

## ACME-101 RING AND BALL APPARATUS

IS: 1205- 1958

This apparatus is used to determine softening point of bitumen. Ring and ball apparatus is used to determine softening point. It is that temperature at which a sample of bituminous material loaded by a 9.5 mm diameter steel ball, drops at a distance of 25 mm.

**Specifications :** The apparatus consists of steel bracket with a sliding plate support.

This support has two holes of 10 mm diameter on which a Ring and Ball guide can be kept.

A central hole on this plate is for inserting thermometer. Supplied with a glass beaker approximate 8.5cm. I.D., 12cm high and a hand stirrer and 2 nos. 9.5 mm diameter steel balls.



ACME-101

## ACME-102 RING AND BALL APPARATUS (ELECTRICAL)

IS: 1205- 1958, IP : 58163.

Same as above but supplied with a thermostatic hot plate. Suitable for operation on 230 V A.C.

**Accessories :** Thermometer IP 60 c range -20 C to 80 C x 0.2°C, Thermometer IP 61 c range 30 C to 300 C x 0.5 C, Electrical Stirrer with stand and blades to gently stir water in the beaker. Suitable for operation on 230 V A.C.



ACME-102

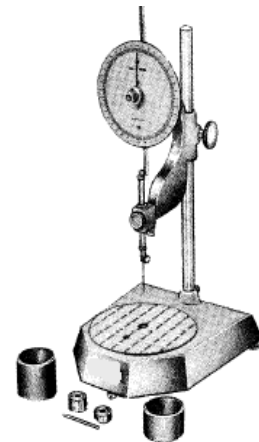
## ACME-103 STANDARD PENETROMETER

IS: 310, 1203, 1448, IP: 60, 49, 50, ASTM : 05, D217, D637.

Used to determine grade of bitumen. The penetration tests determine consistency of bitumen for the purpose of grading. Depth in units 1/10 of millimeter to which a standard needle having a standard weight will penetrate vertically in a duration of five seconds at a temperature of 25°C determines penetration for gradation.

**Specifications :** It consists of a vertical pillar mounted on a base provided with leveling screws. The head, together with diameter plunger rod and cone (or needle) slides on a pillar and can be clamped at any desired height. A rack and pinion and pointer assembly provides fine adjustment of needle or cone tip to sample. It incorporates a clutch mechanism which makes reading of penetration and subsequent resetting a simple and accurate operation. The dial is graduated in 400 1/10 and the millimeter subdivisions and the needle pointer against figures makes easy reading. Supplied with a bitumen penetration needle, ring weight one each 50 gms. and 100 gms. and two sample containers

**Accessories :** penetration cone for empirical estimation of penetration of lubricating Grease, Petroleum jelly etc.



ACME-103



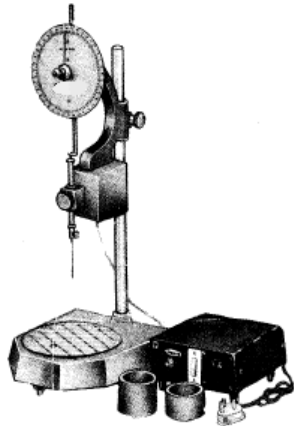
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## ACME-104 AUTOMATIC STANDARD PENETROMETER

Same as above but supplied with transistorized timer and electro-magnet incorporated in the clutch mechanism to accurately control penetration time to exact five seconds.

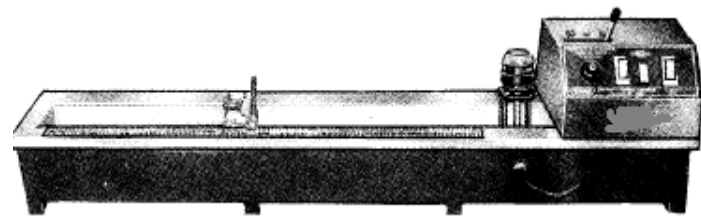
ACME-104

## ACME-105 DUCTILITY TESTING APPARATUS

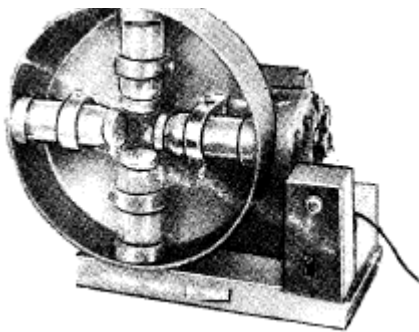
IS: 1 208-1958, ASTM : D 1 13, IP 32,55.

