Lee Baldwin

Head of Customer Technical Support Concrete

Heidelberg Materials

Heidelberg Materials

HM Business Overview

evoHub | evoBuild CPD 29th April 2026

13.01.2026

Heidelberg Materials is one of the world's largest building material companies

Cement	Aggregates	Concrete	Asphalt
127	2934	45	8
Million Metric Tons	Million Metric Tons	Million Cubic Meters	Million Metric Tons

Providing the materials to build the future.

- > 150 years company history
- > 3000 locations
- 50 countries
- 51000 employees

until 2023....

Hanson

HEIDELBERGCEMENT Group

became...

Heidelberg Materials

Heidelberg Materials UK is leading the way

- World's first carbon capture cement plant producing **evoZero near-zero cement** – Padeswood cement plant
- World's first **hydrogen trial** at a cement plant – Ribblesdale cement plant
- UK's first **hydrogen asphalt trial** – Criggion asphalt plant
- UK's first use of an **electric paver** on a major road network

About Heidelberg Materials

- Leading supplier of lower carbon heavy building materials to the construction industry.
- Produces aggregates (crushed rock, sand and gravel), asphalt, ready-mixed concrete, cement and GGBS.
- Part of a global company represented in over 50 countries with more than 51,000 employees.
- Committed to decarbonising the built environment/growing the circular economy.
- Develops digital solutions to improve efficiency, productivity and customer service.

No.1
for cement and concrete

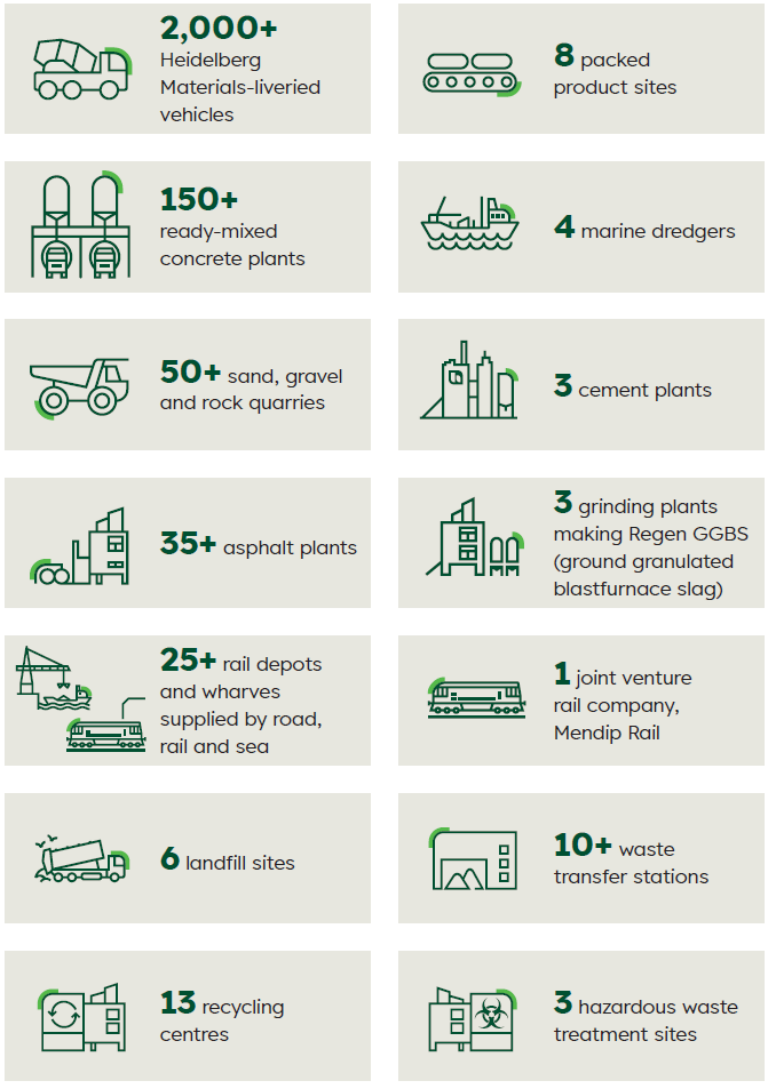
No.2
for aggregates

No.3
for asphalt and contracting

Our business – Nov 2025 Update

In the UK, Heidelberg Materials is split into five business lines:

- Aggregates
- Asphalt and contracting
- Cement
- Concrete
- Recycling



Supplying essential building materials

Our products are used to help build the infrastructure we need to live, learn, work and travel:

