STANDARDS ASSOCATION OF AUSTRALIA

Australian Standard METHODS OF TESTING BITUMEN AND RELATED ROADMAKING PRODUCTS

AS 2341.15 DISTILLATION OF CUTBACK BITUMEN*

1 SCOPE. This standard sets out a procedure intended to give approximate information concerning volatile constituents in cutback bitumens and to provide a means for separating the bitumen component from the more volatile constituents and quantitatively determining same.

NOTES:

1. The residue from distillation may need to be retained for measurement of dynamic viscosity at 60°C, apparent viscosity at 25°C and matter insoluble in toluene, and for rolling thin film oven (RTFO) treatment followed by measurement of ductility at 15°C.
2. The results of the physical examination of the residue after distillation are not necessarily characteristic of the original bitumen component nor of the residue which may be left at any particular time after the cutback bitumen has been applied.

2 REFERENCES. This standard requires reference to the following standards:

BS 658	Apparatus for the Determination of Distillation Range (including Flasks and Receivers)
IP Standard Thermometers	
IP 27	Distillation of Cutback Asphaltic (Bituminous) Products

3 PRINCIPLE. The sample is distilled without rectification at a specified rate to a temperature of 360°C, the volume distilling at various temperatures being noted. The residue from the distillation is retained and tested as required.

4 APPARATUS. The following items of apparatus are required:

(a) *Distillation flask.* A side-neck glass distillation flask (see Fig. 1) having the following dimensions:

Capacity of bulb to base of neck ..... 455 ± 12 mL
Diameter of neck, inside ..... 25 ± 1.2 mm
Diameter of tubulature, inside . 10 ± 0.5 mm
Height of flask, outside ..... 135 ± 5.0 mm
Vertical distance bottom of bulb, outside, to horizontal tangent at tubulature, inside..... 105 ± 3.0 mm
Length of tubulature..... 220 ± 5.0 mm
Angle of tubulature..... 75 ± 3.0 degrees
Thickness of tubulature wall .....1.0 mm to 1.5 mm

(b) *Condenser.* A condenser tube of tapered glass having a suitable form and the following dimensions:

Outside diameter of small end. 12.5 ± 1.5 mm
Outside diameter of large end . 28.5 ± 3.0 mm
Length ..... 360.0 ± 4.0 mm
Length of tapered portion ... 100.0 ± 5.0 mm
Thickness of walls ..... 1.0 mm to 1.5 mm

The condenser tube shall normally be fitted with a water jacket 200 mm to 220 mm in length, but this may be dispensed with provided that the operator is satisfied that no vapour loss will result during the distillation.

(c) *Adaptor.* A heavy-wall (1 mm) glass adaptor with reinforced top, having an angle of approximately 105 degrees. The inside diameter at the large end shall be 18 mm approximately and at the small end not less than 5 mm. The lower surface of the adaptor shall be on a smooth descending curve from the larger end to the smaller. The inside line of the outlet end shall be vertical and the outlet shall be cut or ground (not fire polished) at an angle of 45 ± 5 degrees to the inside line.

(d) *Shield.* A galvanized steel shield, lined with 3 mm asbestos, and fitted with transparent mica windows, of the form and dimensions shown in Fig. 2 shall be used to protect the flask from air currents and to prevent radiation. The cover (top) may be of asbestos cement made in two parts, or it may be of galvanized steel lined with 3 mm asbestos.

NOTE: Shields complying with IP 27 may be used since results are not affected; however, the mica windows permit better observation of the distillation.

(e) *Receiver.* A 100 mL Crow receiver complying with BS 658.

(f) *Residue container.* A metal container of approximate dimensions 1.6 mm thickness, 75 mm diameter and 55 mm depth, and provided with a lid.

(g) *Thermometer.* A thermometer complying with IP 6C.

*From IP 27, Distillation of cutback Asphaltic (Bituminous) Products.