

FLOW CHARACTERISTICS OF WINDSHIELD AND BACKLIGHT PREFORMED BONDING TAPES

Application

This procedure is used to determine the flow out behaviour of bonding tape. The height of tape and amount of flow is determined after the specified time, temperature and load.

Apparatus and Materials Required

Mechanical Convection Oven

Capable of maintaining a constant temperature of 90 +/- 1 °C.

Glass Plates

Flat polished plate glass 75 x 75 x 6 mm.

Bonding Tape

Samples of tape 75 mm long with a cross section as specified on the relevant engineering drawing. Samples must have a uniform cross section over the entire 75 mm length.

Weight

75 x 75 mm - 0.7 kg.

Spacer

Steel - 75 x 15 x 3 +/- .05 mm.

Required for maintaining the minimum height of the compressed test assembly.

Thickness Gauge

Capable of measuring thicknesses up to 25 mm within .02 mm. The gauge must be equipped to provide a 0.5 kg load over a contact area of approximately 10 cm².

Stopwatch

Hydraulic Press

Capable of compressing the bonding tape to the specified thickness.

Date	Action	Revisions
2000 11 13	Revised	Editorial – no technical change A. Cockman
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Conditioning and Test Conditions

Prior to testing, all specimens must be conditioned for a minimum of 24 hours at 20 +/- 2 °C. The test must also be performed at this temperature.

Procedure

Note: 3 assemblies are required for this test.

1. Using the thickness gauge, measure the combined height of two pieces of glass plate under a 0.5 kg load to the nearest .02 mm and mark the mating surfaces.
2. Prepare the test assembly as shown in the sketch, ensuring that the spacer is positioned centrally between the bonding tapes.
3. Centre the assembly on the base plate of the hydraulic press.
4. Compress the assembly under the hydraulic press to a bonding tape thickness of 3 +/- 0.05 mm. Hold in this position for 1 minute. The maximum load on the sample must not exceed 250 kg.
5. Take the assembly from the press, remove the spacer and add the weight to provide a 0.7 kg load on the assembly. Allow to stand for 60 +/- 5 minutes.
6. After 60 +/- 5 minutes, remove the weight and measure the combined thickness of the glass plates and bonding tape to the nearest 0.02 mm, using the thickness gauge. Then replace the 0.7 kg weight. (This thickness(T_1) is used for calculating the recovery height and flow).
7. Place the assembly (with weight) in the oven maintained at 90 +/- 1 °C for 24 hours.
8. Remove the sample from the oven and allow to recover (with weight) at 23 +/- 2 °C for 60 +/- 5 minutes.
9. After 60 +/- 5 minutes, remove the weight, measure and calculate the tape recovery height T_2 as in para 6.

Evaluation

The recovery height prior to and after heat exposure and flow values for the tape are calculated as follows:

$$R_1 \text{ (mm)} = T_1 - T_G$$

$$R_2 \text{ (mm)} = T_2 - T_G$$

$$F \text{ (mm)} = T_1 - T_2$$