



Research and testing capabilities on low carbon concretes

BRE is experienced in research and testing of a variety of low carbon cement systems, binders and related materials:

- Alkali activated cementitious materials/geopolymers
- Binders that harden through carbonation/carbon sequestration
- Calcium sulfoaluminate-based cements
- Sulfur binders
- Supplementary cementitious materials (calcined clays, reclaimed fly ash, energetically modified materials)
- Novel minor constituents (eg graphene admixtures)
- Recycled and secondary aggregates

Physical properties of concrete

We have a fully equipped concrete research laboratory for tests on plastic and hardened concrete and manufacture of test specimens. Fresh and strength-based concrete tests to standard and in-house test methods for.

- Consistence
- Air content
- Strength (compressive, flexural, compressive)
- Modulus
- Comparison with conventional concrete reference/comparatives
- Microstructure/petrography
- Other tests on request (including structural)



Durability of concrete

New cement and concrete formulations not based on Portland cement (PC) may have different strength and performance envelopes. We offer:

Durability based tests

- Accelerated Freeze thaw/scaling test (BS/EN)
- Sulfate resistance (BRE in house and ASTM)
- Carbonation (natural and accelerated exposure, BS/EN)
- Marine exposure (secure site with full immersion and atmospheric conditions)
- Dimensional stability (in house method)
- Abrasion resistance
- Chloride diffusion (BS/EN)
- Chloride migration (BS/EN)

Creep and shrinkage of concrete

New cement and concrete formulations not based on PC may have different creep, and shrinkage properties, which need to be known about for design purposes. We can conduct creep in compression and a variety of standard and non-standard shrinkage tests. We can also screen for long term potential instabilities (shrinkage/expansion) by storing in various moist conditions and temperatures. Tests are relatively long term and are not offered by many other laboratories

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