

Petrographic Analysis

One of the most effective methods used to evaluate building materials quality, diagnose causes of deterioration, and determine extent of damage is petrographic examination. It is applicable to aggregates, concrete, mortar, grout, plaster, stucco, terrazzo, building stone, and similar materials. Petrographic methods combine unaided visual inspection and examination using stereo, petrographic and metallographic microscopes, and scanning electron microscopes. CTLGroup's expert interpretation of findings helps develop practical solutions to our clients' problems.

Petrographic examination is often supplemented with chemical analysis, and X-ray diffraction analysis. Physical tests develop data on compressive strength, volume change, air content of hardened concrete, freeze-thaw durability, and rapid chloride permeability.

CTLGroup provides all of these services. Our expert petrographers and materials technologists are available for on-site investigations.

Using guidelines given in various ASTM standards, CTLGroup's staff of internationally-recognized professional petrographers derive information that includes:

- Condition of material
- Causes of inferior quality, distress, or deterioration
- Probable future performance
- Compliance with project specifications
- Description of materials

Petrographic examination of concrete can provide descriptive information that includes:

- Degree of cement hydration
- Estimation of water-cement ratio
- Extent of paste carbonation
- Presence and amount of fly ash
- Extent of corrosion of reinforcing steel
- Evidence of alkali-aggregate reaction, sulfate attack or other chemical attack
- Presence of potentially reactive aggregates
- Evidence of improper finishing
- Estimation of air content
- Evidence of early freezing
- Causes of cracking

