

## المحاضرة الثامنة

## تجربة رقم ( ١٠ ) فحص الفقدان بالتسخين

## Loss on Heating Test

Test Conditions:

- 50 gm of asphalt heating for 5hrs at 163 °C.

References: ASTM D1754-02 and AASHTO T 47-05: "Standard test method effect of heat and air on asphalt materials (thin- film oven test)" .

Apparatus:

1. Oven with rotating shelf "ASTM Standard", see Fig. ( 6 ).
2. Containers "metal or glass" 55 mm in diameter and 35 mm depth, see Fig. (7 ).
3. Thermometer.
4. Balance.



Figure ( 6 )



Figure ( 7 ) Containers

## Procedures .

1. Heat a suitable amount of bitumen to temperature of 150° C, and pour (50 ±0.5) gm of the bitumen in the specified container but avoid the air bubbles in the sample, and weight to the nearest 0.01 gm. This will be W1.
2. Bring the oven to a temperature of 163 °C and place the container with the sample, then close the oven and rotate the shelf.
3. Maintain the temperature at (163 ±1) °C for 5 hours, after the sample has been introduced. The 5- hrs period shall start when the temperature reach 162 °C but the total time in oven shall in no case exceed 5hrs and 15 min. The rate of shelf rotating is of 5 to 6 rpm.
4. Remove the sample container from the oven; cool to room temperature and weight to the nearest 0.01 gm. This is W2.
5. Empty the containers into a larger one stir combined residue thoroughly and prepare it for penetration and ductility test.

## Calculations.

1. Find the loss in mass for each sample from:

$$\% \text{loss in mass} = \frac{w1-w2}{w1} * 100$$

Where:

W1=weight of the sample before TFOT (gm)

W2= weight of the sample after TFOT (gm)

Report the average value.

2. Find the penetration and ductility of the residue expressed as percent of the original penetration.

$$\text{Retained Penetration (\%)} = \frac{\text{Pen. after TFOT}}{\text{Pen. before TFOT}}$$

$$\text{Retained Ductility (\%)} = \frac{\text{Duc. after TFOT}}{\text{Duc. before TFOT}}$$

<b>Grade of Bitumen :</b>				
<b>Pan No.</b>	<b>Weight of Dish (gm)</b>	<b>Weight of (Sample+ Dish) Before TFOT, (gm)</b>	<b>Weight of (Sample+ Dish) After TFOT, (gm)</b>	<b>% Loss in Mass</b>
<b>A</b>				
<b>B</b>				
<b><i>Penetration after TFOT</i></b>				
<b><i>Ductility after TFOT, cm</i></b>				