

Aggregate/Bitumen/Asphalt Lab Civil Engineering Lab Equipment

FLAKINESS & ELONGATION TEST

As Per IS 2386 (P-I)

Specification : Aggregates which are flaky and/or elongated will often lower the work ability of a concrete mix and may also affect long term durability. In bituminous mixtures, flaky aggregates make for a harsh mix and may also crack and break up during compacting by rolling. The flakiness of aggregate is determined by measuring the thickness of individual particles. Hence we offer thickness gauge and length gauge to check flakiness and elongation index of the aggregate respectively.



METAL MEASURE

AS PER IS: 2386 (Part- III)

Determines bulk density or unit weight of aggregates.

Specifications: Calibrated cylindrical measures of sheet iron with handles. Consists of 3 measures one each 3 liters capacity, 15 liters capacity and 30 liters capacity. Complete with one tamping rod, round, 16mm dia. and 600mm long, one end rounded



DENSITY BASKET

As Per IS 2386 (PART-III) & BS 812

For Density Tests on Aggregates as per Procedure Laid Down.

Specification: Made of Brass/GI with Stainless steel Wire Mesh 6.3mm/4.75mm size Ruggedly Constructed, Approximately 20cm dia x 20cm high. Complete with Handle.



RIFFLE SAMPLE DIVIDER

As Per IS: 1607-1960

Specification : Riffle sample divider is required for the rapid collection of true representative samples from aggregates, sand and fillers. Riffle Sample Divider consists of a metal box fitted with a series of chutes of equal width which discharge the material alternatively in opposite directions into separate pans. The chutes of the riffle are steep enough to allow rapid flow of the material. The sample divider is supplied with two containers and a sampling scoop



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AGGREGATE CRUSHING VALUE

As Per IS 2386 (P-IV)

Specification :The selection of proper aggregate for a given application is essential to attain the desired quality. Various characteristics are required to be determined for the selection of appropriate aggregate from the wide range available. Aggregate crushing value test apparatus is used for measuring resistance of an aggregate to crushing. Made of Mild Steel comprising of: Cylindrical Cell, 150mm internal dia x 130 to 140mm height, Plunger, 148mm dia x 100 to 115mm height, Base Plate, 200 to 230mm square x 6mm thickness, Tamping Rod, 16mm dia x 450 to 600mm length. Metal Measure, 110mm internal dia x 180mm height



AGGREGATE IMPACT TESTER

As Per IS 2386 (P-IV)

Specification :Aggregate Impact Value Test Apparatus is used for determining the aggregate impact value. The Sturdy Construction consists of a base and support columns to form a rigid framework around the quick release trigger mechanism to ensure an effective free fall of the hammer during test. The free fall can be adjusted through 380 ± 5 mm. The hammer is provided with a locking arrangement. Aggregate impact value test apparatus is supplied complete with a cylindrical measure of 75mm dia x 50mm depth, an automatic blow counter and a tamping rod.



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SPECIFIC GRAVITY / BUOYANCY BALANCE

As Per IS: 2386 (Part III)

Specification :The density of hardened concrete specimens such as cubes and cylinders can be quickly and accurately determined using a Specific Gravity / Buoyancy Balance. The apparatus consists of a rigid support frame, incorporating a water tank mounted on a platform. A mechanical lifting device is used to raise the water tank through the frame height immersing the specimen suspended below the balance in this Buoyancy Balance. Any type of Electronic Balance fitted with an under bench weighing facility can be fitted. The balance supplied can also be used as a standard weighing device, thus providing a versatile and comprehensive weighing system in the laboratory. (i) Cap. 5 Kg (5000gm) Accuracy 0.5 gm

(500mg) (ii) Cap. 15kg (15000gms) Accuracy 1 gm (1000 mg)






LOS ANGELES ABRASION TESTING MACHINE

As Per IS 2386 (P-IV) ASTM: C131, AASHTO T-96

Specification :Los Angeles Abrasion Testing Machine is used for determining the resistance to wear of small size coarse aggregates and crushed rock. The abrasion testing machine consists of a Closed hollow cylindrical steel drum rotating around its horizontal axis on ball bearing units mounted on a sturdy base framework at a speed of between 30-33 rpm. Supplied complete with subtracting revolution counter to preset the number of revolutions, a sample collection tray for removal of the sample on completion of testing and set of 12 abrasive charges. The los Angeles Abrasion testing machine is fitted with 1 HP Motor. Suitable for Operation on 440V, Three Phase, 50Hz, AC Supply.



