



# Standard Test Procedures Manual

Section: EMULSIFIED ASPHALT

Subject: ELASTIC RECOVERY

## 1. SCOPE

### 1.1. Description of Test

The elastic recovery is a measure of the tensile properties of the polymer modified asphalt cement residue of a polymer modified emulsified asphalt.

### 1.2. Application of Test

The elastic recovery is measured by the percentage to which the asphalt cement residue will recover its original length after it has been elongated to a specific distance at a specified rate of speed and then cut in half. The distance to which the specimen contracts during a specified time is measured and the elastic recovery is calculated.

## 2. APPARATUS AND MATERIALS

### 2.1. Equipment

Mold for the test specimen, water bath, a testing machine and thermometers conforming to the specifications described in ASTM Designation D113-86.

## 3. PROCEDURE

### 3.1. Sample Preparation

The sample shall consist of the asphalt cement residue obtained from the distillation of a polymer modified emulsified asphalt.

### 3.2. Equipment Preparation

Assemble the mold on a flat and level brass or glass plate. Thoroughly coat the surfaces of the plate and the interior surfaces of the middle brass spacers with a thin layer of a mixture of glycerin and talc to prevent the material under test from sticking.

### 3.3. Test Procedure

After a thorough stirring, pour the sample into the mold. When pouring, pour the material in a thin stream back and forth from end to end of the mold until the mold is more than level full. Take care not to disarrange the parts and thus distort the test specimen.

Allow the test specimen to cool to room temperature for a period of 30 to 40 minutes.

Place the mold, plate and test specimen in the water bath at a temperature of 10° C for 30 minutes.

After the 30 minutes, cut off excess bitumen with a hot straight edged putty knife or spatula to make the mold just level full.

Place the mold, plate and test specimen back in the water bath at 10° C for 85 to 95 minutes. Then remove the test specimen from the plate, detach the side pieces and test the specimen immediately.

Elongate the specimen to 20 cm at a rate of 5 cm/min. After elongation the testing machine is stopped and the specimen is held in this stretched position for 5 minutes.

At this time the specimen is cut in half with a pair of scissors or other suitable cutting device.

The specimen is left undisturbed for one hour when the one half sample specimen is retracted until the two broken ends touch. The new pointer reading is recorder in centimeters.

While the test is being made, the water in the tank of the testing machine shall cover the specimen both above and below by at least 2.5 cm and shall be kept continuously at 10° C ± .5° C.

## 4. RESULTS AND CALCULATIONS

### 4.1. Calculations

The percent elastic recovery is calculated by the following formula:

$$\% \text{ elastic recovery} = \left( \frac{20 - x}{20} \right) \times 100$$

Where x = Final reading in cm after bringing the two broken ends together.

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## 5. ADDITIONAL INFORMATION

### 5.1. General

Unmodified asphalts rarely show elastic recoveries more than 10%. Elastic recovery of polymer modified materials depends upon the type and amount of polymer.

### 5.2. References

ASTM Designation D113-86, Standard Test Method for Ductility of Bituminous Materials, Volume 4.03.

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STP 203-18

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## APPROVAL SHEET

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Quality Control Engineer Date

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