Residential:
Deansgate Square, Manchester

Commercial:
The Shard, London

Hospitals:
Christie Hospital, Manchester

Tunnels:
Thames Tideway super sewer, London

Bridges:
Second Severn Crossing linking England and Wales

Roads:
A414 resurfacing works, Hertfordshire

Power generation:
Hinkley Point C, Somerset

Sea defences:
Marine Parade, Dawlish, Devon

Sport:
Sir Chris Hoy Velodrome, Glasgow

Rail:
Channel Tunnel rail link

Introduction to Low Carbon Concrete

Heidelberg Materials UK Technical Support
Continuous Professional Development

Heidelberg Materials

Agenda

1. Introduction to Heidelberg Materials
2. The “Low Carbon Challenge”
3. Low Carbon Concrete
4. SCMs & Carbon Capture Technologies
5. Low Carbon Concrete Specification

The “Low Carbon Challenge”

The Source, The Ambition, The Journey

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The path to decarbonisation

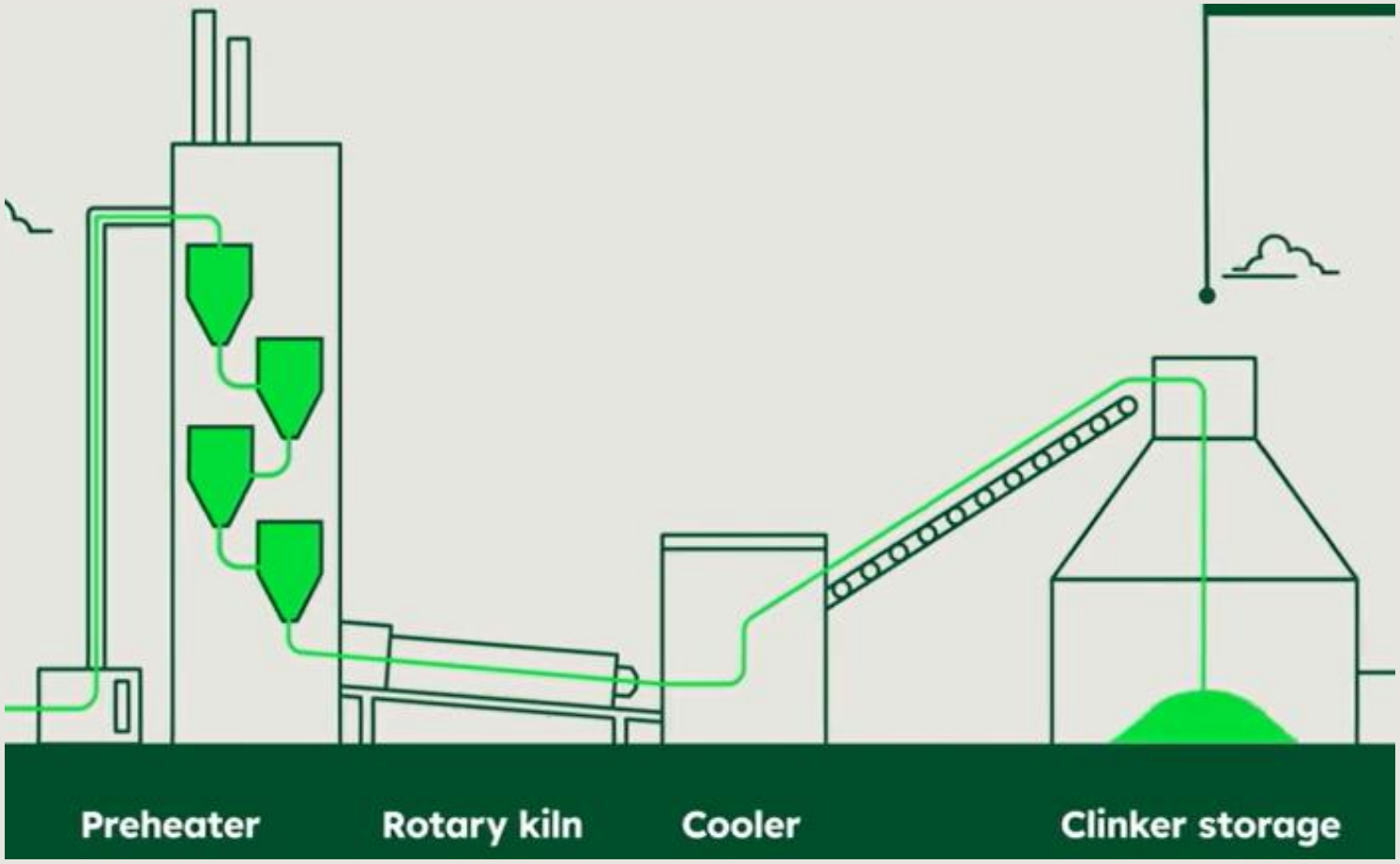
We are committed to reaching net zero carbon by 2050 and progress to date is good: we have reduced our CO_2 emissions in the UK by more than 50% since 1990.