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<p>DEVEL ABRASION TESTING MACHINE As Per ASTM D2-33 & IS 2386 (PART IV) For The Determination of Resistance of Aggregates to Wear by Abrasion. Specification : It consists of two hollow cylinders closed at one end and provided with fitting covers at the either end. These cylinders are mounted on a shaft at an angle of 30° with the axis of rotation of the shaft. The shaft rotates at 30-33 RPM. Through a reduction gear operated by a motor and is provided with a revolution counter. Complete with Abrasive Charge consisting of 12 Nos. Hardened steel Balls of 48mm dia. Suitable for operation on 440 Volts, Three Phase, 50 Cycles, A.C. supply. Note : Option of Digital Preset Counter can be provided at an Extra Cost</p>	
<p>DORRY ABRASION TESTING MACHINE As Per BS 812 For Testing Aggregates for Resistance to Abrasion. Specification : It consists of a disc rotating about a shaft connected to a reduction gear box coupled to a motor. The disc rotates at 28-30 RPM. Under the rotating disc is a tray with an outlet to facilitate the removal of sand. Two Conical Hoppers are mounted on a bracket fixed to the circular tray. An arrangement is made for start and stop the flow of sand. Two containers with weights are supplied to keep the specimens pressed against the rotating disc. Suitable for operation on 220 V, 50 cycles, A.C. Supply</p>	
<p>RING & BALL APPARATUS As Per IS 1205 1985, IP 58/63 & ASTM D 36. This apparatus is used to determine Softening point of Bitumen. It is that temperature at which a sample of bituminous material loaded by a 9.5mm dia steel ball, drops a specified distance when heated under specified conditions. Specification : The apparatus consists of steel bracket with a sliding plate support. That support has two holes of 10mm dia 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 600ml, high and a hand stirrer and 2 Nos. 9.5mm dia steel balls. Electrical heating, with a Heater and Energy Regulator, Suitable for operation on 230 V, 50Hz, Single Phase, A.C. supply. Each unit is supplied with bath of heat resistant.</p>	

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STANDARD PENETROMETER

Optional: Automatic also available

As Per ASTM D5, BS 2000

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.

Specification : It consists of a vertical pillar mounted on a base provided with leveling screws. The head, together with dial plunger rod a cone (or needle) slides on a pillar and can be clamped at any desired height. A rack and pinion and pointer assemble 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. two sample containers.

Accessories: Penetration cone for empirical estimation of penetration of lubricating grease, petroleum jelly etc. Balance fitted with an under bench weighing facility can be fitted. The balance supplied can also be used as a standard weighing device, thus providing a versatile and comprehensive weighing system in the laboratory. (i) Cap. 5 Kg (5000gm) Accuracy 0.5 gm (500mg) (ii) Cap. 15kg (15000gms) Accuracy 1 gm (1000 mg)



STRIPPING VALUE APPARATUS

For determining stripping value of bituminous mixes having aggregate size: 1.0mm to 75 micron.

Specification : A circular tray rotates in a vertical plane at a rate of approximately 100 R.P.M. 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 center of the tray. A

time switch is provided. Suitable for operation on 230 V A.C. Single Phase.



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SAY BOLT VISCOMETER

As Per ASTM D88, D244, AASHTO T72

Say bolt Viscometer, Electrically Heated, ASTM D88, D244, AASHTO T72 for the empirical measurement of Say bolt Viscosity of petroleum products at specified temperatures between 70o F and 210o F. This is also used for determining the SayboltFurol Viscosity of bituminous materials at temperatures of 250, 275, 300, 350, 400 and 450 F. It comprises one each of cylindrical Oil cup, Universal Tip, Furol Tip, Bath Fitted with immersion Heater mounted on a stand. Dimmer stat for temperature control, Stirrer with shield. Complete with insulated handle and thermometer support receiving flask, withdrawal tube, filter funnel, thermometer support for cup and circular spirit level. Suitable for operation on 230 V 50 Hz, Single Phase, A.C.



