



TORONTECH

AUGUST, 2026

NEWSLETTER



CONCRETE & MORTAR AIR ENTRAINMENT TESTING

*Precision Air Content Measurement
for Fresh Concrete and Mortar*

Air content is a **critical quality-control parameter** in freshly mixed concrete and mortar. Too little entrained air can reduce freeze-thaw durability and increase the risk of scaling and cracking, while excessive air can reduce compressive strength. Accurate, repeatable measurement is therefore essential for consistent concrete performance.

Torontech offers a complete range of instruments for concrete and mortar air-content testing, including standard pressure meters for normal-weight concrete, a dual-method model supporting ASTM C231 pressure testing and ASTM C173 volumetric testing, analog and digital models, portable field instruments, and dedicated mortar air meters.

HOW THE AIR METER WORKS

METHOD 1:

Air Entrainment Meter ASTM C231 / AASHTO T152 — Type B Pressure Method (Boyle's Law)

A known volume of air is pressurized in the sealed chamber and then released into the concrete sample. The resulting pressure change corresponds to the air content of the sample and is read directly as a percentage on the gauge.

①

Fill & Rod

Fill bowl in 3 layers, rod each 25×, strike off flush.



②

Seal

Lock airtight cover with clamps; inject water to expel air pockets.



③

Pressurize

Pump air into chamber to the initial pressure mark on gauge



④

Equalize Pressure

Open the main valve so the pressurized air acts on the concrete sample.



⑤

Read Air Content

Read the air-content percentage directly from the gauge after the reading stabilizes





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METHOD 2:

Mortar Air Entrainment Meter ASTM C185 / DIN EN 459-2 — Pressure Compensation Principle

A defined pressure is created in the upper chamber. When the equalization valve is opened, the chamber pressure acts on the mortar-filled test pot. The resulting pressure change corresponds directly to the air content of the mortar sample and is read from the gauge.

①

Fill Test Pot

Fill mortar pot to the brim;
attach upper pressure
chamber



②

Pre-Pressurize

Pump to set pressure in
upper chamber; petcock
valves closed



③

Equalize Pressure

Open the equalization
valve so the chamber
pressure acts on
the mortar sample.



④

Read Result

Pressure drop indicates %
air content directly on
gauge scale.

Key Difference:

Concrete air meters use the ASTM C231 pressure method for freshly mixed concrete, while mortar air meters use a pressure-compensation method for mortar samples. Both provide a direct percentage reading without additional calculation.



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AIR ENTRAINMENT METERS

Air Entrainment Meter Dual Method

Key Features:

- **Dual Testing Methods:** Supports ASTM C231 pressure testing and ASTM C173 volumetric testing, eliminating the need for two separate instruments.
- **Accurate Air Content Measurement:** Pressure method uses Boyle's Law, while the volumetric method employs a roller agitation system for reliable results.
- **Built for Field Use:** Rugged anodized aluminum construction, an airtight lid, and stainless steel clamps provide long-term durability.
- **Standards Compliant:** Meets ASTM C231, ASTM C173, and AASHTO T152 requirements.



Air Entrainment Meter Standard (Type B)

Key Features:

- **ASTM C231 Pressure Method:** Measures the air content of freshly mixed normal-weight concrete in accordance with ASTM C231 and AASHTO T152.
- **Large Easy-Read Gauge:** High-visibility 0–12% air content dial with 0.25% graduations for fast, accurate readings in the field.
- **Aggregate Correction Capability:** Supports determination and application of the aggregate correction factor for porous or absorptive aggregates as specified by ASTM C231.



Air Entrainment Meter Digital

Key Features:

- **Digital Pressure Transducer:** A high-resolution digital display reduces analog gauge-reading errors and improves measurement consistency.
- **Data Storage & Export:** Stores test results with date, time, and sample ID, with USB or Bluetooth connectivity for easy record management.
- **Automatic Aggregate Correction:** Digitally stores and automatically applies the aggregate correction factor to reduce calculation errors.
- **ASTM C231 Compliant:** Performs the standard Type B pressure test while enhancing accuracy with digital measurement technology.



Air Entrainment Meter Ultra Precision

Key Features:

- **High-Accuracy Pressure Gauge:** The temperature-compensated stainless-steel Bourdon-tube gauge provides high-resolution measurement for demanding laboratory and field applications.
- **Multi-standard Compliance:** Suitable for ASTM C231, EN 12350-7, BS 1881-106, and AASHTO T152 testing requirements.
- **Certified Calibration:** Individually supplied with a factory calibration certificate and calibration verification port for routine performance checks.
- **Precision-Machined Chamber:** Tight manufacturing tolerances minimize systematic measurement errors and improve repeatability.





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💡 Did You Know?

Entrained air was discovered by accident in the 1930s when researchers found that concrete mixed with certain compounds was far more resistant to freeze-thaw damage.

This led to the development of **ASTM C231**, first published in 1940, which remains one of the most widely used standards for measuring air content in freshly mixed concrete.



