MATERIAL EVOLUTION

TECHNICAL DATA SHEET

MevoCem 52.5N

Alkali-Activated Cementitious Binder

ALTERNATIVE BINDER SYSTEM

- Zero percent clinker
- Manufactured in the UK
- Up to 85% CO_2 savings (embodied carbon of 144-196 kg CO_2e / tonne)
- 52.5N alternative binder system
- One part powder system
- Similar to white cement in colour

APPLICATION USES

01. Semi-dry Concrete

- Paving
- Building blocks
- Kerbs
- Gardening and landscaping elements
- Roof tiles
- Pipes and manholes

02. Precast Concrete, High strength with Rebar Reinforcement

- Precast products
- Ground-bearing small element precast (cattle slats, L walls, etc.)

03. Ready-mix Concrete

- Foundations
- Footings
- Floors, slabs
- Paving
- Paths
- Driveways
- Concrete piles

CONCRETE PROPERTIES

- Good early and long-term strengths compared to blended cements when cast at low temperatures
- Concrete with strength class from C20 to C50
- Workability up to 120 mins on S1-S4
- Higher flexural strength
- Enhanced chemical resistance and durability
- Very low heat of hydration, far below the characteristic value of 270 J/g required for low heat common cements
- Works in reinforced and unreinforced concrete

RECOMMENDATIONS FOR USE

- Use only recommended admixtures from Material Evolution
- Use clean graded aggregates free from organics/ deleterious materials
- Avoidance of contamination between OPC and MevoCem concretes as this can affect the fresh properties, and later strength if combined with OPC
- Test samples should be cured in a standard environment but out of water
- Ensure effective curing measures are employed to avoid rapid surface drying. A minimum 90% efficient curing membrane is recommended in accordance with good site practice.
- Please contact Material Evolution Technical Services (info@materialevolution.com) for further guidance

DATA AND CERTIFICATION

Table 1. *Results from independent testing in accordance with methods as described in BS EN 196.*
**Strength results where the w/b ratio of the tested mortar has been reduced, in line with permissions in BSI Flex 350 v2.0:2024-09.*
***Strength results where both a reduced w/b ratio is used, along with curing in ambient environment, not submerged.*

Physical Characteristics	
Density (g/cm^3)	2.79
Blaine (cm^2/g)	4360
Heat of hydration (J/g), 24h	138.20
Heat of hydration (J/g), 72h	160.30

Compressive Strength (MPa)			
Cure Duration	w/b 0.5	w/b 0.45*	w/b 0.45**
2 days	23.6	32.7	34.1
7 days	42.2	40.8	47.2
28 days	55.3	57.7	64.5

MevoCem satisfies chemical requirements as per EN197-1, with a total composition including only 0.07% S2- (sulfide) & <0.01% Cl- (chloride). In addition to this, the total alkali content as Na20 eq. does not exceed 5%.

MIX DESIGN

Concrete mix designs need to be established to each individual need, we strongly recommend that trial mixes are carried out before scaling up to larger work, and that they meet the required fresh properties and strength requirements. Please contact Material Evolution Technical Services for further guidance info@materialevolution.com.

AVAILABILITY

MevoCem is available across the UK, supplied from the Mevo A1 Production Facility in Wrexham, delivered to customers in bulk tankers.

STANDARDS AND SYSTEMS

Independently tested to 52.5N according to BSI Flex 350 v2.0:2024-09, using procedures described in BS EN-196 and EN-197, with a modified w/c ratio of 0.45

Ongoing compliance testing in accordance with Flex350

Table 2. *Summary of the available test results through the BSI Flex 350 testing programme. The tested concrete has been formulated for design chemical class DC-3. The certified mix uses a w/b ratio of 0.43, 400 kgm-3 of MevoCem and a limestone aggregate package. See 'example 1' (table B.1) of BSI Flex 350 v2.0:2024-09 for the reference design.*

Flex 350 Clause	Test Name	Result (or expected date)
6.3.1	Compressive strength	D3 – 38.7 MPa D28 – 61.0 MPa D56 – 63.8 MPa
6.3.2	Tensile strength	D28 – 3.65 MPa
6.3.3	Secant modulus of elasticity	30.0
6.3.4	Poisson's ratio	0.20
7.3	Accelerated carbonation	Depth of carbonation, d_k = 34.5 mm @ D70
7.4	Chloride migration	Average chloride ingress depth = 16.1 mm Chloride migration coefficient = 3.5 x10^{-12} ms^{-2}
7.5	Freeze-thaw resistance	After 56 cycles = 3.97 kgm^{-2}. No visual cracking, scaling or loss of salt solution.
7.6.1	Sulfate resistance	Due Feb 2026 (1 year) Feb 2027 (2 year)