Construction Materials Testing Products

CATALOG 2026

High Precision

Our equipment is designed to deliver precise measurements, ensuring the reliability of test results.

Durability

Built to withstand harsh testing environments, our products are robust and long-lasting.

Innovation

We constantly integrate the latest technologies into our products to meet the evolving needs of the construction industry.

Customer Support

Our dedicated team provides comprehensive support and training to ensure you maximize the benefits of our products.

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Introduction

Cantrol is a leading innovator in the field of construction material testing equipment. Founded in the principles of precision, reliability, and advancement, Cantrol has carved a niche for itself by delivering high-quality testing solutions that meet the rigorous demands of the construction industry.

What We Do

At Cantrol, we specialize in designing, manufacturing, and supplying an extensive range of advanced testing equipment that caters to a variety of construction materials such as concrete, asphalt, soil, and aggregates. Our products are engineered to provide accurate and consistent results, ensuring that construction projects adhere to both national and international standards.

Our Mission

Our mission is to empower construction professionals with the tools they need to verify the quality and durability of their materials, thereby contributing to the safety, efficiency, and success of construction projects worldwide. We are committed to innovation, continuous improvement, and customer satisfaction.

Commitment to Quality

Quality is at the heart of everything we do at Cantrol. We adhere to strict quality control processes to ensure that every piece of equipment we produce meets the highest standards of accuracy and reliability.

Concrete Testing Equipment
Product Selection Guide

This guide is designed to help you select the appropriate concrete testing equipment for your specific needs. Choosing the right equipment is crucial for ensuring accurate and reliable test results, which are essential for quality control, research, and compliance with industry standards. Here's a breakdown of common concrete properties and the equipment used to test them:

- **Compressive Strength:**
  - **Test:** Compression Test
  - **Equipment:** Compression Testing Machine, Concrete Cylinder Molds, Capping Compound/Grinder
  - **Considerations:** Machine capacity (kN), platen size, data acquisition capabilities, standards compliance (ASTM C39, EN 12390).
- **Flexural Strength (Modulus of Rupture):**
  - **Test:** Flexural Test (Beam Test)
  - **Equipment:** Flexural Testing Machine (Beam Testing Machine)
  - **Considerations:** Machine capacity, adjustable span length, loading rate control, standards compliance (ASTM C78, EN 12390).
- **Workability/Consistency:**
  - **Test:** Slump Test, Flow Table Test (for SCC)
  - **Equipment:** Slump Cone, Tamping Rod, Base Plate, Flow Table
  - **Considerations:** Adherence to standard dimensions (ASTM C143, EN 12350-2 for Slump; EN 12350-5 for Flow Table).
- **Air Content:**
  - **Test:** Air Entrainment Test (Pressure Method)
  - **Equipment:** Air Entrainment Meter
  - **Considerations:** Measurement range, accuracy, standards compliance (ASTM C231, EN 12350-7).
- **Permeability:**
  - **Test:** Permeability Test
  - **Equipment:** Permeability Testing Apparatus
  - **Considerations:** Test method, cell pressure capabilities, standards compliance (EN 12390-8).
- **Durability:**
  - **Tests:** Freeze-Thaw Resistance, Chloride Penetration Resistance, Sulfate Attack Resistance
  - **Equipment:** Freeze-Thaw Chamber, Chloride Migration Test Apparatus, Curing Tanks/Rooms
  - **Considerations:** Temperature and humidity control for curing, temperature cycling capabilities for freeze-thaw, standards compliance (ASTM C666, ASTM C1202).

- **Concrete Cylinder Molds:** Choose appropriate sizes and materials (steel, plastic, or …).
- **Capping Compound/Grinder:** For preparing smooth and even surfaces on concrete cylinders for compression testing.
- **Curing Tanks/Rooms:** For maintaining controlled temperature and humidity for curing concrete specimens.
- **Laboratory Mixers:** For preparing concrete mixes in the laboratory.
- **Vibrating Tables:** For consolidating fresh concrete in molds.
- **Ovens and Balances:** Essential for various concrete testing procedures.

Concrete Compression Machines

This high-capacity compression testing machine is designed for accurately determining the compressive strength of concrete cylinders, cubes, and other construction materials. It features a robust frame, a precision hydraulic loading system, and a user-friendly digital or touch control panel. In advanced model, the automatic loading control ensures consistent and repeatable test results, while the data logging capabilities allow for easy data analysis and reporting. This machine is ideal for quality control in construction projects, research in material science, and educational purposes.

Specifications:

- Capacity: 1200/1500/2000/3000 kN (270/338/450/675 klbs)
- Loading Rate: adjustable, manual or with closed-loop servo control for precise rate maintenance
- Platen Size: 300mm diameter (12 inches), hardened steel
- Vertical Clearance: 350mm (14 inches)
- Horizontal Clearance: 350mm (14 inches)
- Piston Stroke: 50mm (2 inches)
- Data Acquisition :7” Touch screen display with real-time load and stress display, USB output for data transfer to PC. Software included for data acquisition, analysis, report generation, and exporting to various formats (e.g., CSV, Excel).

- Power Supply: 120/220V, 50/60Hz, single-phase
- Dimensions: 820mm x 470mm x 1350mm (L x W x H)
- Weight: 500-800 kg (approx.)
- Standards Compliance: ASTM C39, EN 12390, CSA A23.2-9C

Optional Accessories: Compression platens of various sizes (e.g., for cubes, beams), traceable calibration certificates, extensometers for strain measurement.

Flexural Testing Device

Designed to determine the flexural strength (modulus of rupture) of concrete beams and other flexural specimens. This machine features adjustable support spans and a precise loading system to ensure accurate and repeatable test results.

Specifications:

- Span Length: Adjustable from 100mm to 1500mm (4 to 59 inches)
- Sample Size: 150×150×750mm /100×100×500 mm
- Support Rollers: Hardened steel, with adjustable spacing
- Weight: 14 kg
- Standards Compliance: ASTM C78, EN 12390-5

Fully Automatic GFRC Flexural

This machine is designed for automated and precise flexural testing of Glass Fiber Reinforced Concrete (GFRC) specimens. It provides consistent results, reduces operator error, and ensures compliance with industry standards.

Specifications:

- Capacity: 50 kN (Maximum load)
- Resolution: 10 N
- Loading Rate: 0.4-8 mm/min (Adjustable range)
- Displacement Measurement: Encoder
- Stroke: 50 mm
- Data Acquisition: 7” Touch screen display
- Displacement Accuracy: 0.01 mm
- Test Fixture: 3/4-point bending, adjustable span
- Standards: ASTM C947
- Power Supply: 120/220V, 50/60Hz, single-phase

Concrete Splitting Tensile Device

The Splitting Tensile Test Device is an essential accessory designed for use with compression machines to accurately measure the splitting tensile strength of cylindrical concrete specimens.

Specifications:

- Size: 4x8in / 6x12in
- Material:Galvanized steel

Concrete Cylinder Molds

Used to cast concrete cylinders for compression testing. Available in various sizes to meet different testing standards.

Specifications:

- Material: Galvanized Steel or Plastic
- Sizes: 100x200mm (4x8 inches), 150x300mm (6x12 inches), and other sizes as per standards
- Standards Compliance: ASTM C31, EN 12390-1

Concrete Cube Molds

Concrete cube molds are essential tools used in the construction industry to determine the compressive strength of concrete. By casting concrete into these standardized molds, engineers and technicians can accurately assess the material's strength and ensure it meets project specifications.

Specifications:

- Material: ABS plastic
- Dimensions: 150x150x150mm (6" x 6" x 6")

Flexural Molds

Flexural Apparatus, made of galvanized steel. Can perform 3-points or 4-points flexural tests on concrete beam specimens 100 x 100 x 500 mm,150 x 150 x 750 mm, EN 12390-5 ASTM C78 ASTM C293 AASHTO T97 BS 1881:118

Specifications:

- Material: Galvanized Steel
- Dimensions: 100x100x500 mm

Concrete Mixer (Laboratory Scale)

Used for mixing small batches of concrete in the laboratory for mix design and testing.

Specifications:

- Drum Capacity: 60, 100, 160 liters.
- Motor Power: 1.1, 3, 4 kW.
- Power Supply: 120/220V, 50/60Hz, single-phase or 380/415 V, 50/60 Hz 3-phase.

Vibrating Table

Used to consolidate fresh concrete in molds, removing entrapped air and ensuring uniform density.

Specifications:

- Table Size: 700x700mm
- Amplitude: 0.5-1.2 mm
- Power Supply: 120/220V, 50/60Hz, single-phase

Slump Test Sets

Slump tests assess fresh concrete's workability, measuring its consistency and ease of placement.

Specifications:

- Slump Cone:
  - Material: Stainless Steel/ Galvanized Steel/Plastic.
  - Dimensions: 12" height, 8" base diameter, 4" top diameter.
- Tamping Rod:
  - Material: Steel.
  - Dimensions: 24" long, 3/4" or 5/8" diameter.
- Base Plate:
  - Material: Steel.