STANDARD TAR VISCOMETER

Electrical Heating with Immersion Heating Elements and Dimmer stat for controlling the temperature. Suitable for operation on 230 V, 50Hz, Single Phase , A.C. supply Complete with 10mm cup and valve. Cup, 10mm Ball Valve, 10mm



CLEAVELAND FLASH POINT & FIRE POINT APPARATUS

This apparatus is used for determination of Flash point & Fire point of Petroleum Products except fuel oil with open cup flash below 80 deg.C as per specification IP 36 and IS: 1448 (P:69) 1969. The apparatus consist of a cup, heating plate to specific dimension thermometer clip & test flame attachment with swivel joint for passing over test liquid surface in the prescribed manner, heating is control by means of energy regulator fitted to the apparatus. Suitable for aspiration on 220 volts 50 cycles AC circuits.



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PENSKY MARTENS FLASH POINT APPARATUS

This is widely used for determination of closed cup Flash Point of Fuel Oil, cut back asphalts, other viscous material and suspension of solids having a flash point about 490C(1200F).The apparatus serve the purpose according to IP 34, ASTM-D-93-58T, IS-1448(P:I) 1960(P:21) and IS 1209/1958 method B. The apparatus consists of Brass Test cup with handle removable cup cover with spring operated rotating shutter having piolet jet, stirrer with flexible shaft. The assembly rests in Air Bath which is covered with Dome shape metal top. The cup is fitted with insulated handle and locking arrangement near cup plunge. The assembly rests on a round shaped heater with different temperature regulation system suitable for operation on 220 Volts AC mains.



CENTRIFUGE EXTRACTOR HAND OPERATED

As Per ASTM D2172, AASHTO T-58, T-164

The 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 gms. 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.



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CENTRIFUGE EXTRACTOR - MOTORIZED

As Per ASTM D2172 AASHTO T-58, T-164

Centrifuge Extractor, Electrical Operation, Capacity 1500g, with a Dimmer stat for speed control from 2,400 to 3,600 rpm. Suitable for operation on 230 V, 50 Hz, Single Phase, A.C. supply. Used for the determination of bitumen percentage in bituminous mixtures. It consists of a removable, precision machined aluminum rotor bowl (accessory 1500 or 3000 g capacity), housed in a cylindrical aluminum box. The separate control panel incorporates an electronic card fitted with AC drive that automatically drives the bowl speed rotation ramp from 0 to 3600 R.P.M. as requested by Standards, with automatic fast stop bowl rotation at the end of the test. Supplied complete with speed regulator and digital display monitoring the frequency. Power supply: 230 V A.C. Single Phase.



BENKELMAN BEAM

As Per AASHTO T 256

Lightweight Aluminum construction, Ease of Transportation, Unique Telescopic Design Simplifying Field set up, Compact, Thereby reducing the amount of storage space needed. Benkelman Beam utilizes the technique of using balanced beam in conjunction with a suitable vehicle to measure road flexure The improved Benkelman Beam is a convenient, accurate device for measuring the deflection of flexible pavements under moving wheel loads. Operating on a simple lever arm principle, the unit consists. Supplied with carrying case.



STRAIGHT EDGE (3 METERS)

A straight edge approximately 3 metres in length may be used to determine lateral surface regularity of a road surface. This lightweight apparatus is made up of mild steel or aluminum as per customers requirement and is equally supported at both ends producing a set height between the road surface & the beam. Any vertical irregularity is measured using incremented wedges.



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DUCTILITY TESTING APPARATUS

As Per IS 1208-1058, ASTM D 113, IP32, 55, AASHTO T 51

Designed to test three specimens simultaneously. The machine consists of a carriage moving over a lead screw. An electric motor driven reduction gear unit ensures smooth constant speed and continuous operation. The entire assembly is mounted with a stainless steel lined water bath completely encased in metal bound hardwood. It is equipped with an electric pump circulator and heater. The temperature is controlled thermostatically. Two rates of travel i.e. 5 cm/min and 1 cm/min are provided. Suitable for operation on 230 V, 50 Hz, Single Phase, A.C. supply.

COMPLETE WITH: Ductility Mould , with Base Plate 3 Nos.

Thermometer IP 38 C, Range: 23o C to 27o C



MARSHAL STABILITY TEST APPARATUS

As Per ASTM: D 1559- T -62.