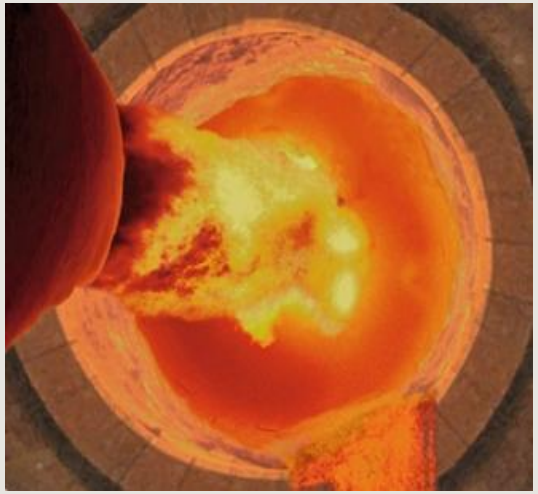
As we move forward, we are:

- Continuing to invest in plant efficiency across our operations.
- Developing plans for a carbon capture and storage plant at our Padeswood cement works in north Wales.
- Increasing the use of alterative raw materials and fuels, including hydrogen.
- Developing innovative, lower carbon materials.

CO_2 : Cement Manufacture – CEM I

Limestone + Clay heated to 1400°C – cooled and ground to make cement



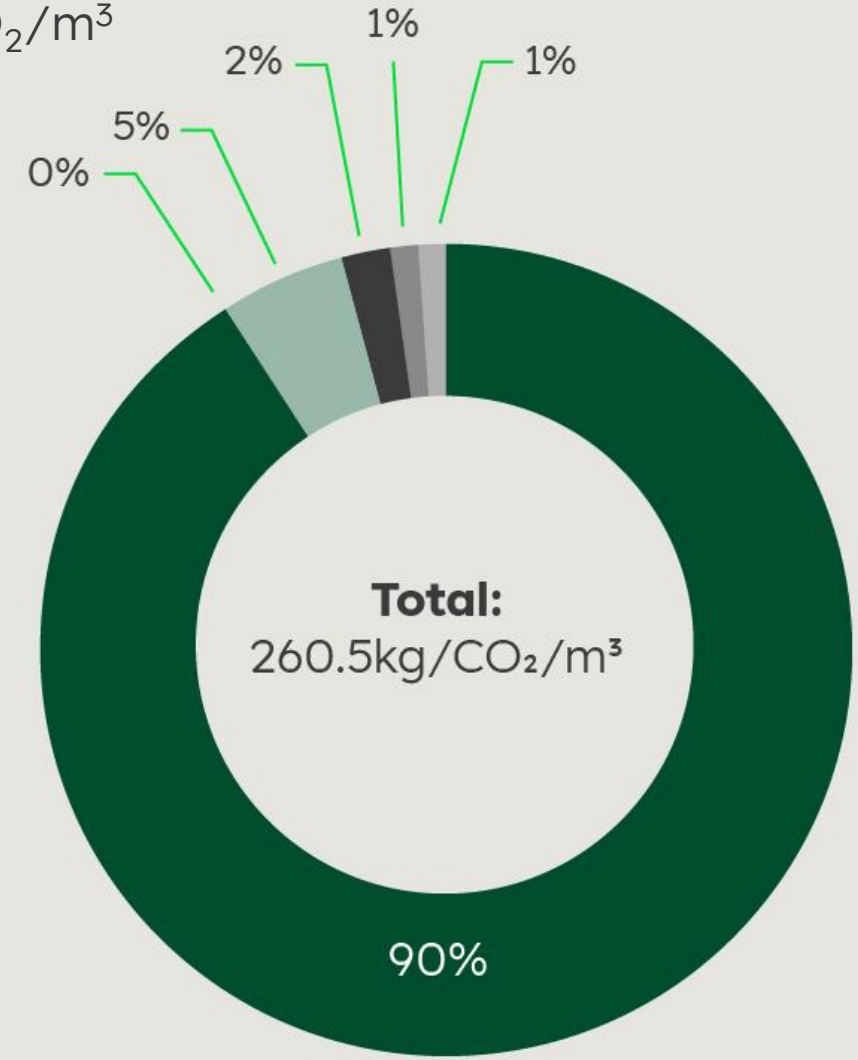


$CaCO_3$ + Heat ➡ $CaO + CO_2$

CEM I = 840 kg/CO2/Tonne
Source MPA Factsheet 18 (2025)