Air Entrainment Meters

Air entrainment meters are used to measure the amount of air entrained within a concrete or mortar mixture.

Specifications:

- Model: 2615016
- Volume: 6 / 7 lit
- Test Method: Type A / B
- Material: Steel / Aluminum

Concrete Curing Cabinet

A concrete curing cabinet is a controlled environment used to maintain optimal temperature and humidity levels for curing concrete specimens. Proper curing is crucial for achieving the desired strength, durability, and other performance characteristics of concrete. These cabinets ensure consistent and standardized curing conditions, especially for laboratory testing and quality control.

Specifications:

- Temperature Control: Precise digital control, maintaining a constant temperature 10-50 °C.
- Humidity Control: High humidity levels, from ambient to 95% relative humidity.
- Air Circulation: Internal fans to ensure uniform temperature and humidity distribution within the cabinet.
- Material: Durable, corrosion-resistant materials.
- Capacity: 350/700 lit.
- Shelving: Adjustable or fixed shelving to accommodate different specimen sizes and shapes.
- Power Supply: 120/220V, 50/60Hz, single-phase

Water Curing Tank

Heavy Duty Polyethylene Rectangular Water Curing Tank will be used for curing of concrete and cement samples. The Analogue or Digital Thermostatically Controlled Heater should be ordered separately.

Specifications:

- Capacity: 500 Lit. (132 Gal)
- Material: Heavy Duty Polyethylene
- Dimension: 1100×1000×440 mm
- Controller: Digital/Analogue
- Power Supply: 1000 W,120/220V, 50/60Hz, single-phase

Automatic specimens End Grinder

An Automatic Specimen End Grinder is a machine used to prepare material samples for testing by grinding their ends to create smooth, parallel surfaces. This ensures accurate and reliable test results.

Specifications:

- Specimen Size: 3 pcs of 100×200 mm (4×8”), 2 pcs of 150×300mm (6×12”).
- Grinding Wheel: a 230mm diamond grinding wheel.
- Planeness accuracy : 0.05mm.
- Automation: Features automated specimen feeding, grinding, and coolant application.
- Grinding Rate: Adjustable 0.5-1.5 mm/min.
- Coolant System: Integrated coolant system to prevent overheating and ensure smooth grinding.
- Safety Features: Includes safety guards and emergency stops.
- Power Supply: 120/220V, 50/60Hz, single-phase

Unbonded capping

Unbonded capping is a method used in concrete compressive strength testing to create a uniform bearing surface on concrete cylinder specimens. Unlike traditional capping methods that involve bonding a material (like sulfur or gypsum) to the cylinder end, unbonded capping uses reusable neoprene pads confined within steel rings.

Specifications:

- **Pad Material:** neoprene with specific hardness (durometer) requirements.
- **Retainer Rings:** Steel rings designed to confine the neoprene pads and prevent lateral expansion under load.
- **Specimen Size:** standard concrete cylinder sizes (e.g., 6x12 inches, 4x8 inches).
- **Reusability:** Pads and rings are reusable, making it a more economical option than bonded capping.
- **Standard Compliance:** ASTM C1231/C1231M.

Aggregate Testing Equipment Product Selection Guide

This guide will help you select the right aggregate testing equipment for your specific needs. Accurate aggregate testing is crucial for ensuring the quality and performance of construction materials like concrete, asphalt, and road base. Here's a breakdown of common aggregate properties and the equipment used to test them:

- **Particle Size Distribution (Gradation):**
  - **Test:** Sieve Analysis
  - **Equipment:** Sieves (various sizes), Sieve Shaker, Scales/Balances, Sample Splitter
  - **Considerations:** Sieve sizes (mesh openings), shaker type (mechanical, vibratory), capacity of the shaker, accuracy of the scales, standards compliance (ASTM C136, EN 933-1).
- **Specific Gravity and Absorption:**
  - **Test:** Specific Gravity and Absorption Test
  - **Equipment:** Wire Baskets, Water Tanks, Drying Oven, Scales/Balances
  - **Considerations:** Capacity of the baskets, temperature control of the oven, accuracy of the scales, standards compliance (ASTM C127 for coarse aggregate, ASTM C128 for fine aggregate).
- **Abrasion Resistance:**
  - **Test:** Los Angeles Abrasion Test, Micro-Deval Test
  - **Equipment:** Los Angeles Abrasion Machine, Micro-Deval Apparatus
  - **Considerations:** Drum dimensions and rotation speed (for LA Abrasion), abrasive charge (steel spheres or rods), standards compliance (ASTM C131, AASHTO T96 for LA Abrasion; EN 1097-1 for Micro-Deval).
- **Soundness (Resistance to Weathering):**
  - **Test:** Sodium Sulfate or Magnesium Sulfate Soundness Test
  - **Equipment:** Containers for soaking aggregates, Drying Oven, Scales/Balances
  - **Considerations:** Solution concentration, number of cycles, temperature control of the oven, standards compliance (ASTM C88).
- **Shape and Texture:**
  - **Tests:** Flat and Elongated Particles, Angularity
  - **Equipment:** Proportional calipers, Aggregate Shape Tester
  - **Considerations:** Accuracy of measurement tools, standards compliance (ASTM D4791).

- **Sample Splitters:** For obtaining representative samples.
- **Drying Ovens:** For drying aggregates to a constant weight.
- **Scales and Balances:** For accurate weighing of samples.
- **Containers and Trays:** For handling and storing aggregates.
- **Brushes and Cleaning Tools:** For cleaning sieves and other equipment.

Micro-Deval Testing Apparatus

Measures the resistance of aggregates to abrasion and degradation in the presence of water.

Specifications:

- Abrasive Charge: 5 kg Steel balls.
- Drum Speed: 100±5 rpm
- Standards Compliance: EN 1097-1
- Power Supply: 120/220V, 50/60Hz, single-phase

Los Angeles Abrasion Machine

Evaluates the abrasion resistance of coarse aggregates, a critical property for pavements and other applications.

Specifications:

- Drum speed: 30-33 rpm.
- Charges: 12 steel balls.
- Power Supply: 120/220V, 50/60Hz, single-phase

Drying Ovens

Used for drying samples at controlled temperatures.

Specifications:

- Temperature Range: Ambient to 230°C
- Capacity: 100/200/300 lit
- Power Supply: 120/220V, 50/60Hz, single-phase

Sieves

Sieves are essential tools used to determine the particle size distribution (gradation) of aggregates like sand, gravel, and crushed stone. This analysis is crucial in construction for ensuring the quality and performance of concrete, asphalt, and other building materials. A set of sieves with progressively smaller openings is used to separate the aggregate into different size fractions.

Specifications:

- Sieve Sizes/Mesh Openings: Available in a range of standard sizes, conforming to ASTM E11, ISO 3310-1 from mesh number No. 400 to 5".
- Frame Diameter: 8 inches (203 mm) and 12 inches (305 mm).
- Frame Material: stainless steel.
- Mesh Material: woven wire cloth made of stainless steel.
- Standard Compliance: ASTM E1, ISO 3310-1.

Sieve Shaker

A sieve shaker is a mechanical device used to agitate a stack of sieves for particle size analysis. It provides consistent and controlled shaking, ensuring accurate and repeatable results when determining the particle size distribution of granular materials. Using a shaker is more efficient and consistent than manual sieving.

Specifications:

- Sieve Capacity: 8" or 12" diameter, up to 11 sieves.
- Shaking Motion: Orbiting & Tilting / Vibrating.
- Timer: adjustable duration.
- Amplitude/Intensity Control: Adjusts the intensity or amplitude of the shaking motion.
- Clamping Mechanism: Securely holds the sieve stack in place during operation.
- Noise Level: low.
- Power Supply: 120/220V, 50/60Hz, single-phase

Riffle Boxes

Riffle boxes (also called sample splitters or Jones splitters) are tools used to reduce a large sample of granular or powdered material into smaller, representative subsamples. They consist of a series of equally spaced chutes (or riffles) that divide the material as it is poured through. This ensures a statistically representative portion of the original sample is collected.

Specifications:

- Number of Chutes/Riffles:12, 16.
- Chute Width: 2, 1, 1/2, 3/8 inch.
- Material: durable, non-corrosive steel.

Universal Sample Splitter

A Universal Sample Splitter is a versatile tool designed to divide a bulk sample of granular material into two or more representative subsamples. Unlike traditional riffle boxes with fixed chutes, these splitters feature adjustable chutes to accommodate a wider range of particle sizes and sample volumes. This makes them adaptable to various materials and testing needs.

Specifications:

- Adjustable Chutes: 1/4″ to 3/4″ openings / 1/2” to 4” openings
- Hopper Capacity: 8/20 liter.
- Material of Construction: made of durable coated steel to resist wear and corrosion.