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 programmers 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, 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 5000kgf 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
 Standard Accessories: Marshal Mould:3 Nos, Marshal Rammer:2 Nos, Pedestal :1 Nos, Braking Head:1 Nos



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MIXER WITH HEATING JACKET

As Per BS 598:107

A 6-litre Mixer Used in conjunction with an Iso Mantle, is suitable for mixing samples of asphalt. Bench mounting Mixer, 6 liter nominal capacity. Supplied with bowl, beater and whisk. Motorised with two speed operated on 230 V A.C., Single Phase.

ISO Mantle Electric Heater: For use of Bench Mounting mixer. For 230 VAC.,50Hz, Single Phase.



AUTOMATIC COMPACTOR

As Per BS 598-107

Automatic Compactor for Bituminous Mixes Rugged construction to withstand hard work Fully automatic and easy to operate Uniform compaction Automatic Preset Blow Counter Specification : The Automatic Compactor eliminates the laborious process of manual compaction and an even degree of compaction is achieved. The driven mechanism lifts the weight of 4.5kg and drops it through a correct height of 457 mm. The rammer foot is removable, which facilitates preheating. A compaction pedestal with specimen holder is fixed to the base. An Automatic Blow counter enables the number of blows to be present before each test and automatically stops the machine on completion. Suitable for operation on 230 V, 50 Hz, Single Phase, A.C. supply.



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CORE CUTTING/ DRILLING MACHINE

(Diesel Engine Driven)

Suitable to cut/drill cores of concrete, rocks, stones, tiles or the similar materials. The machine is suitable for core samples of size upto 150 mm diameter with the help of thin walled diamond bits which are at extra cost. The machine has sturdy base with pillar support in which rack and pinion is provided for adjustment in height and penetration assembly. The leveling screws are provided at the base. For gripping the sample in position suitable grips are provided. A suitable diesel engine is fitted in the machine with cooling arrangement with water. The base frame is also fitted with wheels for ease of transportation.

Dimension approx, are as under: Height : 1300 mm, Base : 600 x 1200 mm, Head travel on rack : 350mm, Drill speeds : 900 R.P.M. for soft samples and 350 R.P.M. for hard Samples, Water swivel : Built in the machines. Accessories: (1) Thin wall diamond bits. (2) Core barrel.



CORE CUTTING/ DRILLING MACHINE MOTORIZED

Rated Voltage: ~220 V / 50Hz,

Power Input: 2800W, No-Load Speed: 840rpm, Max. bit diameter: 50mm/100mm/150mm
 Shaft Male: 1 1/4"UNC

Features : 1. Compact size with light weight as well as safety in operation, 2. The drills are equipped with a friction clutch as well as over load current protection for protecting motor, 3. High-strength gear to keep the drill working long hours constantly, 4. Excellent speed, smooth and stability during drilling, 5. Out setting water swivel seal facilitate making replacement when the seal worn out, 6. Bits capacity: 25mm Dia - 150mm Dia Complete Combination : The core drill includes drill motor, base, column, carriage, control panel, friction clutch, motor mount plate, rack, gear-box, out setting water swivel seal, hydraulic system.

Optional parts include water pump, rod for ceiling jack, water container, adapters.
 Application : The Core Drill is the industry standard, designed for concrete, reinforced concrete, Asphalt and brick in construction.



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LOSS ON HEATING/ THIN FILM OVEN

Precise, Hot Air Drying Better Mineral / Blanket Insulation for high Temperature & to avoid heat loss Silent Hot Air Blower, Unique design of Air Circulation provide through out uniform Air movement Unique design of ventilation keeps the surface of the instruments from being Burnt even when the instruments i.e. Oven Temperature maintained at 200°C Polish / Hair Line 304 grade S. Steel sheet interior, long operation, corrosion resistant Kanthal A-1 Super quality coil shaped & Air heater tubular model wound on side/on the back of the Oven for better accuracy Full feature with Digital Temperature Controller cum Indicator having Alarm facility (On Customer request) Toughened Glass view window to observe /Test the material without disturbing the Temperature condition of the chamber. Working Temperature required as per IS : ASTM is 163°C+/- 1°C Provide with detachable metal shaft (Both for Loss on Heating / Thin Film Oven) Reduction gear is fitted from outside rotated by a vertical shaft having 5-6 RPM. Applications : For Bitumen Testing Loss of weight, softening Paint, Penetration Loss of wt. in Bitumen & Flux Oils (For Construction / Road Projects Department / Industries) Specifications : Size: 16" x 16" x 16", Capacity: 60 ltr, Heater Wattage: 1.5 KW

