS 1301.438.

1. DEFINITION

For the purposes of this Standard the following definition applies:

Bursting strength. The true peak pressure developed by the hydraulic fluid in forcing a rubber diaphragm through a circular area of the paper when the pressure is applied in the manner described in the method. The pressure required to extend the rubber diaphragm during the test is included in the indicated bursting pressure.

2. APPARATUS

The test instrument used is known as a burst tester, but the design specified for paper is different from that specified for testing paperboard and corrugated fibreboard in AS 1301.438. If any material is tested contrary to the provisions of the FIELD OF APPLICATION, the type of instrument used shall be stated in the report.

The tester for paper has the following features:

2.1 Clamping. The instrument shall have means for clamping the test piece firmly, uniformly and without slippage between two parallel, annular, plane, unpolished (matt) clamping plates. One design which achieves this has on its clamping surfaces concentric or spiral V-grooves not less than 0.25 mm deep and 0.9 mm apart, the innermost groove being not more than 3.3 mm from the edge of the circular opening of the plate.

The upper clamping plate shall be made from steel plate, preferably stainless steel, at least 6 mm thick, and shall have a circular opening 30.5 $\pm$0.1 mm in diameter (Figure 1). The circular edge of the opening which is in contact with the test piece shall be rounded to remove sharpness to minimize damage to the diaphragm: a radius of curvature of 0.2 mm is recommended. The space above the upper clamping plate must be sufficient to allow free bulging of the test piece and must be open to the atmosphere to allow air above the test piece to escape. If the space above the test piece is enclosed an orifice of diameter 4 mm provides sufficient means for the air to escape.

The lower clamping plate shall be 3.5 $\pm$0.1 mm thick and shall have an opening 33.1 $\pm$0.1 mm in diameter, with the lower edge rounded (about 3 mm radius) to avoid cutting the diaphragm when pressure is applied. This rounding shall commence at a point 0.65 $\pm$0.10 mm below the top surface of the clamping plate (Figure 1).

The upper clamping plate shall be connected to the clamping mechanism through a swivel joint to ensure an even clamping pressure. Under test conditions the openings in the two clamping plates shall be concentric to within 0.25 mm (see Appendix A7).

The instrument must be fitted with a means of applying a clamping pressure of 800 to 1200 kPa set as described in Appendix C. It should be noted that on some instruments the gauge pressure is not the actual clamping pressure.

2.2 Diaphragm. A special rubber diaphragm, free from reinforcing agent and mineral loading, is clamped

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