Screen Shaker

The Aggregate Screen Shaker is a robust and efficient machine designed for separating and classifying various sizes of aggregates, such as sand, gravel, and crushed stone. It is widely used in construction, mining, and material processing industries to ensure precise grading and quality control of materials.

Specifications:

- Screen Size: 1m x 0.5m
- Mesh Sizes: Adjustable 0.1mm to 100mm
- Capacity: 1 cu. ft.
- Frame Material: High-strength steel
- Features: Easy maintenance, durable construction, and customizable screen options.
- Power Supply: 120/220V, 50/60Hz, single-phase

Specific Gravity and Absorption of Fine and Coarse Aggregate

Equipment for determining the specific gravity and absorption of aggregates.

Specifications:

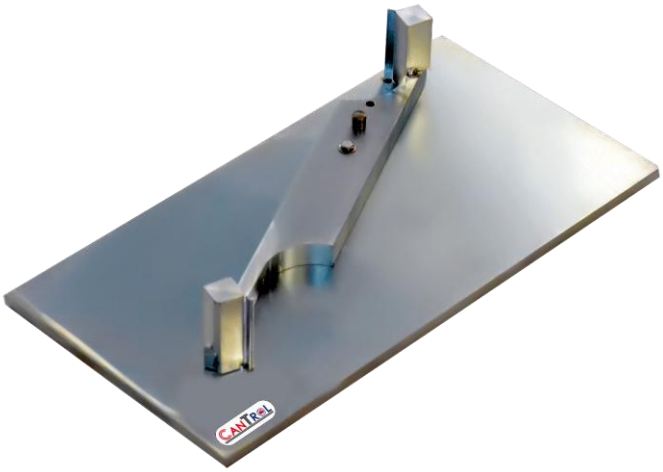
- Includes: Wire basket, water tank, scale.
- Standards Compliance: ASTM C127, ASTM C128

Aggregate Shape Tester

Determines the shape and angularity of aggregates, which influence their workability and strength in concrete.

Proportional Caliper Device

Use to determine the percentage of flat particles, elongated particles, or both flat & elongated particles in coarse aggregates. Ratio desired is obtained by selecting one of four adjustable positions: 2 = l:2; 3 = 1:3; 4 = 1:4; or 5 = 1:5.



Jaw Crusher

The Cantrol Inc. Laboratory Jaw Crusher is recommended for intermittent or continuous pre-crushing of coarse materials. Jaw Crusher has 4x5 1/2in (100x140mm) feed opening for crushing 2 1/2in (65mm) and smaller feed material to 0.04in-0.20 (1-5mm) and finer at up to 130lbs (300kg) per hour. It performs well in crushing small quantities of materials with varying levels of hardness such as hard quartz to soft claystone. The unit comes standard with 55 HRC hardened steel-chrome alloy jaw. Construction of the crusher features a case-hardened alloy steel eccentric shaft running in heavy-duty sealed needle bearings. The crusher is belt driven by a 3Kw motor with overload and on/off switches, all mounted on a steel base. The Cantrol Inc. is equipped with fixed and movable crushing jaws as well as lateral support walls made of tempered steel.

Specifications:

- Capacity: 660 Lb/hr. (300 Kg/hr)
- Power Supply: 120/220V, 50/60Hz, 2/3-phase

Ball Mill Machine

CANTROL Ball Mill Machine is used for grinding media in spherical or cylindrical shapes in rotating container to grind a wide range of material types to very fine sizes up to 1-50µm

Specifications:

- Capacity: 9 Lit.
- Drum Speed: 30-350 rpm (Variable Speed)
- Charges: 3Kg S. Steel balls,10mm Dia.
- Volume: 5 Liter
- Internal Dimameter:220mm
- Power Supply: 120/220V, 50/60Hz, single-phase

Fine Mill

This device is used for wearing materials with a size of 35µ. The maximum size of the input material is 2.5 and the minimum size of the output material is 10µ. The pounder is made of chrome and steel with 63 HRC stiffness.

Specifications:

- Capacity: 150 cc, 250 cc, 500 cc
- Input Size: 2.5 mm
- Output Size: 10 µm
- Power Supply: 3 kW,220 V, 50/60 Hz,1 ph
- Dimension: 100x70x60 cm
- Weight: 280 kg

Steel Testing Equipment
Product Selection Guide

Steel is a cornerstone material in civil engineering, used extensively in bridges, buildings, tunnels, and other infrastructure. Ensuring the quality and performance of steel components is paramount for structural integrity and safety. This guide outlines the key considerations for selecting appropriate steel testing machines for civil engineering applications, along with relevant industry standards.

1. **Universal Testing Machines (UTMs):** These are the most versatile machines, capable of performing various tests, including tension, compression, bending and flexure. They are available in different capacities and configurations (hydraulic, electromechanical, servo-hydraulic). UTMs are suitable for testing a wide range of steel products, from small samples to large structural members.
2. **Bend Testing Machines:** These machines assess the ductility and soundness of steel by bending specimens to specific angles. They are often used to evaluate weld quality and material toughness.

Standards Compliance: Ensure the testing machine and procedures comply with relevant industry standards, including:

- **ASTM A370:** This standard covers procedures and definitions for mechanical testing of steel products, including tension, bend, and hardness testing. It is a fundamental standard for steel testing in various industries.
- **ASTM E8/E8M:** This standard specifies the methods for tension testing of metallic materials, including determining yield strength, tensile strength, elongation, and reduction of area. It is widely used in civil engineering for evaluating the tensile properties of steel components.
- **ISO 6892-1:** This international standard specifies the method for tensile testing of metallic materials at room temperature. It is similar to ASTM E8 but provides an alternative approach.
- **EN 1993 (Eurocode 3):** This European standard provides design rules for steel structures. It references various testing standards and specifies requirements for material properties and testing procedures.

Universal Testing Machine

A Universal Testing Machine (UTM) is a versatile equipment used to test the mechanical properties of materials. By applying controlled forces, it determines how a material reacts to tension, compression and bending.

Specifications:

- Load Capacity: 600 / 1000 kN
- Test Types: Tensile, compression, flexure tests.
- Crosshead Speed: Adjustable, 0-100 mm/min.
- Load Accuracy: 50 N
- Displacement accuracy: 0.01 mm
- Specimen Size diameter: 8-28 mm/8-40 mm
- Grips and Fixtures: rebar, plate and etc.
- Safety Features: Overload protection, emergency stop, and automatic shut-off.
- Power Supply: 120/220V, 50/60Hz, single-phase

Cold Bending Machine

The device facilitates the evaluation of bending effects on steel bars through two specific test modalities: 90-degree bending followed by re-bending to 20 degrees, and 180-degree bending. The system incorporates a horizontally oriented hydraulic jack integrated into a high-strength steel frame. The jack applies controlled loads to the specimen using standardized mandrels of varying diameters, ensuring compliance with established technical specifications. This setup enables precise assessment of the steel bars' mechanical behavior under bending stress.

Specifications:

- Bending Angle: adjustable, up to 180 degrees.
- Specimen Size diameter: 6-40 mm
- Power Supply: 120/220V, 50/60Hz, single-phase

Asphalt Testing Equipment
Product Selection Guide

This guide will help you select the appropriate asphalt testing equipment for your specific needs. Accurate asphalt testing is crucial for ensuring the quality and performance of asphalt pavements and other asphalt-based materials. Here's a breakdown of common asphalt properties and the equipment used to test them:

Asphalt Binder Testing:

- **Penetration:**
  - **Test:** Penetration Test
  - **Equipment:** Penetrometer
  - **Considerations:** Needle type, temperature control, standards compliance (ASTM D5, AASHTO T49).
- **Softening Point:**
  - **Test:** Ring and Ball Test
  - **Equipment:** Ring and Ball Apparatus
  - **Considerations:** Ring and ball dimensions, heating rate, standards compliance (ASTM D36, AASHTO T51).
- **Ductility:**
  - **Test:** Ductility Test
  - **Equipment:** Ductility Machine
  - **Considerations:** Elongation rate, temperature control, standards compliance (ASTM D113, AASHTO T51).

Asphalt Mixture Testing:

- **Marshall Stability and Flow:**
  - **Test:** Marshall Test
  - **Equipment:** Marshall Testing Machine, Marshall Mold, Compaction Hammer
  - **Considerations:** Machine capacity, loading rate, mold dimensions, standards compliance (ASTM D6927, AASHTO T245).
- **Indirect Tensile Strength (IDT):**
  - **Test:** Indirect Tensile Test
  - **Equipment:** Indirect Tensile Testing Machine, Loading Strips
  - **Considerations:** Loading rate, temperature control, standards compliance (ASTM D6931).