CEM I Concrete Mix: Carbon (CO_2) in concrete

C28/35 CEM I Concrete
Total 260.5kg/CO_2/m^3



- CEM I
- GGBS
- Raw material haulage
- Aggregates
- Chemical admxitures
- Operations

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Low carbon concrete

Heidelberg Materials

The Low Carbon Journey

- What is “Low Carbon”?
  - Reduced CO_2 against previous builds
  - Reduced CO_2 against a fixed benchmark
- Quick Wins
  - How mix specifications can drives up CO_2
- Engagement
  - Working with your Concrete supplier
- Innovation
  - Future materials and digital technologies

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Meeting the industry's low carbon needs

- Net zero commitments are becoming a requirement on the majority of new construction projects
- These require reduction in the project's carbon
- Key challenges in specifying concrete are;
  - Benchmarking its carbon intensity against a "fixed and static" reference
  - Access to verified carbon data
- evoBuild, a global brand for low carbon and circular products
- We target **at least 30% CO_2 reduction**
- Movement through the evoBuild increments enables reduction of CO_2.

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Low Carbon evoBuild Concretes – GWP Mapped Against Global Concrete Ratings

evoBuild low carbon concrete 50

GCCA A1-A3 minimum Grade D

evoBuild low carbon concrete 60

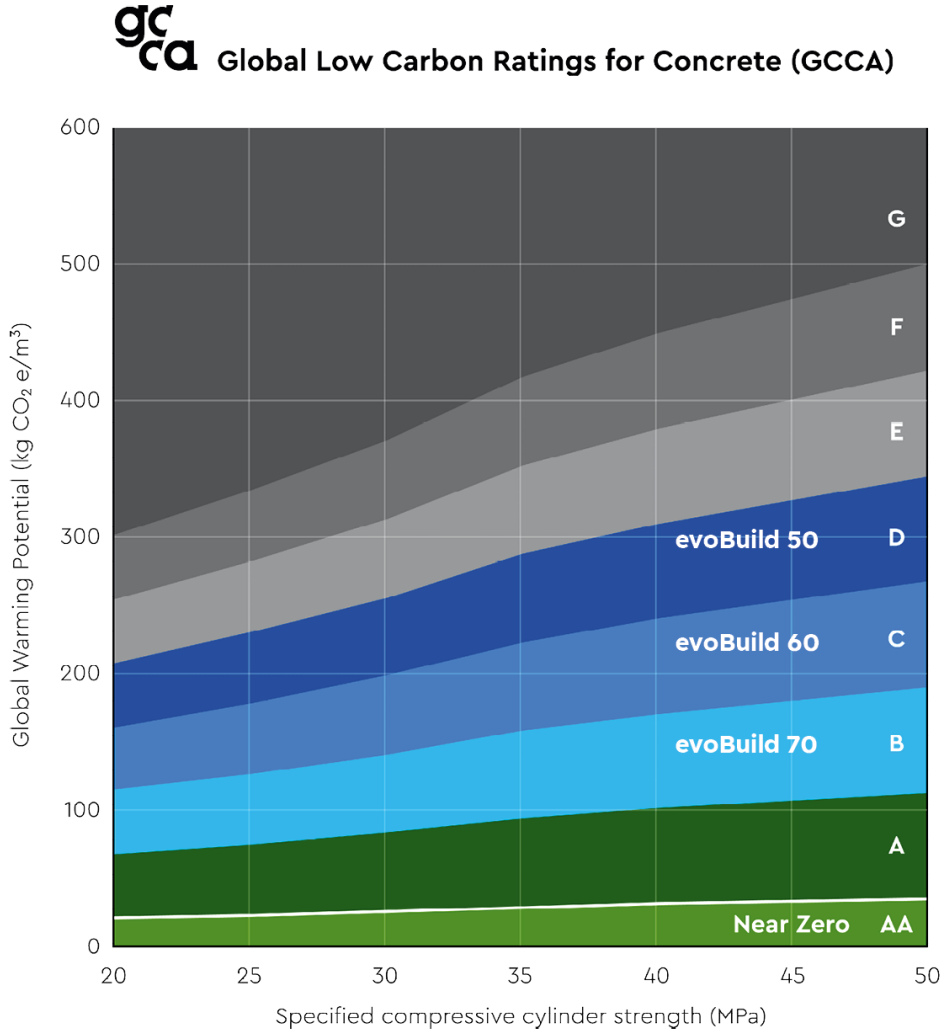
GCCA A1-A3 minimum Grade C

evoBuild low carbon concrete 70

GCCA A1-A3 minimum Grade B

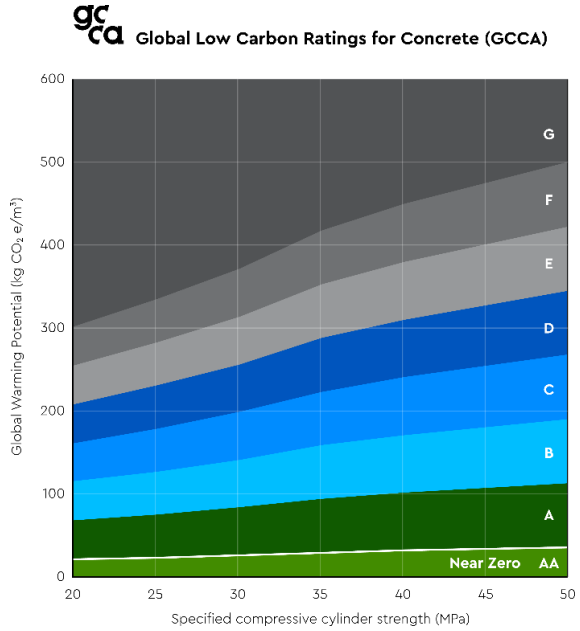
Key benefits:

- Reduces carbon emissions by 50-70% against fixed CO_2/T GCCA reference.
- Verified indicative Global Warming Potential (GWP) values provided
- Behaves like current concretes - unchanged construction process.
- Complies with BS 8500 and BS EN 206-1.
- Available nationally



Low Carbon evoBuild Concretes – Customer Example

	Mix Comments	Clients E10	evoBuild 60 GGCA C	evoBuild 70 GGCA B
