

## TRANSPORTATION LABORATORY EQUIPMENTS



**Universal Testing Machine**

- Used for various performance tests on asphalt mixture samples.
- ASTM D7369; EN 12697; etc



**Gyratory Compactor**

- Used to perform mixture design according to Superpave design method.
- Combines simultaneous action of selected vertical static compaction and of the shearing action resulting from the rotation of the mould on its inclined axis.
- ASTM D6307; AASHTO TP-4; EN 12697-31.



**Dynamic Shear Rheometer (DSR)**

- Used for testing asphalt bitumen to determine its various rheological properties.
- AASHTO T315-10



**British Pendulum Tester**

- Used in the design and maintenance of public highways and to test the frictional and skid resistance of new roads, road markings and iron works.
- AASHTO T 278; AASTM D3319.

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### **MARSHALL Impact Compactor**

- Designed for the preparation of bituminous specimens for Marshall stability and flow tests.
- ASTM D 1559, D 6926; AASHTO T245.



### **MARSHALL Stability Tester**

- Designed to determine the maximum load and flow values of bituminous mixtures.
- ASTM D1559, D5581, D6927, D6931; AASHTO T245, T283; EN 12697-44



### **Thermal Stress Restrained Specimen Test Machine (TSRST)**

- Designed for testing thermo-volumetric properties and thermal cracking resistance of asphalt concrete mixtures.
- ASHTO TP 10-93.



### **Standard Penetrometer**

- Used for specifying the penetration grade of asphalt bitumen.
- The amount of penetration to bituminous sample defines its consistency expressed as the distance in tenths of a millimeters that a standard needle penetrates vertically into a specimen of the bituminous sample under specified conditions of temperature, load and duration of loading.
- ASTM D5/D5M; AASHTO T 49

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### Rotational Viscometer

- Used to determine the viscosity of asphalt binders in the high temperature range of manufacturing and construction. This measurement is used in the Superpave PG asphalt binder specification.
- AASHTO T 316; ASTM D 4402



### Flash and Fire Point Tester

- Used to determine the minimum temperature up to which bitumen sample can be exposed. Once the minimum temperature limit is exceeded, the asphalt bitumen demonstrate flash and catch fire.
- ASTM D92; AASHTO T48.



### Softening Point Apparatus

- Used for determining softening point of bituminous materials by ring and ball method.
- ASTM D36-06; AASHTO T53.



### Los Angeles Abrasion Tester

- Used for the determination of aggregate resistance to fragmentation.
- ASTM C131, C535; AASHTO T96; EN 1097-2, 12697-17, 13450

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### Bitumen Oven for Thin Film Oven Test

- Simulates short-term aging by heating a film of asphalt binder.
- AASHTO T 179; ASTM D 1754



### Bitumen Oven for Rolling Thin-Film Oven Test

- Provides simulated short term aged asphalt binder for physical property testing. The RTFO also provides a quantitative measure of the volatiles lost during the aging process.
- AASHTO T 240; ASTM D 2872



### Vacuum Oven for SARA Analysis

- Used to help separation of four defined fractions from petroleum asphalts. The four fractions are defined as saturates, aromatics, resins and asphaltenes.
- ASTM D4124



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### Standard Proctor Test Apparatus

- Determine the compaction of different types of soil and the properties of soil with a change in moisture content.
- AASHTO T99-86; ASTM D698-91



### Vibratory Hammer for Compaction of Soil

- Used for preparing test specimens of road base and subbase materials and bituminous mixtures by vibrating hammer.
- EN 13286-4; BS 1377:4 / EN 12697-9, 12697-10, 12697-32.



### Laboratory Mixer

- Designed for mixing of soil and asphalt samples to be used for mechanical tests such as compaction, indirect tensile, Marshall etc.
- EN 12697-35.



### Sieve Machine

- Used to perform mechanical sieving of granular soil and paving materials.

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### Laboratory Ovens

- Used for drying and heating various laboratory specimens such as aggregate, asphalt, soil, etc.
- EN 932-5, 1097-5; ASTM C127, C136, D558, D559, D560, D698, D1557, D1559 BS 1377:1, 1924:1