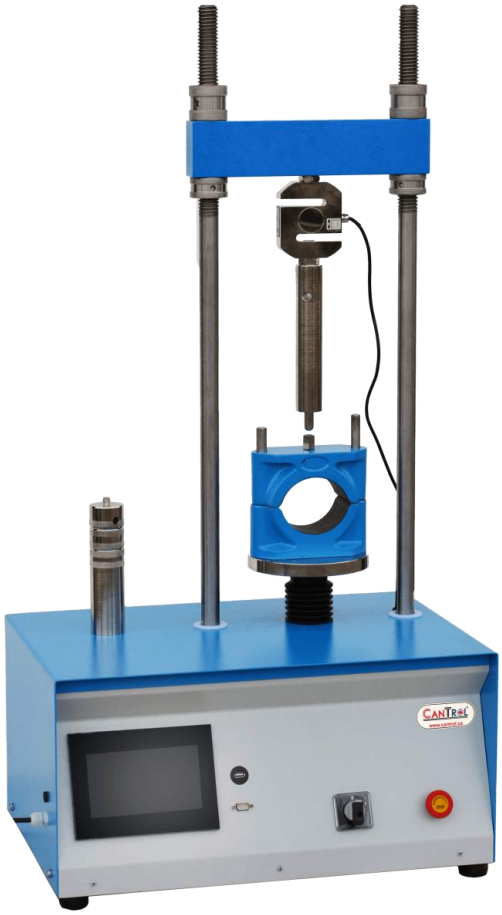
- **Ovens:** For heating and drying asphalt samples.
- **Mixing Equipment:** For preparing asphalt mixtures.
- **Molds and Compaction Equipment:** For preparing test specimens.
- **Core Drilling Equipment:** For extracting samples from pavements.
- **Temperature Control Devices:** For maintaining specified test temperatures.

Marshall Testing Machines

Marshall Testing Machines are essential for evaluating the stability and flow of asphalt mixes, crucial for constructing durable pavements. These machines perform the Marshall Stability Test, a widely recognized method for determining the optimum binder content and predicting the performance of asphalt under traffic loads.

Specifications:

- **Loading Capacity:** 50 kN
- **Loading Rate:** Standard rate of 50 mm/min
- **Measurement:** Measures both stability (maximum load) and flow (deformation at maximum load)
- **Models:** Automatic with loadcells and encoder for precise measurement (1614011/ 1614012) and semiautomatic with loadcell and dial gauges (1614021/ 1614022).
- **Standards:** Compliant with ASTM D6927 and AASHTO T245 testing standards
- **Power Supply:** 120/220V, 50/60Hz, single-phase



Marshall Compactor

Automatic Marshall Compaction Machines streamline the preparation of asphalt specimens for Marshall testing, ensuring consistent and repeatable compaction. By automating the hammer blows, these machines minimize operator variability and improve the reliability of test results. This is crucial for accurate assessment of asphalt mix properties and pavement performance prediction.

Specifications:

- **Models:** 1612021/1612022
- **Hammer Weight:** 4.536 kg (10 lbs)
- **Drop Height:** Standardized at 457 mm (18 inches)
- **Blow Rate:** Controlled and consistent, around 50-60 blows per minute
- **Specimen Size:** Accommodates standard 4-inch (101.6 mm) and 6-inch (152.4 mm) diameter molds
- **Automation:** Automatic blow counting and shut-off after the desired number of blows
- **Safety Features:** include safety enclosures and interlocks to protect operators
- **Standards:** Compliant with ASTM D6926 and AASHTO T245 testing standards
- **Power Supply:** 120/220V, 50/60Hz, single-phase

Marshall Compaction Molds

The Marshall Compaction Molds are used to produce the Marshall specimens with automatic or manual compactors. All parts are made from galvanized steel, protected against corrosion. The diameter is of the mold is 4”.

Centrifuge Extractor

Asphalt extraction devices are crucial for determining the binder content of asphalt mixtures. These devices use solvents to separate the asphalt binder from the aggregate, allowing for accurate quantification of each component. This information is essential for mix design, quality control, and forensic analysis of pavement failures.

Specifications

- **Capacity:** handles samples up to 1500g / 3000g
- **Rotation Speed:** Variable speed control, up to 3600 RPM for efficient extraction
- **Bowl Material:** Corrosion-resistant materials
- **Solvent Compatibility:** Designed for use with various solvents
- **Filtration:** Utilizes filter paper or other filtration methods to separate the extracted binder from the solvent
- **Safety Features:** Includes safety interlocks and enclosures to protect operators from rotating parts and solvent exposure
- **Standards:** ASTM D2172 and AASHTO T164

Marshall Water Bath

Marshall Water Baths are essential for conditioning asphalt specimens prior to Marshall Stability testing. By immersing compacted samples in a precisely controlled water bath, these units ensure uniform temperature throughout the specimen, a critical factor for accurate and repeatable test results. This controlled temperature conditioning is necessary to simulate field conditions and assess the performance of asphalt mixes under varying temperatures.

Specifications:

- **Temperature Control:** Precise temperature control, with a tolerance of ±1°C (±1.8°F)
- **Capacity:** 30 lit (up to 24 Marshall specimens)
- **Temperature Uniformity:** Uniform temperature distribution
- **Material:** Corrosion-resistant stainless steel for the tank and housing
- **Heating and Circulation:** Efficient heating elements and circulation systems to maintain stable temperature and uniformity
- **Digital Display and Control:** Digital temperature display and control for accurate setting and monitoring
- **Standards:** Compliant with ASTM D6927 and AASHTO T245 testing standards

Rice Testing Shaker

A Rice Testing Shaker, also known as a Vibro-Deaerator, is a laboratory instrument designed to consistently agitate and deaerate samples, primarily in asphalt testing. It's crucial for accurate specific gravity determination, ensuring the removal of entrapped air that can affect test results. These shakers are also used in other applications like soil and aggregate testing.

Specifications:

- **Purpose:** Deaeration of samples for specific gravity testing (asphalt, soil, aggregates).
- **Operation:** Provides consistent shaking/vibration to remove air bubbles.
- **Timer:** Built-in digital timer for precise control of shaking duration.
- **Speed Control:** Adjustable vibration speed to prevent sample damage.
- **Capacity:** Accommodates various sizes and types of pycnometers or flasks.
- **Clamping Mechanism:** Securely holds the sample containers during operation.
- **Construction:** Durable construction with a stable base.
- **Standards Compliance**: ASTM D2041 (asphalt), ASTM C128 (fine aggregates), ASTM D854 (soils), and AASHTO T209 (asphalt).

Semi-Automatic Bitumen Penetration Test Apparatus

Semi-Automatic Digital or Dial Bitumen Penetrometers are used to examine the penetration of bituminous samples under a constant load, time and temperature. The Penetrometer consists of a cast iron base with coarse and fine levelling screws, a penetration timer unit, and a digital or dial penetration measurement gauge with 0.01 mm readability. To start the 5 second test, the user should press the start button of the digital timer controller, then the needle will be released to bitumen sample. The Semi-Automatic Digital or Dial Penetrometer are supplied complete with; standard Penetration Needle, 2,5g, Sample and 3 pieces of stainless-steel containers cup Ø 55x35 mm.

Specifications:

- **Capacity:** 100 g (plunger 97.5 g + 2.5 g penetration needle)
- **Resolution:** 5 seconds (adjustable from 0.1 to 9999 sec.)
- **Stroke Limit:** 50mm
- **Accuracy:** 0.01mm
- **Displacement:** Digital/Dial Gauge

Asphalt Content Ignition Furnace

CANTROL Asphalt Content Ignition Furnace is a high-precision ignition oven that can determine, in full automatic mode, the binder content of asphalt mixes in full conformance with the most common international standards. It combines an ignition oven with a continuous weighing system that monitors the loss of weight of the asphalt sample and automatically determines, at the end of the test, the binder content and percentage. An independently controlled auxiliary afterburner chamber significantly reduces the furnace emissions.