Air Entrainment Meter High Precision

Key Features:

- **High-Resolution Pressure Gauge:** Fine 0.1% air-content graduations provide greater reading resolution than standard models.
- **Multi-standard Compliance:** Meets ASTM C231, AASHTO T152, and EN 12350-7 requirements for infrastructure and construction testing.
- **Positive-lock Clamp System:** Four heavy-duty lever clamps provide a secure, airtight seal for consistent test results.
- **Stainless Steel Gauge Mechanism:** Corrosion-resistant internal components help maintain long-term calibration in demanding field environments.
- **Shock-mounted Gauge:** Protects the gauge mechanism from vibration during transport and field use to preserve accuracy.



Air Entrainment Meter Portable

Key Features:

- **Lightweight Aluminum Construction:** Easy to carry and operate, making it ideal for elevated, confined, or remote job sites.
- **7L Bowl Capacity:** The 7,000 mL bowl provides the sample capacity required for concrete air-content testing while remaining practical for field use.
- **ASTM-Compliant Performance:** Designed for concrete air-content testing in accordance with ASTM C231 and AASHTO T152.
- **Quick-Release Clamp System:** Fast, secure sealing shortens test setup time during high-volume field operations.
- **Protective Carrying Case:** Shock-resistant case with dedicated compartments keeps the instrument and accessories organized and protected.





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MORTAR AIR ENTRAINMENT METERS

Mortar Air Entrainment Meter Standard

Key Features:

- **Multi-Standard Testing:** Designed for mortar and masonry testing in accordance with ASTM C185, DIN EN 459-2, and DIN EN 413-2.
- **Durable Cast Aluminum Construction:** Airtight upper pressure head and test pot with spring clamps provide reliable performance in routine laboratory use.
- **Pressure-Compensation Measurement:** Measures the air content of freshly mixed cement paste, mortar, and masonry cement using the pressure-compensation method.
- **Simple Push-Button Controls:** Dedicated test and correction valves enable fast, reliable single-operator testing.



Mortar Air Entrainment Meter Wide Range

Key Features:

- **Extended Measurement Range:** Measures air content beyond 30%, making it ideal for high-air-content specialty mortars and lightweight mixes.
- **Dual-scale Gauge:** Clearly marked standard and extended measurement zones provide easy reading across the full range.
- **Specialty Standards Compliance:** Suitable for ASTM C185, DIN EN 459-2, and specialty mortar testing applications.
- **Large-Capacity Test Pot:** Increased sample volume improves the representativeness of low-density, high-air-content mortar testing.
- **Complete Accessory Package:** Includes an additional calibration vessel and testing guide for extended-range applications.



Mortar Air Entrainment Meter Precision

Key Features:

- **High-Accuracy Pressure Gauge:** Provides improved reading precision for mortar mix design and routine quality-control testing.
- **Factory Calibration Certificate:** Individually calibrated and supplied with calibration data for confidence in measurement accuracy.
- **Standards Compliant:** Meets ASTM C185 and DIN EN 459-2 requirements for mortar testing applications.
- **Precision Sealing Surfaces:** Close-tolerance machined interfaces minimize air leakage for consistent, reliable test results.
- **Temperature-Compensated Gauge:** Maintains measurement accuracy across normal laboratory temperature variations.



Mortar Air Entrainment Meter Digital

Key Features:

- **Digital Pressure Display:** A high-resolution digital transducer reduces analog reading errors and improves measurement consistency.
- **Digital Test Records:** The digital model supports efficient recording and management of mortar air-content results.
- **Digital Standards Compliance:** Meets ASTM C185 and DIN EN 459-2 requirements while providing traceable digital test records.
- **Auto Calibration:** Automatic zero and span calibration simplifies setup while maintaining measurement accuracy.
- **Real-time Pressure Monitoring:** Live pressure display helps ensure the correct test pressure is reached before measurement.





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Why Choose Torontech for Air Meter Testing

- ▶ **Complete Range — Concrete and Mortar, One Supplier:** Standard, dual-method, digital, ultra-precision, high-precision, portable, and four mortar meter variants — every air content measurement application is covered.
- ▶ **Precision Options for Every Application:** Choose from standard field instruments, digital models, and high-precision systems according to your application and required measurement accuracy.
- ▶ **Multi-Standard Testing:** Models are available for ASTM C231, ASTM C173, ASTM C185, AASHTO T152, EN 12350-7, BS 1881-106, DIN EN 459-2, and DIN EN 413-2 test methods.
- ▶ **Digital Measurement Options:** Digital models provide clear direct readings, reduce manual transcription errors, and simplify the recording of test results.

Strengthen Your **Concrete and Mortar Air Content Testing Program** with Torontech

Torontech's concrete and mortar air-meter lineup helps construction laboratories, ready-mix quality-control teams, materials-testing firms, and precast producers obtain accurate, repeatable air-content results across a wide range of applications.

Explore the full lineup: <https://www.torontech.com/product/concrete-air-meter-air-entrainment-meter/>

For expert guidance on selecting the right air meter for your application, standard, and budget: sales@torontech.com

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