FND 4	**Mix/Grade**	FND4	FND4	C25/30
	Strength Grade	C25/30	C25/30	C25/30
	Minimum Cement Content (MCC)	380kgs	360kgs	360kgs
	Max Water Cement Ratio (WCR)	0.35	0.45	0.45
	Cement Type	CIIIA	CIIIB-SR	CIIIC
	Consistence	S3	S3	S3
	Estimated Carbon kg/CO_2/m³	220	174	152



Notes:

- Clients spec called for FND4 in CIIIA – MCC and WCR applied by FND criteria – driving carbon up – GCCA D
- Client asked for reduced carbon options
- evoBuild 60 in CIIIB proposed
- evoBuild 70 in CIIIC proposed – can't be designated FND 4
- Key point – design criteria are the key drivers of carbon in concrete

CO_2 Data: Ready-Mixed Concrete: Environmental Product Declaration (EPD)

epd-norway
Global Program Operator

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN 15804+A2

Heidelberg Materials UK – UK average C28/35 CIIIA Ready-mixed concrete

Owner of the declaration
Heidelberg Materials UK
Second Floor, Arena Court
SL6 8QZ Maidenhead
United Kingdom

Product
UK average C28/35 CIIIA Ready-mixed concrete

Declared product / Declared unit
1 m³ of UK average C28/35 CIIIA Ready-mixed concrete

This declaration is based on Product Category Rules
EN 15804:2012 + A2:2019,
NPCR 020 PART B for concrete and concrete elements (v3.0)

Program operator:
EPD-Norge
Majorstuen P.O. Box 5250
N-0303 Oslo
Norway

Declaration number
NEPD-7893-7537-2

Registration number
NEPD-7893-7537-2

Issue date
21.10.2024

Valid to
21.10.2029

EPD Software
Emidat EPD Tool v1.0.0

Indicator	Unit	A1-3
GWP-total	kg CO_2-eq.	162.68 (145.40)*

Ready-Mixed Concrete

Heidelberg Materials published a series of concrete EPDs in 2024

- C32/40 CIIIB, CIIIA, CEM I
- C28/35 CIIIB , CIIIA, CEM I
- C16/20 GEN3 CIIIA, CEM I

These EPDs

- Use national product data
- The A1-A3 GWP numbers are published for both Gross and Net cement inputs

Ensure that your concrete supplier is able to supply Gross numbers – as used by Low Carbon Concrete benchmarking schemes