Specifications:

- **Maximum Temperature**: 650°C
- **Temperature Accuracy:** ± 2°C
- **Chamber Dimensions:** 370mm*370mm*370 mm
- **Power**: 6 kW, 25 A, 220-240V,50/60Hz.
- **Weighing Capacity:** up to 4000g
- **Balance Readability:** 0.1 g
- **External Dimensions:** 700 x 800 x 1200 mm
- **Weight:** 200 kg
- **Heating Elements:** High-performance ceramic embedded elements
- **Insulation:** High-efficiency ceramic insulation
- **Control System:** PID controller with touchscreen
- **Data Output:** Integrated Printer
- **Construction:** heavy-gauge painted steel
- **Exhaust Port Diameter:** 100 mm / 4 inches
- **Compliant with Standards:** ASTM D6307, AASHTO T308

Accessories for Asphalt Content Furnace

- (4) Sample Baskets
- (2) Basket Covers
- (2) Trays
- (2) Basket Retainer Brackets
- (4) Rolls of Printer Paper
- Transport Handle
- Aluminum Cooldown Plate
- Cool Down Safety Cage
- Fan Motor Lubricant
- Face Shield
- Heat Resistant Gloves
- Stainless Steel Basket Brush

Soil Testing Equipment
Product Selection Guide

This guide will help you select the appropriate soil testing equipment for your specific needs. Accurate soil testing is crucial for geotechnical investigations, foundation design, earthwork construction, and environmental studies. Here's a breakdown of common soil properties and the equipment used to test them:

Index Properties:

- **Moisture Content:**
  - **Test:** Oven Drying Method
  - **Equipment:** Drying Oven, Balance, Moisture Cans
  - **Considerations:** Oven temperature control (105-110°C), balance accuracy, standards compliance (ASTM D2216, AASHTO T265).
- **Particle Size Distribution (Gradation):**
  - **Test:** Sieve Analysis (for coarse-grained soils), Hydrometer Analysis (for fine-grained soils)
  - **Equipment:** Sieves (various sizes), Sieve Shaker, Hydrometer, Sedimentation Cylinder, Stirring Apparatus, Drying Oven, Balance
  - **Considerations:** Sieve sizes (mesh openings), shaker type, hydrometer type, standards compliance (ASTM D422, AASHTO T88).

- **Atterberg Limits:**
  - **Tests:** Liquid Limit, Plastic Limit, Shrinkage Limit
  - **Equipment:** Liquid Limit Device (Casagrande or Fall Cone), Plastic Limit Rolling Device, Shrinkage Limit Mold, Drying Oven, Balance
  - **Considerations:** Liquid limit device type, groove tool dimensions, standards compliance (ASTM D4318, AASHTO T89, T90).
- **Specific Gravity:**
  - **Test:** Specific Gravity Test
  - **Equipment:** Pycnometer, Drying Oven, Balance
  - **Considerations:** Pycnometer size, temperature control, standards compliance (ASTM D854).

Engineering Properties:

- **Shear Strength:**
  - **Tests:** Direct Shear Test, Triaxial Shear Test, Unconfined Compression Test
  - **Equipment:** Direct Shear Testing Machine, Triaxial Testing Machine, Unconfined Compression Testing Machine
  - **Considerations:** Shear box size (for direct shear), cell pressure and back

pressure control (for triaxial), loading rate control, data acquisition, standards compliance (ASTM D3080 for direct shear, ASTM D4767 for triaxial, ASTM D2166 for unconfined compression).

- **Consolidation:**
  - **Test:** Consolidation Test (Oedometer Test)
  - **Equipment:** Consolidation Testing Machine (Oedometer), Loading Frame, Dial Gauges or LVDTs
  - **Considerations:** Loading system (dead weights or pneumatic/hydraulic), sample size, data acquisition, standards compliance (ASTM D2435).
- **Permeability (Hydraulic Conductivity):**
  - **Tests:** Constant Head Permeability Test, Falling Head Permeability Test
  - **Equipment:** Permeameter, Constant Head Reservoir, Graduated Cylinder, Stopwatch
  - **Considerations:** Permeameter type, sample size, head measurement accuracy, standards compliance (ASTM D2434).
- **Compaction:**
  - **Tests:** Standard Proctor Test, Modified Proctor Test
  - **Equipment:** Proctor Mold, Compaction Hammer (standard or modified), Graduated Cylinder, Drying Oven, Balance
  - **Considerations:** Mold size, hammer weight and drop height, standards compliance (ASTM D698 for standard Proctor, ASTM D1557 for modified Proctor).
- **California Bearing Ratio (CBR):**
  - **Test:** CBR Test
  - **Equipment:** CBR Testing Machine, CBR Mold, Penetration Piston
  - **Considerations:** Machine capacity, penetration rate, standards compliance (ASTM D1883, AASHTO T193).

Field Testing Equipment:

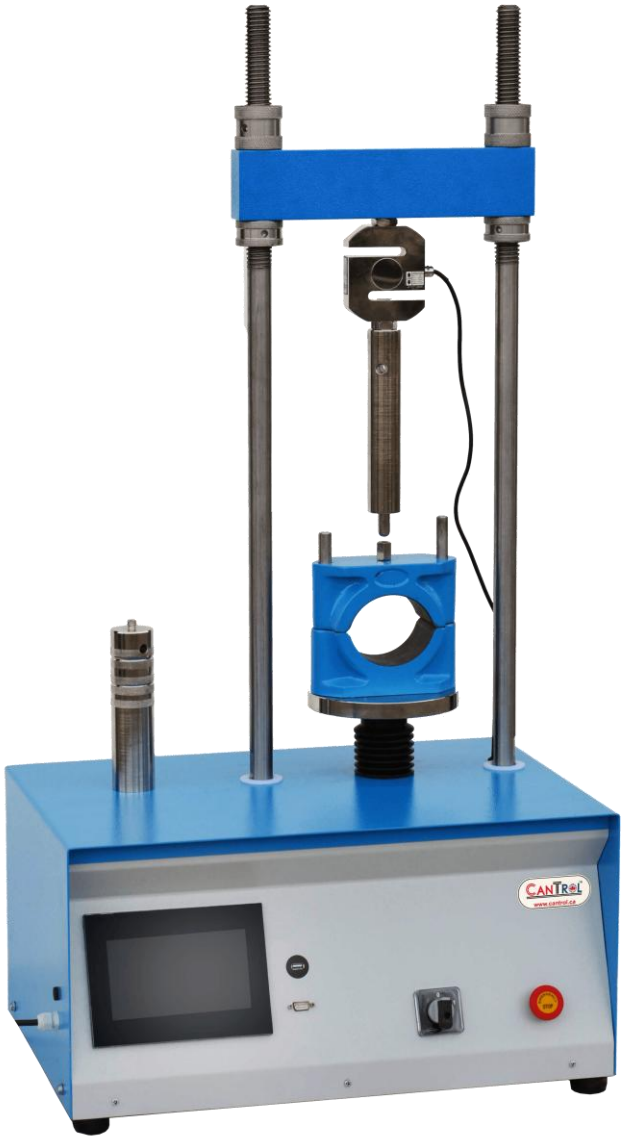
- **Nuclear Density Gauge:** For rapid determination of soil density and moisture content in the field.
- **Dynamic Cone Penetrometer (DCP):** For evaluating soil strength and bearing capacity in situ.
- **Field Permeameters:** For measuring permeability in the field.

California Bearing Ratio (CBR) Testing Machine

Determines the bearing capacity of soils for pavement design and other geotechnical applications. This machine applies a controlled load to a soil sample and measures penetration resistance.

Specifications:

- Capacity: 50 kN (11,250 lbs)
- Penetration Rate: 1.27 mm/min (0.05 in/min)
- Platen Diameter: 50 mm (2 inches)
- Data Acquisition: Digital display with peak load hold and data logging capabilities.
- Standards Compliance: ASTM D1883, AASHTO T193
- Optional: Automatic data acquisition and software for CBR calculations.



CBR/Marshall Test Machine

The Automatic Digital CBR/Marshall Testing Machine is a multispeed, motorized compression testing system designed for precise and automated evaluation of materials. It features a 50 kN stainless steel load cell, a motorized ram with a 70 mm stroke, and a two-column stainless steel frame with an adjustable crossbeam. The machine incorporates an internal linear displacement transducer (LVT) for accurate displacement measurement and a digital control unit with real-time Force-Displacement (F-mm) graph display.

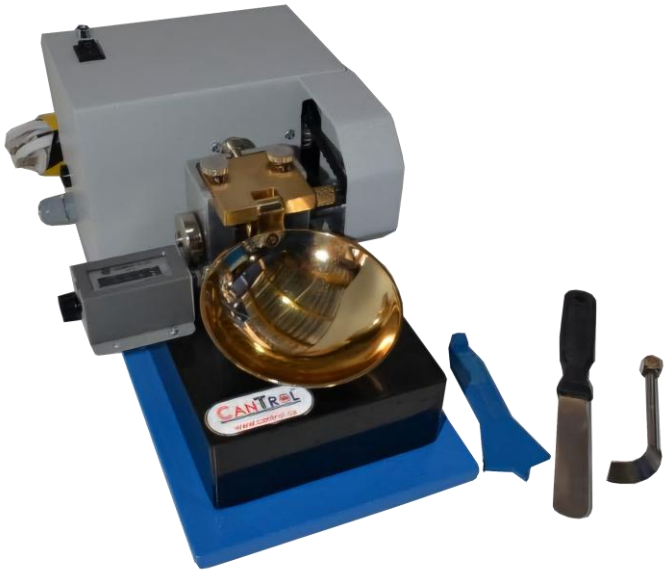
The system is equipped with specialized software for conducting CBR (California Bearing Ratio) and Marshall tests independently. The automated testing procedure begins once the specimen is placed on the loading plate, which ascends at a predefined speed. The machine halts automatically upon detecting the failure point and returns the loading plate to its initial position. Test results, including F-L (Force-Load) graphs, are displayed in real-time and can be printed for analysis. This system ensures high accuracy, repeatability, and compliance with standardized testing protocols.

