



CarbonCure's Robust Lab Protocol: Customized Trials to Maximize Customer Success

At CarbonCure, we recognize that strong data and thorough evaluation and verification are essential for any concrete producer looking to incorporate CO₂ mineralization into their operations.

Our comprehensive two-step lab protocol ensures compatibility, and maximizes cement efficiency.

Step 1: Material Trials Tailored to You and Your Operations

Consulting and building upon hundreds of prior customer trials, our expert lab team will carefully assess how your cement, supplementary cementitious materials (SCMs) and chemical admixtures respond to injected CO₂.

Send your material samples to CarbonCure's lab in Dartmouth, Nova Scotia, Canada

- **Cement and SCMs:** Our team will confirm volumes for you, typically in the same ratio you use on-site (e.g. 70% cement / 30% SCM).
- **Admixtures** - sealed properly to avoid contamination - also form a part of the trial process. Our team will advise on necessary volumes.

We test for CO₂ reactivity in our high-tech lab using cutting-edge technology and ASTM standards

- **Isothermal Calorimetry (ASTM C1679):** Measures the heat given off during cement hydration. A noticeable heat release confirms that CO₂ is reacting to form calcium carbonate—helping improve concrete's properties.
- **Fourier-Transform Infrared Spectroscopy (FTIR):** Checks qualitatively for calcium carbonate formation by looking at characteristic infrared signals.
- **X-Ray Diffraction (XRD), Thermogravimetric Analysis (TGA), and Mass Spectrometry:** As needed, to provide deeper insights into how CO₂ interacts with your materials.

[Learn more](#) about the advanced equipment and processes powering CarbonCure's research lab.

What You Can Expect

- ✓ Verification that your cementitious materials are a good match for CO₂ injection.
- ✓ Assessment of whether admixtures and CO₂ might affect setting times or other key properties.



Step 2: Determine CO₂ Dose & Cement Reduction

Our team will then evaluate lab results to fine-tune the precise amount of injected CO₂, verify performance, and identify potential cement savings to maximize value without sacrificing quality. All testing is completed at a CarbonCure lab, or at a CarbonCure-approved lab.

- **Batching and fresh concrete testing**
- **Standard Mixing Sequence:** Start with aggregates and partial water, add cementitious materials, then the remaining water and admixtures, and finally inject CO₂.
- **Measure Slump (ASTM C143), Air Content (ASTM C231), Unit weight (ASTM C138) and Temperature (ASTM C1064):** Confirm that your fresh concrete meets jobsite requirements.
- **Cylinder casting and strength testing**
- **Cast 4×8 in. Cylinders (ASTM C39):** Evaluate compressive strength at 7 and 28 days (or additional time points if needed).
- **Optional Durability Indicator Tests:** Bulk and surface electrical resistivity tests can help assess long-term performance of concrete.

[Learn more](#) about CarbonCure's comprehensive testing.

What You Can Expect

- ✓ Decision support to help you reduce cement thanks to CO₂ injection and mineralization.
- ✓ You'll gather reliable lab data to assure customers and stakeholders that your concrete meets or exceeds project specs.

Backed by Two Specialized Lab Teams



Customer Lab Team works directly with new customers to confirm that your materials and CarbonCure's technologies are the perfect match—by the time you install CarbonCure's equipment, you will already know what results to expect.



Research & Development Team creates new innovations, runs advanced tests (like XRD or TGA), and supports existing producers with any troubleshooting.

[Learn more](#) about the teams behind our advanced lab protocols.