CO_2 Data: Ready-Mixed Concrete: Carbon Quotation Stage and Post Delivery

EMBODIED CARBON RATING CERTIFICATE

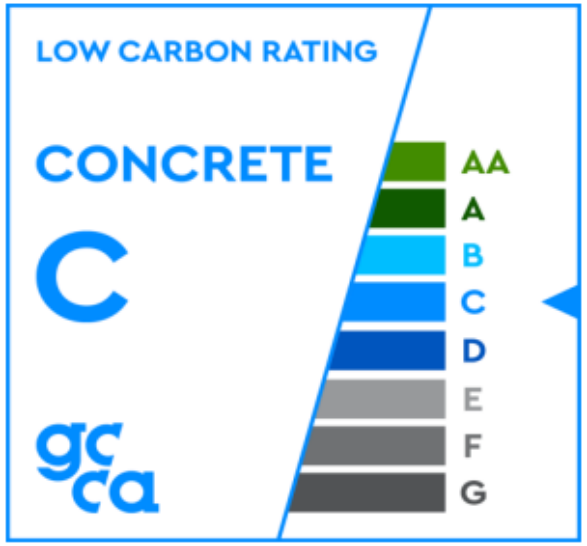
Concrete mix	C25/30 - MIX 1A
Cube strength, f_{cu}	30 MPa
Cement type	CIIIA+SR
SCM	Regen GGBS
CEMI content	175 kg/m³
w/c ratio	
SCM content	50%
Aggregate type	LIMESTONE 20
Slump class	S3

MIXTYPE/STRENGTH **C25/30**

Gross C 198 $kgCO_2e/m^3$

Net 179 $kgCO_2e/m^3$

All figures kg CO_2e/m^3 Bounding figures are only applicable to specified strength class



Ticket Date	Supply Plant	Mix Type	Volume (m3)	Carbon ($kgCO_2e/m^3$)	GCCA
01/11/2024	3204 OXFORD	C32/40	7	164.7	D
01/11/2024	3204 OXFORD	C32/40	7	165.1	D
20/11/2024	3204 OXFORD	C32/40	7	163.3	D
20/11/2024	3204 OXFORD	C32/40	2	169.6	D
20/11/2024	3204 OXFORD	C32/40	7	166.1	D
20/11/2024	3204 OXFORD	C32/40	7	166.1	D
20/11/2024	3204 OXFORD	C32/40	7	165.2	D

Ready-Mixed Concrete

EPDs need to be verified – as such there is a time and cost factor

At project tender and quotation stage, customers want to know the A1-A3 GWP numbers on many different concrete mixes

Heidelberg Materials calculates and provides verified indicative A1-A3 Gross GWP number for each mix line on its quotes

Post- delivery: Carbon scorecard can be provided. Customers can report actual carbon intensity on a project

SCMs & Carbon Capture Technologies

Heidelberg Materials

Supplementary Cementitious Materials (SCMs): Alternatives to CEM I

SCM	A1-A3 kg CO_2/t*	Typical (Max) % Replacement of CEM I	UK Availability High Level
Ground Granulated Blastfurnace Slag GGBS	155	50-80 (95)	Heidelberg Materials 10 year secure import supply from developed world excess (x3 import/grinding locations)
Pulverised Fly Ash PFA	22	6-35 (50)	Import only – UK sourced beneficiated ash waste being investigated
Limestone Filler	44	10-15 (35)	Inert material. Widely available in the UK at concrete plants and also as a CEM II A-L blended cement
Calcined Clay	48-274	20-30 (50)	No UK source, import options being developed

GGBS is critical for the Low Carbon Concrete transition phase

*CO2 values; MPA Factsheet 18 2025

Carbon capture and storage - evoZero

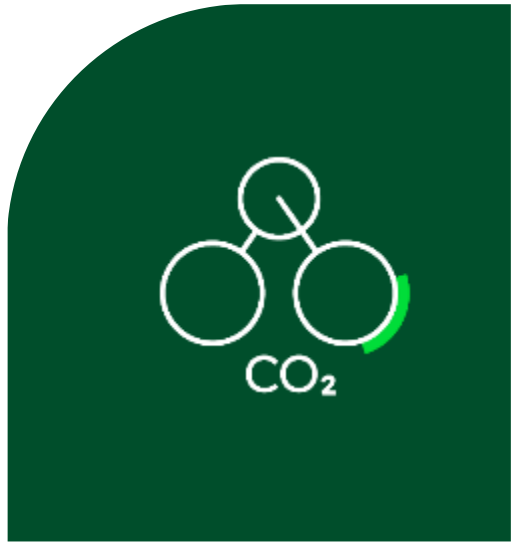
- Brevik in Norway is the world's first operational CCS Cement Plant
  - It will capture ~400,000 tonnes of CO^2 p/a
  - Liquified & permanently stored in North Sea Gas Wells
  - Equivalent CO_2 savings to parking up 180,000 cars


