

DUCTILITY TEST

AIM:

1. To measure the ductility of a given sample of bitumen
2. To determine the suitability of bitumen for its use in road construction

THEORY:-

The property of bitumen which allows it to undergo deformation or elongation is called ductility of bitumen. The ductility of bitumen is measured by the distance in Cm (centimeter), to which the bitumen sample will elongate before breaking when it is pulled by standard specimen at specified speed and temperature.

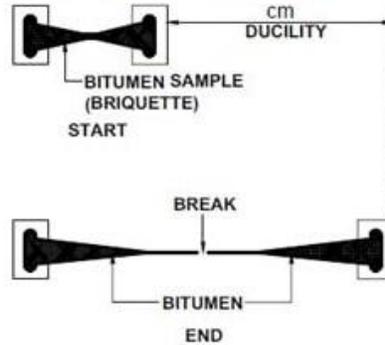
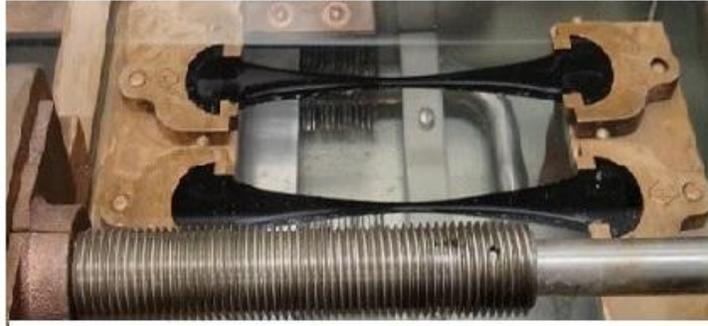
APPARATUS :

Briquette mould, (length – 75mm, distance between clips – 30mm, width at mouth of clips – 20mm, cross section at minimum width – 10mm x 10mm), Ductility machine with water bath a pulling device at a precalibrated rate, a putty knife, thermometer.

PROCEDURE

1. Melt the bituminous test material completely at a temperature of 75°C to 100°C above the approximate softening point until it becomes thoroughly fluid
2. Strain the fluid through IS sieve 30.

3. After stirring the fluid, pour it in the mould assembly and place it on a brass plate
4. In order to prevent the material under test from sticking, coat the surface of the plate and interior surface of the sides of the mould with mercury or by a mixture of equal parts of glycerin and dextrin
5. After about 30 – 40 minutes, keep the plate assembly along with the sample in a water bath. Maintain the temperature of the water bath at 27°C for half an hour.
6. Remove the sample and mould assembly from the water bath and trim the specimen by leveling the surface using a hot knife.
7. Replace the mould assembly in water bath maintained at 27°C for 80 to 90 minutes
8. Remove the sides of the moulds
9. Hook the clips carefully on the machine without causing any initial strain
10. Adjust the pointer to read zero
11. Start the machine and pull two clips horizontally at a speed of 50mm per minute
12. Note the distance at which the bitumen thread of specimen breaks.
13. Record the observations in the proforma and compute the ductility value report the mean of two observations, rounded to nearest whole number as the “Ductility Value”



RECORD AND OBSERVATIONS:

- I. Bitumen grade = _
- II. Pouring temperature oC =
- III. Test temperature oC =
- IV. Periods of cooling, minutes =
 - a) In air =
 - b) In water bath before trimming =
 - c) In water bath after trimming =

RESULT:

The Ductility value of given bitumen is _____

VIDEO URL: <https://www.youtube.com/watch?v=TE8zYxUJHt0>