In flexible pavement construction, bitumen binders are used. It is important that bituminous material forms ductile thin film around the aggregates, which serves as a binder. The binder material not of sufficient ductility renders pervious pavement surface and leads to development of cracks: Therefore it is important to carry out the ductility tests on bituminous material.

Specifications : The apparatus consists of a Water bath with a thermostatic heater, and a circulating pump to maintain uniform water temperature. One half of the briquette moulds is fixed on a fixed plate in the water bath, the other half of the briquette mould is fixed to a carrier which slides over a rotating threaded shaft with a clutch. The motor and gears to rotate the shaft are housed in a cabinet fixed above the other end of the bath. A pointer fixed to the carrier moves over a scale graduated from 0 - 10 cm x 1 mm fixed on the bath with "0" (zero) of the scale towards the fixed plate side. The rotating shaft has 2 speeds of travel for the bracket, 5 cm/min. and 1 cm/min., selected by a clutch. Water bath inside is aluminum, it is an insulated water bath- Water bath is provided with a drain. A heater with thermostat control is fixed inside the water bath. Control switches for motor, stirrer, heater and indicator lamps are fixed at a convenient place on the water bath. Complete with three briquette moulds and one base plate, all made of brass. Operates on 230 Volts AC, single phase.



ACME-DT105



## ACME-106 STRIPPING VALUE APPARATUS

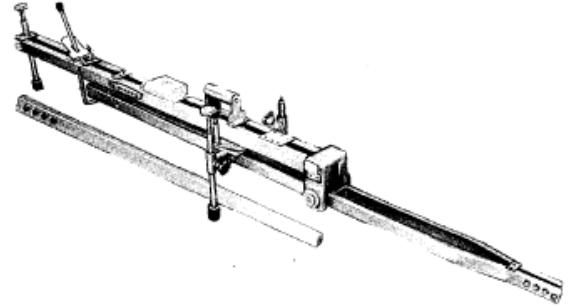
For determining Stripping Value of bituminous mixes having aggregate size 1.0 mm to 75 microns.

Specifications : A circular tray rotates in a vertical plane at a rate of approximately 100 rpm. by an electrical geared motor. 4 bottles of approximately 400 cc are mounted on this circular tray at an angle of 90° to each other with their mouth towards centre of the tray. A time switch is provided. Suitable for operation on 230 Volts A.C. single phase.

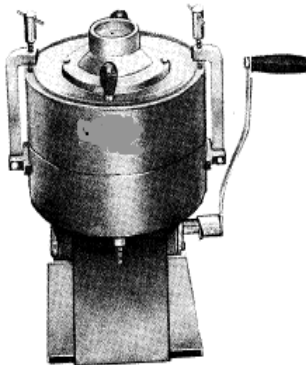
ACME-106

## ACME-107 BENKLEMAN BEAM

This device was developed by U.S. Bureau of Public Roads and is used to measure deflections of flexible pavements. The light weight instrument is supplied in two parts for assembling on site with easy hand tools. In use one end of the beam rests at a point under investigation while the beam is pivoted at the centre. The free end carries a dial gauge to record the deflections. The other end is kept on a stable platform. The beam ratio is 2.1 which magnifies even small deflections. Supplied with a dial gauge 0.01 x 25 mm. This is a light weight dismoentleable instrument and easy to carry.



ACME-07



ACME-108

## ACME-108 CENTRIFUGE EXTRACTOR (HAND OPERATED) ASTM : D2172, AASHO:T'58, T'1 64.

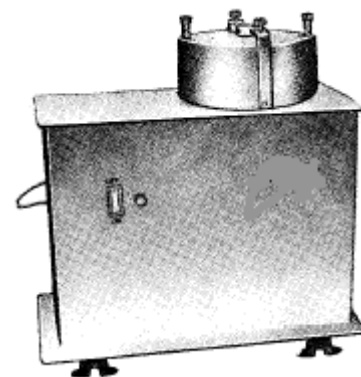
This instrument is used for determination and checking of bitumen percentage in bituminous mix, the mix is added with a solvent and dissolved bitumen is removed by centrifugal action. Consists of a removable aluminum rotor bowl, capacity 1500 gm with a cap and tightening nut.