LCO2

Carbon capture and storage

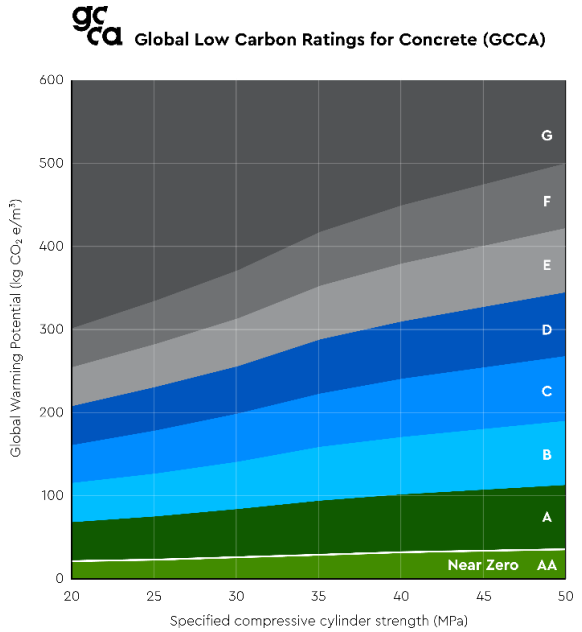
- Utilising carbon capture and storage technology is vital if we are to reach net zero carbon emissions by 2050.
- We are involved in a number of industry-leading projects at our UK cement works:
    - **Padeswood, north Wales:** Investing £400m in a facility to capture 800,000 tonnes of CO_2 a year, transported via the HyNet North West pipeline and storing it safely under the seabed. UK net zero cement as early as 2028.
    - **Ketton, Rutland:** As part of the Government's Net Zero Innovation Portfolio, we are trialling C-Capture's solvent technology to selectively capture the CO_2 produced.
    - **Ribblesdale, Lancashire:** We have proved that enforced carbonation of recycled concrete paste allows for high CO_2 uptake, preventing emissions.

The 1st net zero cement facility in the UK, and a global exemplar project.



evoZero Example – CEM I Slipform Core

	Mix Comments	Clients E10	evoBuild GGCA AA
Core	Mix/Grade	Core	Core
	Strength Grade	C40/50	C40/50
	Powder Content	450kgs	450kgs
	Cement Type	CEM I	CEM I
	Estimated Carbon kg/CO_2/m^3	390	30



Notes:

- Concrete core - schedule critical concrete element
- Typically, reliant on CEM I mixes
- Clients mix rated as GCCA E
- By replacing UK CEM I with evoZero carbon accounted, the mix carbon is significantly reduced to GGCA AA Near Zero rated
- The mix setting and performance characteristics are unaffected – hence the schedule isn't impacted