Atterberg Limits Testing Set

Determines the liquid limit, plastic limit, and plasticity index of soils, which are important for soil classification and engineering properties.

Specifications:

- Model: 2810140
- Liquid Limit Device (Casagrande or fall cone method)
- Plastic Limit Rolling Device
- Porcelain Evaporating Dishes
- Standards Compliance: ASTM D4318



Soil Dispersion

CANTROL dispersing soil stirrer used in hydrometer method of testing subgrade soils, heavy-duty mixer stainless steel operates at a speed above 10,000 RPM (no load). Includes stirring apparatus with stainless steel paddle and stainless-steel dispersion cup with removable interior baffles and automatic switch-on by positioning bowl.

Hydrometer

Used for determining the specific gravity and particle size distribution of fine-grained soils.

Specifications:

- Hydrometer Type: 151H/152H
- Temperature Compensation: 20°C
- Reading Accuracy: 1 g/l
- Comply with AASHTO T 88, ASTM D7928, ASTM D422.

Direct Shear Test Apparatus

Measures the shear strength of soil samples under direct shear stress.

Specifications:

- Load Capacity: 5 kN
- Load rate: Adjustable, 0.01 – 7 mm/min
- Shear Box Dimensions: 100100 mm/6060 mm
- Deformation Measurement: Guage (2819011) /LVDT (2819021)
- Load Resolution: 10 N
- Deformation Resolution: 0.01 mm
- Display: LCD (2819011) / 4” touch screen (2819021)
- Standards Compliance: AASHTO T 236, ASTM D3080/3080M.
- Power Supply: 120/220V, 50/60Hz, single-phase

Fully Automatic Direct Shear Test Apparatus

The specifications of the machine are similar to the direct shear test machine, except that the normal loading system is automatic. Model: 2819011

Sand Equivalent Shaker

The Laboratory Sand Equivalent Shaker from Cantrol is an exceptional, precision-engineered device designed to deliver uniform, repeatable, and highly accurate shaking performance for sand equivalent tests.

Specifications:

- Power Supply: 120/220V, 50/60Hz
- Timer: Pre-Set Digital Timer
- Dimension: 600x360x850 mm
- Weight: 65 kg
- Power Supply: 120/220V, 50/60Hz, single-phase

Soil Sample Grinder

The Soil Sample Grinder is a precision instrument designed for the rapid preparation of dry soil samples for laboratory analyses, including Atterberg limits and particle-size distribution. It efficiently breaks down soil agglomerations into individual grains while preserving true grain size, ensuring accurate and repeatable test results. The grinder features a 0.950 L (2-pint) hopper with a manually operated gate to regulate feed rate into the grinding chamber. Constructed entirely of anti-rust stainless steel, it includes No. 10 (2.0 mm), No. 4 (4.75 mm), and No. 35 wire mesh screens to retain larger particles.

Specifications:

- Model: 210245 / 210246
- Capacity: 0.950lit. (2pints)
- Standards Compliance: ASTM D4318
- Power Supply: 120/220V, 50/60Hz, single-phase

Plate Load Test

The Plate Load Test is an insitu load bearing test of soil used for determining the ultimate bearing capacity of the ground and the likely settlement under a given load. The Plate Bearing Test is carried out in accordance with BS 1377 Part 9. It basically consists of loading a steel plate of known diameter and recording the settlements corresponding to each load increment. The test load gradually increased till the plate starts to settle at a rapid rate. The total value of load on the plate divided by the area of the steel plate gives the value of the ultimate bearing capacity of soil. A factor of safety is applied to give the safe bearing capacity of soil.

Specifications:

- Capacity: 300kN (2823010)/500 kN (2823020)
- Base Plate Size: 200/300/450mm
- Stroke Limit: 100 mm
- Standards Compliance: ASTM D1194, ASTM D1195, ASTM D1196; BS 1377:9

Oedometer

Measures the one-dimensional consolidation characteristics of soil samples under vertical loads. Main body is manufactured of rigid and machinery aluminum, long time loading is possible due to this high-quality manufacturing. The frame is designed to load the specimen through a level arm assembly and one of three alternative beam ratios as 9:1, 10:1 and 11:1.

Specifications:

- Model: 2816010
- Cell: 50 mm / 61.5 mm / 71.5 mm / 75 mm
- Sets of Weight consist of:(3) 8kg; (2) 4kg; (1) 2kg; (1) 1kg
- Deformation Measurement: 10×0.01mm or 5×0.002 mm

Fully Automatic Unconfined Compression Testing Machine

The Fully Automatic Unconfined Compression Testing Machine delivers precision and efficiency for unconfined compressive strength (UCS) testing of cylindrical specimens in concrete and geotechnical applications. With complete automation of loading, control and data capture, this system enables consistent and repeatable results with minimal operator intervention.

Specifications:

- Model: 2818021/ 2818022
- Capacity: 10 KN
- Resolution: 2 N
- Standards Compliance: ASTM D4318
- Power Supply: 120/220V, 50/60Hz, single-phase

Fully Automatic Consolidation Test Apparatus

Fully Automatic Consolidation Test Apparatus is a cutting-edge, high-performance system engineered to deliver exceptional accuracy, unmatched consistency, and fully automated control for soil consolidation testing. Designed for modern geotechnical laboratories, universities, research institutions, and civil engineering firms, this powerful apparatus eliminates manual intervention, minimizes operator error, and ensures reliable results in full compliance with international soil mechanics standards. Built with robust materials, intelligent automation, and real-time digital monitoring, the Fully Automatic Consolidation Test Apparatus is the ultimate solution for precise determination of settlement characteristics in undisturbed and remolded soil samples.

Specifications:

- Capacity: 10 kN
- Power Supply: 120/220V, 50/60Hz, single-phase

Proctor Mold and Hammer

Determines the maximum dry density and optimum moisture content of soil samples for achieving desired compaction levels.

Specifications:

- Mold Size: 4/6 inch.
- Hammer Weight :5.5/10 lb.
- Drop Height: 12/18 inch.

Soil Proctor Mold Extruder

The specimen extruder is designed to easily extrude specimens from Marshall, CBR, standard and modify proctor molds. There is a 50 kN capacity handy jack that is used to extrude specimen from 4” to 6” molds. Also, it is possible to order an extra part, in order to extrude 38 mm to 50 mm specimen from molds.

Automatic Soil Compactor

Compactor automatically compacts and rotates the mold after each blow while keeping track of the numbers of hammer blows and shutting off once a preset number of blows is reached. Design of Cantrol Soil Compactor allows the hammer to drop the required height into the soil in the mold which rotates circularly to distribute the blows uniformly over the surface of the specimen in the mold. The unit can be used to perform standard or modified compaction tests using a 5.5 lb. hammer with 12” height of drop or a 10 lb. hammer with 18” drop., The 4in and 6in, complete set of compaction molds models:2814114 and 2814114 should be ordered separately.

Cement Testing Equipment
Product Selection Guide

This guide will assist you in selecting the appropriate cement testing equipment for your specific needs. Accurate cement testing is vital for ensuring the quality and performance of concrete and other cement-based materials. Here's a breakdown of common cement properties and the equipment used to test them:

- **Fineness:**
  - **Tests:** Sieve Analysis, Air Permeability (Blaine Test)
  - **Equipment:** Sieves (various sizes, typically #100, #200, #325), Sieve Shaker, Blaine Air Permeability Apparatus
  - **Considerations:** Sieve mesh sizes, shaker type, Blaine apparatus calibration, standards compliance (ASTM C204, EN 196-6).
- **Consistency:**
  - **Test:** Vicat Test
  - **Equipment:** Vicat Apparatus (with various needles and plungers)
  - **Considerations:** Needle and plunger dimensions, standards compliance (ASTM C187, EN 196-3).
- **Setting Time:**
  - **Test:** Vicat Test, Gillmore Needles
  - **Equipment:** Vicat Apparatus, Gillmore Needles
  - **Considerations:** Needle dimensions and weights, standards compliance (ASTM C191, EN 196-3).
- **Soundness (Expansion):**
  - **Test:** Le Chatelier Test, Autoclave Expansion Test
  - **Equipment:** Le Chatelier Flasks, Autoclave
  - **Considerations:** Flask dimensions, autoclave pressure and temperature control, standards compliance (ASTM C151, EN 196-3).
- **Compressive Strength:**
  - **Test:** Compressive Strength Test (of cement mortar or concrete)
  - **Equipment:** Compression Testing Machine, Mortar Mixer, Standard Molds (cubes or prisms)
  - **Considerations:** Machine capacity, loading rate control, mold dimensions, standards compliance (ASTM C109, EN 196-1).
- **Heat of Hydration:**
  - **Test:** Heat of Hydration Test (Calorimetry)
  - **Equipment:** Calorimeter (various types, including conduction calorimeters and isothermal calorimeters)
  - **Considerations:** Calorimeter type, temperature measurement accuracy, data acquisition capabilities, standards compliance (ASTM C186).
- **Mortar Mixers:** For preparing cement mortar specimens for testing.
- **Mixing Bowls and Utensils:** For handling and mixing cement and other materials.
- **Curing Cabinets/Rooms:** For maintaining controlled temperature and humidity for curing cement specimens.
- **Drying Ovens:** For drying samples to a constant weight.
- **Balances and Scales:** For accurate weighing of materials.
- **Water Baths:** For maintaining constant temperatures during certain tests.

