

RESISTANCE TO AGING AND FLEXING OF BONDED INLAY ASSEMBLIES

Application

This procedure is used to evaluate bonded inlay assemblies for separation or loosening of the bond lines when subjected to accelerated aging tests. The bond strength of the materials is determined in a tensile test machine before and after aging and the sample is also tested for delamination after an aging and flexing test.

A properly bonded assembly will exhibit no greater loss of bond strength after aging than that permitted by the material standard.

Apparatus Required

Tensile Machine

The tensile testing machine shall have a full scale range of 0 - 10 lb with an accuracy of +/- 1 % tolerance in load indication.

Ball Tension Fixture

See attached drawing.

Rubber Coated Ball or Equivalent

A 5 inch diameter 10 lb rubber ball, or equivalent material, with the proper diameter and weight is required. The rubber ball with a lead center may be obtained from General Stores, Steel Division, under Code #63-64-760.

Air Circulating Ovens

Maintained at 190 +/- 5 °F and 180 +/- 2 °F.

W Flex Tester

As described in FLTM BN 102-02.

Materials Required

For purposes of production material approval, master roll samples of the original approved materials (retained by the Utica Trim Plant) shall be used as approved reference samples for bonding evaluations.

Date	Action	Revisions
2001 08 22	Revised	Editorial – no technical change A. Cockman
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Conditioning of Samples

All samples shall be conditioned at 70 +/- 2 °F and 65 +/- 2 % relative humidity for at least 24 h prior to testing. (See note.)

Note: The variation in temperature alone shall not be of such magnitude as to cause a variation in relative humidity greater than that specified.

Procedure

Preparation of Samples

Prepare sample using the material to be evaluated in conjunction with the approved reference control vinyl material.

The assembly shall consist of a base vinyl coated fabric and an unsupported vinyl film to be used as the inlay.

Bonding of Samples

For each test, bond the assembly, using the special die as shown in the attached drawing, under a pressure of 200 - 300 psi with a 10 s heat and a 10 s hold. The voltage range is to be determined as follows:

1. **High Voltage**

Using the standard approved reference sample, find the maximum voltage at which no blistering occurs.

2. **Low Voltage**

Using the standard approved reference sample, find the minimum voltage at which a good bond that meets the peel adhesion requirements is obtained.

Testing of Bonded Inlays

A. **Bond Strength Before Aging**

1. Cut a sample from the bonded assembly 1 inch wide and 8 inches long.
2. Insert the sample in the jaws of the tensile machine, allowing an initial jaw separation of 1 in. or more, if required.
3. Peel the strip back upon itself for approximately 3 inches, using a jaw movement speed of 12 inches/minute.
4. Record the bond strength for the 3 inch strip and note the nature of separation.