Ford Motor Company

FORD LABORATORY TEST METHOD BO 124-04

DETERMINATION OF MOISTURE IN POLYVINYL BUTYRAL BY GRAVIMETRIC DESICCATION

Application

This procedure describes a method for determining the moisture content of polyvinyl butyral used in laminated glass.

Apparatus Required

Weighing Bottle

A weighing bottle with a 40 mm I.D. and 80 mm high with a Ts 40/12 ground glass stopper or equivalent.

Sample Stand

Aluminum stand as shown in Figure 1.

Desiccator

Desiccator of sufficient size to hold the weighing bottle, sample and stand.

Chemicals Required

Phosphorous Pentoxide

Anhydrous phosphorous pentoxide, 225 - 450 g. (12 mm deep in desiccator.)

Conditioning and Test Conditions

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

Date	Action	Revisions
2001 03 28	Revised	Editorial – no technical change A. Cockman
1994 12 20		

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Procedure

1. Tare weighing bottle, stopper and stand. (W_1)

2. Cut sample 25 x 150 mm and place on aluminum stand in the weighing bottle. Replace stopper. Polyvinyl butyral changes moisture content rapidly, depending on relative humidity of surrounding air.

3. Weigh the sample, bottle, and stand to the nearest tenth milligram. (W_2)

4. Open desiccator and examine surface of phosphorous pentoxide desiccant. If this surface is not dry and powdery, scrape off crust to ensure fresh, dry, powdery desiccating surface.

5. Place weighing bottle in desiccator and open bottle. Remove stand with sample and place next to weighing bottle. Tightly seal desiccator and allow sample to remain for 16 hours (for .7 - .8 mm thick vinyl) at atmospheric pressure.

6. Open desiccator and rapidly replace sample and stand in weighing bottle. Seal weighing bottle and transfer to storage desiccator.

7. Weigh sample bottle on analytical balance to nearest tenth milligram and calculate moisture content. (W_3)

W_1 = tare weight of bottle plus stand
W_2 = weight of bottle, stand and sample before desiccation
W_3 = weight of bottle, stand and sample after desiccation

$$\text{Moisture content} = \frac{W_2 - W_3}{W_2 - W_1} \times 100$$

Note:

1. All handling of vinyl, bottles, stands should be done with clean, white gloves to prevent fingerprints from affecting data.

2. All desiccators use phosphorous pentoxide as desiccant and before each usage should be carefully examined to ensure a dry, fresh, powdery desiccating surface.

3. Moisture content can be determined after 8 hours desiccation with subsequent redesiccation and reweighing to constant weight. Experience has shown that almost all samples will dry to constant weight before 16 hours desiccation.

Chemicals, materials, parts, and equipment referenced in this document must be used and handled properly. Each party is responsible for determining proper use and handling in its facilities.

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