Vicat Apparatus

Used to Determine the setting time of cement by measuring the penetration of a standard needle into a cement paste.

Specifications:

- Sliding probe weight: 300 g
- Needle Diameter: 1 mm
- Plunger Diameter: 10 mm
- Standards Compliance: ASTM C191, EN 196-3

Mortar Flow Table

Measures the consistency of cement mortar by determining the spread of a standard mortar cone under impact.

Specifications:

- Table Dimensions: 10" (254mm)
- Impact Height: 1/2" (12.7mm)
- Standards Compliance: STM C109, ASTM C185, ASTM C230, ASTM C452, ASTM C87, AASHTO T71, AASHTO T106, AASHTO T137, AASHTO T152 and EN 459-2, 1015-3

Le Chatelier Flask

Measures the soundness of cement by determining the expansion of a cement paste bar upon exposure to water.

Specifications:

- Capacity: 250 ml
- Standards Compliance: ASTM C188

Automatic Blaine Air Permeability Apparatus

Determines the fineness of cement by measuring the air permeability through a bed of cement powder.

Specifications:

- Time measurement: automatic
- Temperature correction: automatic
- Standards Compliance: ASTM C204, EN 196-6

Compressive Strength Testing Machine for Cement Mortars

Determines the compressive strength of standard mortar cubes prepared with cement.

Specifications:

- Capacity: 600 kN
- Accuracy: 0.2 %
- Stroke Limit: 50 mm
- Standards Compliance: ASTM C109, C348, EN 12390-1, EN 196-11

Compression Device

Robust frame fitted with an upper platen with spherical seat that moves vertically sustained by a spring. The apparatus can be placed and centered directly on the lower machine platen. This device, conforming to EN 196 is designed to test portions of 40x40x160 prisms broken in flexure, and conforming to ASTM C109, fitted with compression platens 75 mm dia., and a vertical daylight of 53 mm is used to test 50×50 mm cubes and other little samples.

Specifications:

- Model: 2222010

Cement Mold

Cement Cubic Grinded Mold, 70x70x70mm 3 Gang, Cast Iron Model: 2221020

Cement Cubic Grinded Mold, 40×04×40, 3 gang, Cast Iron Model:

Cement Flexural Steel Mold, 40×40×160mm Model: 2221030

Cement Cubic Grinded Mold, 50×50×50mm, 3 gang, Cast Iron Model: 2221010

2-Gang Prism Molds, 1x1x11/4in (25x25x285mm) Model: 2214070

Cement 3 Gang Plastic Cubic Mold 50x50x50 mm and Air Gun

Cement Mortar Mixer

A Cement Mortar Mixer is a machine designed to efficiently mix cement, sand, water, and other additives to create a homogeneous mortar mixture for construction purposes. It is widely used in building projects to ensure consistent quality and save time compared to manual mixing.
Cantrol designs and manufactures two major types of mixers. These high-quality mortar mixers provide laboratories with the best quality mixers available. All mixers provide 4.7 lit stainless-steel bowl and stainless-steel paddles. Simple and manual mortar mixer: Heavy-duty construction of aluminum and steel sheet provides durability and long service life. The mixing bowl is connected to the mixer by a quick release clamping system. The clearance between the bowl and the paddle is 3±1mm and can be set easily. The micro-switch prevents the machine from starting without a bowl and an emergency button is installed for safety. Two speeds are set in machine 140-285rpm for revolving action and 62-125 rpm for planetary action. All steps of mixing like timing, speeds, delays and steps of adding cement, water etc. will progress automatically and are shown on a 7” touchscreen LCD.

Specifications:

- Capacity: 4.7 lit
- Standards Compliance: ASTM C305, C277, AASHTO T162,EN 196-1,3,EN 413-2, EN 480-1

Fully Automated Cement Autoclave

An autoclave is a sterilization device that uses high-pressure saturated steam to eliminate microorganisms, including bacteria, viruses, and spores, from equipment and supplies. Commonly used in medical, laboratory, and industrial settings, autoclaves ensure the sterility of instruments, media, and other materials.

Specifications:

- Chamber Capacity:10 samples
- Material: Stainless steel chamber for durability and corrosion resistance.
- Standards Compliance: ASTM C151, C490 AASHTO T107
- Power Supply: 120/220V, 50/60Hz, single-phase

Cement Gillmore Needle Apparatus

Specifications:

- Model: 2215010
- Standards Compliance: ASTM C266, AASHTO T154

Grout Flow Cone Set with 0.5in Orifice

Grout Flow Cones measure the flowability of hydraulic grout used in preplaced aggregate concrete. Flowability is measured by time of discharge of a 1.725L sample of grout through the 0.5in (12.7mm) ID discharge tube orifice from the cone. Made of cast aluminum, the Grout Flow Cone has 7in (178mm) top ID and comes with an adjustable point gauge assembly to indicate initial sample level. The Grout Flow Cone Set includes a Grout Flow Cone with replaceable 0.5in (12.5mm) Orifice, a 3-legged Steel Stand, and a 2L (2.1qt) Stainless Steel Beaker Receiving Container. Durable cast aluminum construction0.5in Orifices Steel stand had adjustable feet. Orifices are replaceable easily disassembled for transporting or storing Compliant with current ASTM C-939, D6449 standards., THE 3/4 inches orifice is available in request.

Specifications:

- Model: 2224135
- Standards Compliance: ASTM C939, ASTM D6449

Comparator For Cement Specimen

This apparatus is used for a number of length measurements concerning mainly cement and mortar specimens with different lengths. Therefore, the reference rods are not included and have to be ordered separately.

Specifications:

- Model: 2214090
- Standards Compliance: ASTM C151, C157, C490, C596 EN 1367-4, 12617-4

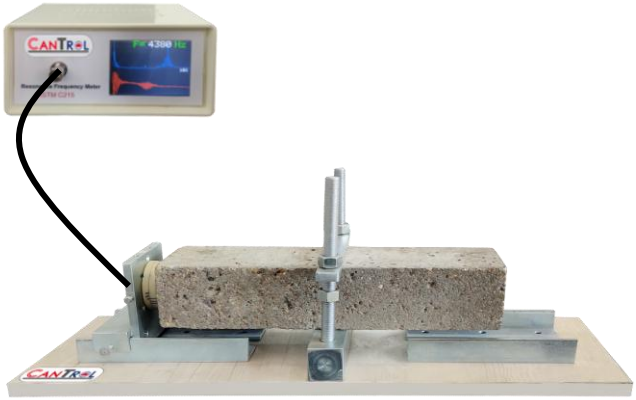
NDT (Non-Destructive Testing) Equipment

Product Selection Guide

This guide will help you select the appropriate Non-Destructive Testing (NDT) equipment for evaluating concrete structures without causing damage. NDT methods are essential for assessing the condition, strength, and integrity of existing concrete structures, identifying defects, and monitoring changes over time. Here's a breakdown of common NDT methods for concrete and the equipment used:

- **Rebound Hammer (Schmidt Hammer):**
  - **Principle:** Measures the rebound of a spring-loaded hammer impacting the concrete surface. The rebound number is correlated to compressive strength.
  - **Equipment:** Rebound Hammer (various types for different energy levels)
  - **Applications:** Estimating relative compressive strength, assessing uniformity of concrete, identifying areas of weakness or deterioration.
  - **Considerations:** Hammer type (N, L, M), calibration, surface preparation, influence of surface texture and moisture content, standards compliance (ASTM C805, EN 12504-2).
- **Ultrasonic Pulse Velocity (UPV):**
  - **Principle:** Measures the travel time of ultrasonic pulses through concrete. Pulse velocity is related to concrete quality and can indicate the presence of voids, cracks, or other defects.
  - **Equipment:** Ultrasonic Pulse Velocity Tester (transmitter and receiver transducers)
  - **Applications:** Assessing concrete uniformity, detecting voids and cracks, estimating dynamic modulus of elasticity, monitoring changes in concrete properties over time.
  - **Considerations:** Transducer frequency, coupling medium, path length, standards compliance (ASTM C597, EN 12504-4).
- **Cover Meter (Rebar Locator):**
  - **Principle:** Uses electromagnetic fields to detect and locate reinforcement bars (rebar) in concrete and measure the concrete cover thickness.
  - **Equipment:** Cover Meter (rebar locator)
  - **Applications:** Locating rebar, determining concrete cover thickness, assessing compliance with design specifications.
  - **Considerations:** Measurement range, accuracy, rebar diameter and spacing, standards compliance (ACI 318).
- **Chloride Ion Penetration Tests**
  - **Principle:** To assess the resistance of concrete to chloride ion penetration, which can lead to corrosion of reinforcing steel.
  - **Rapid Chloride Permeability Test (RCPT) Apparatus:** Measures the electrical conductance of concrete to estimate chloride ion penetration.
  - **Rapid Chloride Migration Test (RCMT):** Used for non-steady-state migration tests to evaluate chloride ion penetration.
  - **Considerations:** Compliance with standards (e.g., ASTM C1202, AASHTO T 277), Ease of use and accuracy of results, Availability of replacement parts and consumables.

