

High-Alumina Cement Concrete

Assessing HAC

HAC differs from Portland cement, being composed of calcium aluminates rather than calcium silicates. Its rapid strength development made HAC popular for precast concrete in the UK during the 1960s. Mineralogical 'conversion' however, sometimes caused catastrophic reductions in concrete strength and increased vulnerability to chemical degradation.

Three UK roof collapses in the mid-1970s led to widespread inspection and monitoring of HAC concrete units, exhaustive research and curtailment of HAC use for structural purposes. Sandberg has been closely involved at research, investigative and consultancy levels for more than twenty five years.

A large stock of UK buildings containing HAC concrete remains, in which the HAC is now usually highly converted. Whilst the probability of sudden collapse is now perhaps remote, there is continuing concern over long-term durability, particularly where carbonation has occurred to the depth of steel reinforcement or prestressing wires.

Experienced site and laboratory assessments can identify potential deficiencies and, for sound HAC concrete, will provide reassurance over future serviceability.

Sandberg Services include:-

- Site inspection (including condition of reinforcement)
- Non-destructive testing (including residual strength, ultrasonic pulse velocity, depth of cover etc)
- Sampling including drilling of core samples
- Confirmation of cement type (where necessary)
- Visual and microscopical examinations (including carbonation and general concrete condition)
- Chemical analysis (including cement, alkali, sulphate, chloride contents etc)
- Assessments of engineering performance and material durability

All work is carried out by trained and professionally qualified staff supported by well equipped UKAS accredited laboratories .



One sampling technique with minimised damage and disturbance



Microscopical examination of thin-section

To discuss your needs please contact

Richard Rogerson

Partner, Construction Materials Department

r020r07.fin