

Cementitious Structural Repair Material

What is LoCem®?

LoCem® is a geopolymer-based, highly durable inorganic binder formed using recycled and waste industrial by-products that is alkali-activated to form a mortar and concrete meeting the requirements of EN1504-3 and PAS8820-2016.

LoCem® concrete repairs come as mix designs for non-structural (R1, R2) and structural (R3, R4) applications in accordance with definitions stated in EN1504-3:2006.



Low-carbon sustainable product (CO₂e savings of over 80% compared to oPc equivalents)



High adhesion to oPc and AACM concrete



Low or no shrinkage



Fire-resistant to 1200C for over 5 hours



Compatible with C-Probe +point®, +chase® and +spray® alkali-activated ICCP anode materials



High chemical and environment resistance

Appearance and Packaging

The AACM powder is a light grey colour that when mixed with the liquid alkali-activator it hardens to form a light grey (near white) finished repair.

It is delivered palletised in 5kg or 25kg bags and 1tonne big-bags with, similarly palletised, alkali-activation liquid that is available in 1 litre, 5litre containers or IBC for higher volume use.

If stored unopened in dry conditions then the shelf-life expectation is 12-months from date of manufacture that is marked clearly on the containers.



Where to use LoCem®

- Structural concrete repairs to any structure type
- Interior and exterior applications
- Where corrosion, chemical and/ or fire resistance are important requirements
- Applications requiring hand-placement, form/pour or spray is preferred
- Applications using C-Probe C-Puck®, +chase®, +point®, +spray® and Carro+® galvanic and galvanic/ impressed anodes

Technical Data

Note all data quoted in this technical datasheet are derived from laboratory test studies undertaken by , or for, C-Probe, however, site conditions may impact in-situ measurements beyond the control of the Company.

Appearance and Packaging

- Alkaline geopolymer powder with aggregates
- Alkaline liquid activator with retarder admixture
- Main constituents are a designed mix of slag (S) and pozzolanic (P,Q) materials
- Subsidiary constituents <5%w/w within binder for each constituent
- Density = circa 2,238 kg/m³ ; Dmax = 3mm
- Fineness = 100% passes 90µm sieve



Requirements of BS EN1504-3 for R4 strength concrete and CE equivalence:

Mechanical/ Physical Test Parameter	EN1504-3 Criteria	LoCem® Test Data
Standard compressive strength, MPa at 28d	> 45	50-65
Elastic modulus, GPa	> 22.0	34.8-37.9
Adhesion, MPa	> 2.0	2.5
Restrained Shrinkage, MPa	> 2.0	No shrinkage
Capillary moisture uptake, kg.m-2.h-0.5	< 0.5	n/a
Chloride content, %w/w binder	< 0.05	0.0

Additional Characterisation Testing:

Mechanical/ Physical Test Parameter	LoCem® Test Data
Flexural strength, MPa at 28d	5-6
Resistivity, kohm.cm (ohm.m)	> 100
Heat of setting, degC/kg	0.87
Restrained Shrinkage, MPa	0.803
Capillary moisture uptake, kg.m-2.h-0.5	4.0
Chloride content, %w/w binder	46-51

Applications Conditions / Limitations

Air Temperature	-5C / +30C
Substrate Temperature	-5C / +30C





Application Method

Method of Application	<p>Apply only to sound and prepared concrete surfaces. Do not add water to the mix—only use alkali activator to recommended levels to provide workability.</p> <p>Pre-wet the substrate and remove loose material. Apply in layers to prevent void formation and work around clean reinforcement steel. Each layer shall be applied wet-on-wet but allowed to stiffen between layers.</p>
Cleaning of Equipment and Tools	<p>Do not allow the material to harden on or in tools or equipment, especially metallic items. Wash with water immediately after use and re-use of equipment and tools is possible.</p>
Workability / Pot Life	<p>45-60 mins (adjustable with retarder use)</p>
Curing	<p>The mixed material will cure under normal atmospheric conditions without the use of curing compounds. Heating the repair material will assist the speed of curing. Avoiding exposure to rain within the first hour after placement is essential.</p> <p>Reference shall be made to BSI PAS8820:2016 for specific requirements.</p>
Legal Considerations	<p>All information provided by C-Probe is given in good faith and are based on data arising from extensive testing undertaken by various external agencies, including Sheffield Hallam University. Use of these materials shall be in accordance with C-Probe's recommendations. No warranty shall be inferred or any liability assumed by C-Probe for the use of the information contained in this technical datasheet.</p> <p>The user must test the product's suitability for their intended use of the product and the method of application presumed. C-Probe reserves the right to alter the content of its technical datasheet at any time and without notification of the user and as such it is assumed that users shall familiarise themselves with the current information prior to purchasing and using the material on an application. Proprietary rights of third parties must always be respected and observed.</p>