The bowl assembly is mounted on a vertical shaft which protrudes from a cast housing. This shaft and thus the bowl is rotated fast manually by enclosed gears in the cast body and handle. Solvent is introduced during the test through the holes in the cap of the housing. A drain is provided to collect dissolved bitumen coming out of the rotating bowl and getting collected in the housing

## ACME-109 CENTRIFUGE EXTRACTOR ((MOTORISED)

Same as above but shaft is rotated by an electric motor and gear. Care is taken to prevent solvent entering into the rotor of electrical motor. Operates on 230 Volts A.C, single Phase.

Accessories: 1. Filter paper disc. (Packet of 100 nos.)  
2. Benzene



ACME-109

## **ACME-110 MARSHALL STABILITY TEST APPARATUS ASTM: D 1559-T 62.**

Originally developed by Bruce Marshall, a highway engineer in U.S.A. later on standardized by ASTM: Generally the test is applicable to hot mix designs using bitumen and aggregates upto a maximum size of 25mm. In this method, the resistance to plastic deformation of cylindrical specimen of bituminous mixture is measured when the same is loaded at periphery at 5 cm per min. This test procedure is used in designing and evaluating bituminous paving mixes. The test procedure is extensively used in routine test programs for paving jobs. There are two major features of the Marshall method of designing mixes namely.

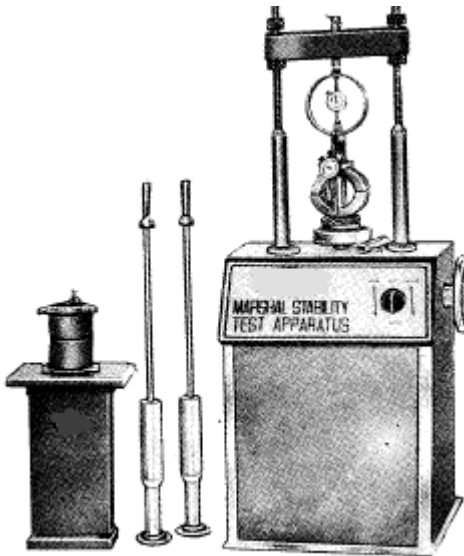
- a) density - voids analysis b) Stability - flow tests

The Marshall stability of mix is defined as a maximum load carried by a compacted specimen at a standard test temperature of 60°C. The flow value is deformation the Marshall test specimen under goes during the loading upto the maximum load, in 0.25 mm units. In this test and attempt is made to determine optimum binder content for the type of aggregate mix and traffic intensity. The apparatus consists of :

- 1) A loading unit motorized, capacity 5000 kgf with two telescopic pillars and an adjustable cross head. Limit switches are fitted inside to control upward or downward movement of the pillars. On-off reversing switch and indicator lamps are on the front side while a hand wheel to manually move the pillars is on the right. The load frame has fixed speed of 5.08cm. per minute. Operated on 230 Volts A.C.
- 2) 1 No. Compaction pedal with specimen mould holder.
- 3) 2 Nos. Compaction Rammers, 4.5 kg weight and free fall 45.7 cm.
- 4) 1 No. Breaking head assembly with provision to fix flow meter.
- 5) 3 Nos. Specimen mould 10.16cm ID x 7.6 cm high with base plate and extension collar-
- 6) 1 No. Kit for specimen extraction, consists of one each load transfer bar, steel ball, specimen extracting Plate.

### **Accessories :**

- (A) Integral type proving ring capacity 3000 kgf
- (B) A dial gauge 0.01 X 25 mm
- (C) Universal water bath S.S. with false bottom and pyramid shaped lid to accommodate 3 Nos. Marshall Specimen.
- (D) Thermometer 0 - 250°C x 1 C.



**ACME-110**