1. **SCOPE**

1.1. **Description of Test**

This method determines the direct measurement of volatile fractions in a bituminous mix.

2. **APPARATUS AND MATERIALS**

2.1. **Equipment Required**

Metal Still - a vertical metal still complete with a paper gasket to which the head can be tightly attached by means of a metal clamp. The head will be of metal, preferably copper or brass, and will be equipped with a 25.4 mm tubulation inside diameter. A suitable still is described in ASTM Method D244 or AASHTO T59.

Condenser - glass tube type having a condenser jacket not less than 400 mm long with an inner tube 9.5 to 12.7 mm in outside diameter. The end of the condenser inserted in the trap will be ground off at an angle of 30 degrees from the vertical axis of the condenser.

Trap - a glass trap conforming to Figure 1 of ASTM Method D-322 or AASHTO T110-70.

Chemicals - sodium carbonate, distilled water.

Heating Device - any satisfactory source of heat that is capable of maintaining a distillation rate of 85 to 95 drops per minute. A ring burner or hot plate has been found to be satisfactory.

Balance - sensitive to 0.1 g.

3. **PROCEDURE**

3.1. **Sample Preparation**

Thoroughly mix the sample to be tested and break up any large lumps. Weigh 500 g of the mixed sample and place in the metal still. Keep the remainder of the sample in a tightly covered container for possible future use.
3.2. **Test Procedure**

After placing the sample in the metal still, add 350 ml of distilled water and 3 g of sodium carbonate and quickly stir into sample.

Firmly attach the still cover along with the paper gasket and assemble the trap and condenser.

Apply heat using the ringer burner or hot plate at a rate that refluxing will start within 5 to 10 minutes. Regulate the heat so that the condensed material will drip into the trap at a rate of 85 to 90 drops per minute.

Continue the distillation until three successive readings of the upper and lower levels of diluent at 15 minute intervals show no increase in the quantity being collected.

Remove the source of heat and allow the trap and contents to reach room temperature. Allow the trap to stand a minimum of 1/2 hour to permit the solvent to separate.

Record the volume of diluent in the trap to the nearest scale division and calculate in weight percent. Use the specific gravity of the diluent at 25°C (usually 0.850).

4. **RESULTS AND CALCULATIONS**

4.1. **Calculations**

\[
\text{% diluent} = \left( \frac{\text{Vol. Diluent in Trap}}{\text{Weight of Sample}} \right) \times \left( \frac{\text{S.G. of Diluent @ 25°}}{100} \right)
\]

4.2. **Reporting Results**

Report the percent volatiles by Reflux on form MR-70.

5. **ADDED INFORMATION**

5.1. **References**


5.2. **General**

Care should be taken to avoid overheating of samples as this causes sample to boil through trap.

Stills should be cleaned out with solvent and rinsed with chlorothene after using.
APPROVAL SHEET

New ____ Revision __ X__ Date of Previous Document 86-01-02
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Description of Revision (Reason for Revision):
Format of test procedure updated.

Review/Implementation Process:
Reviewed by the Materials Section of the Technical Standards and Policies Branch.

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__Nil__

Follow Up/Training Required:
__Nil__

Comments/Concerns/Implications (Budget/Environment/Stakeholders):

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