Impact Resonance Frequency Test



These systems use an impact hammer or to excite vibrations in the concrete samples. The response is measured using accelerometers. This devise is portable and easy to use and is suitable for testing a wide range of concrete samples. Various hammer sizes and impact energies are available.

Specifications:

- Sensor Type: piezoelectric Accelerometers sensors
- Frequency Range: 0.1 to 10 kHz
- Frequency resolution: 20 Hz
- Sampling Resolution: 12 bits
- Sampling rate: 100 kHz (Nyquist: 50 kHz)
- Excitation Level Adjustable

Forced Resonance Frequency Test

These systems use an exciter to generate controlled vibrations in the concrete samples. This method is particularly suitable for laboratory testing and precise measurements.

Specifications:

- Excitation Force Range: 0.1 to 10 kHz
- Frequency resolution: 20 Hz
- Input gain: 50X
- Applications: Laboratory testing of concrete beams, cylinders, and other specimens; material characterization; research studies.

Half-Cell Corrosion Device

A Half-Cell Corrosion device is a portable instrument used to measure the electrical potential difference between a reinforcing steel bar embedded in concrete and a reference electrode (the half-cell) placed on the concrete surface. This potential difference is indicative of the likelihood and severity of corrosion activity within the concrete. It's a standard method (ASTM C876) for evaluating the corrosion condition of steel in concrete.

Technical Specifications

- Measurement Range: -1000 mV to +1000 mV
- Accuracy: ± 1 mV
- Resolution: 0.1 mV
- Input Impedance: > 10 MΩ
- Data Storage: Up to 65000 readings (micro-SD)
- Power Source: Rechargeable internal Li-ion battery

Ultrasonic Pulse Velocity (UPV) Tester

Measures the travel time of ultrasonic pulses through concrete to assess its quality and detect internal defects.

Specifications:

- Frequency Range: 24 kHz - 150 kHz
- Transducers: 54 kHz
- Transit Time Measurement Range: From 0.1 to 2000 µs with an accuracy of 0.1 µs
- Output Voltage 50 to 500 V
- Digital display of pulse velocity
- Various transducer frequencies available
- Internal Rechargeable Battery Capacity: 2800 MAh
- Standards Compliance: ASTM C597, EN 12504-4
- Applications**:** Detecting voids, cracks, and honeycombing; assessing concrete uniformity; estimating dynamic modulus of elasticity.

Wenner surface resistance device

Assessing the electrical resistance of concrete provides crucial insights into its long-term durability, particularly its ability to withstand the infiltration of detrimental chloride ions. The higher the electrical resistance of concrete, the better its resistance to chloride penetration. Cantrol's Wenner resistance meter is a dependable and efficient device available in two models for laboratory and on-site use. The device features two electrode sizes, measuring 38.1 mm according to AASHTO T 358 and 50 mm according to other methods. It is known for its precision and quick results.

Specifications:

- Measurement Range: 1 to 1000 KΩ cm
- Accuracy: 1 %
- Frequency: 40 Hz
- Error Display: Over Current and Poor connection
- Using in Wet Samples: yes

Dynamic Data Logger

These systems acquire and process the vibration data from the sensors to determine the dynamic properties.

Specifications:

- Sampling Rate: Up to 2 Mega SPS.
- Number of Channels: up to 16
- Software Features: FFT analysis, modal analysis, data filtering, report generation.
- Real-time data display and analysis.
- Frequency spectrum analysis tools (FFT).
- Software for calculating dynamic modulus, shear modulus, and damping ratio.
- Data storage and reporting capabilities.

Temperature & Humidity Data Logger

Cantrol Company's data loggers are made with advanced microprocessors, making them small, portable, and capable of running on batteries. It comes with Two Temp. sensors and one Humidity sensor, more sensors should be order separately.

Specifications:

- Input: 4 Channels
- Resolution: 1% full scale
- Power Supply: 120 V, 50/60 Hz, 1 phase
- Display: 4×20 Big character
- Storage: SD card
- Dimension: 200x120x200 mm
- Weight: 4 kg

Concrete Maturity Device

The non-destructive method of evaluating concrete strength during the setting process is known as the concrete maturity test. This test aids in determining the appropriate curing conditions and design of the mixing plan. The maturity test is based on the correlation between concrete temperature, time, and gained strength. A significant advantage of this test method is the ability to accurately predict the time required to reach the desired strength, allowing for timely removal of framework or opening of roads for traffic. To conduct the test, a concrete maturity device equipped with wireless or wired sensors is used to measure temperature inside the concrete during setting. The sensor data is recorded using a reading device, mobile phone, or computer. The resulting analysis can be accessed from anywhere in the world, with software estimating compressive strength based on the user-defined maturity curve. This device has easy installation and activation.

Specifications:

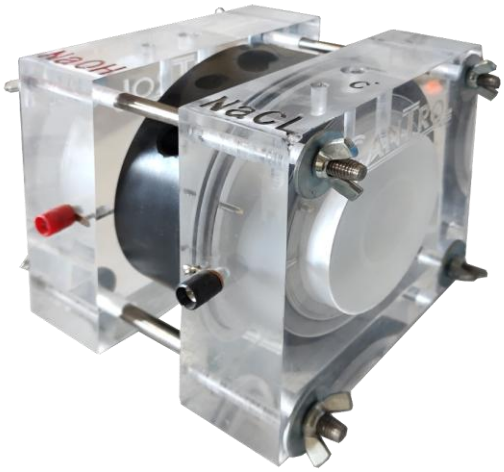
- Measurement Interval: 30 minutes
- Temperature Accuracy: 0.1 C
- Depth of Placement: up to 3 meters
- Maximum Data Collection: 4000 data points
- Connection: Wireless/ wired
- Memory: Cloud storage
- Battery Life: more than 4 months

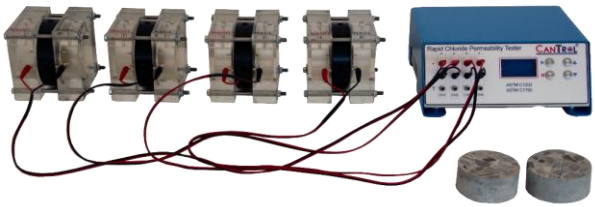
Rapid Chloride Permeability Tester

The penetration of chloride ions is a critical factor influencing the durability of concrete. The Rapid Chloride Permeability Test (RCPT) is a standardized method (ASTM C1202) used to assess the chloride ion permeability characteristics of concrete. In this procedure, a cylindrical concrete specimen with dimensions of 50 mm in thickness and 100 mm in diameter is subjected to a 60 V DC potential difference for a duration of 6 hours. The specimen is positioned between two electrolyte solutions: a 3.0% sodium chloride (NaCl) solution on one side and a 0.3 M sodium hydroxide (NaOH) solution on the other. The electrical current passing through the specimen is measured, and the cumulative charge, expressed in coulombs (C), is calculated to quantify the concrete's resistance to chloride ion penetration. The test is conducted under controlled environmental conditions, with the ambient temperature maintained between 20°C and 25°C. It is noteworthy that the RCPT apparatus is also utilized in the evaluation of electrical conductivity of hardened concrete, as specified in ASTM C1760. The results of this test provide a quantitative measure of the concrete's permeability, which is critical for assessing its long-term durability in chloride-rich environments.

Specifications:

- Channels: 4 Independent Channels.
- Current Measurement: 0 – 600 mA.
- Temperature Measurement: 0-100 C.
- PC Connection.
- Short Circuit Protection system.





Rapid Chloride Migration Test (RCMT)

n this test, by applying a specific Voltage (from 5 to 60 V) along the height of the sample, chlorine ions are forced to migrate into the sample. After a specific time (from 6 to 96 hours), the sample is cut in half along the height and the silver nitrate solution is spread on one of its surfaces and the penetration depth is measured (white part). Finally, the chlorine ion migration rate is calculated using the penetration depth and the concrete is classified.

Specifications:

- Channels: 4 Independent Channels.
- Voltage: v – 60 V.
- PC Connection.
- Short Circuit Protection system

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