Concrete Specification & Compliance monitoring

Heidelberg Materials

Specification to BS8500 – How you can reduce carbon

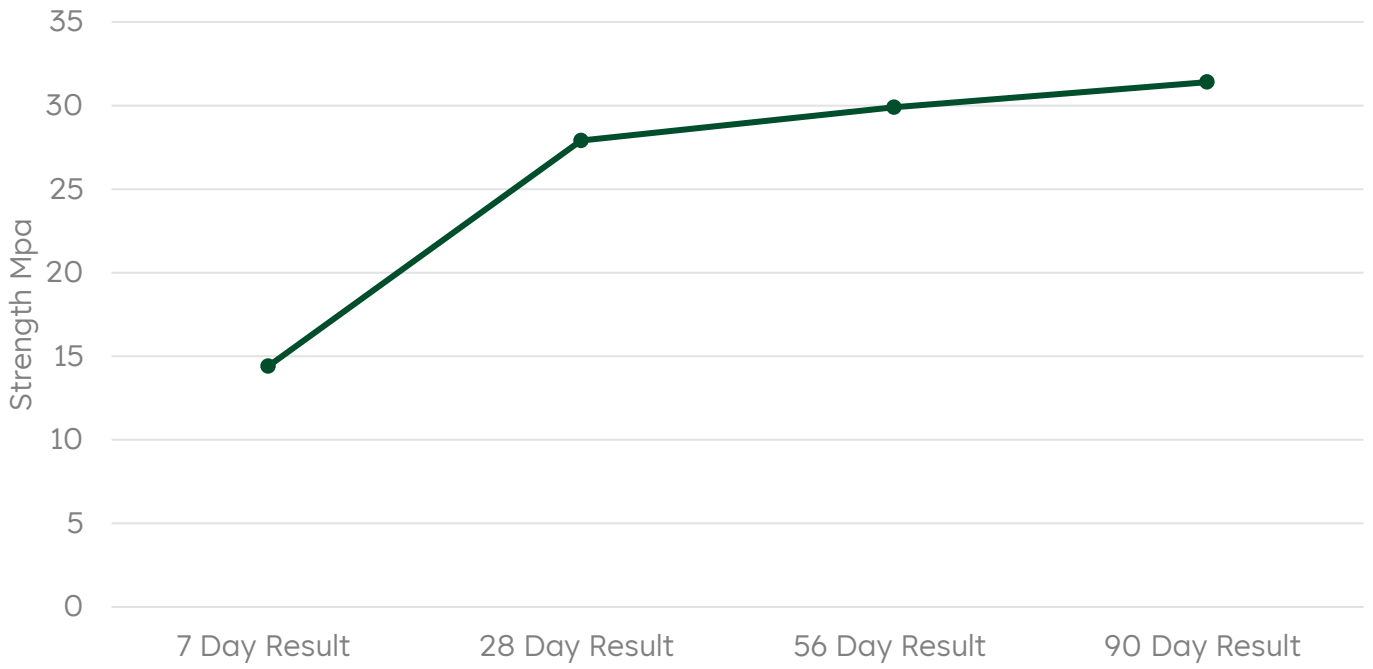
- The carbon impact of durability criteria and Minimum Cement Content (MCC) and Water Cement Ratio (WCR)
- Opportunities to reduce carbon by challenging your designers – before you engage with your concrete supplier

Concrete Strength	Minimum Cement Content	Kg Powder/m^3	Approx CO_2 per m^3
C28/35	None	280	161
C28/35	350	350	194

Concrete Strength	Water Cement Ratio Max	Kg Powder/m^3	Approx CO_2 per m^3
C28/35	None	280	161
C28/35	0.45	335	187

Consider 56 Day Strength Criteria

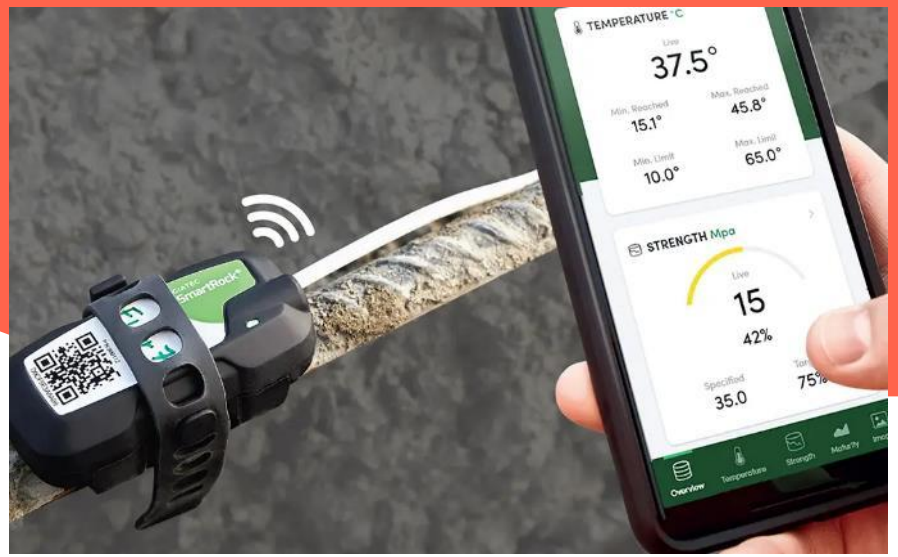
- Specifying concrete strength at 56 days, rather than the traditional 28 days, can reduce embodied carbon.
- In appropriate situations specifying at 56 days should have little or no effect on design.



- Using 56 Day Strengths could save 20kg/m^3 of cement, therefore ~10kg/m^3 CO_2.
- Documents available from MPA, The Concrete Centre, IStructE and being trialled by Highways England

Digital Maturity Sensors

- Saved Laing O'Rourke 34 tonnes of CO_2 at King's Cross Capella
- Saved Mace 14 days from program plan on Heathrow Airport Taxiway
- Provided Buckingham Group evidence of in-situ strength to re-open a Merseyside railway bridge
- Allowed Bouyges to dispense with site cubes for formwork & prop removal at Finsbury Hospital



Low Carbon evoBuild Concretes – GWP Mapped Against Global Concrete Ratings

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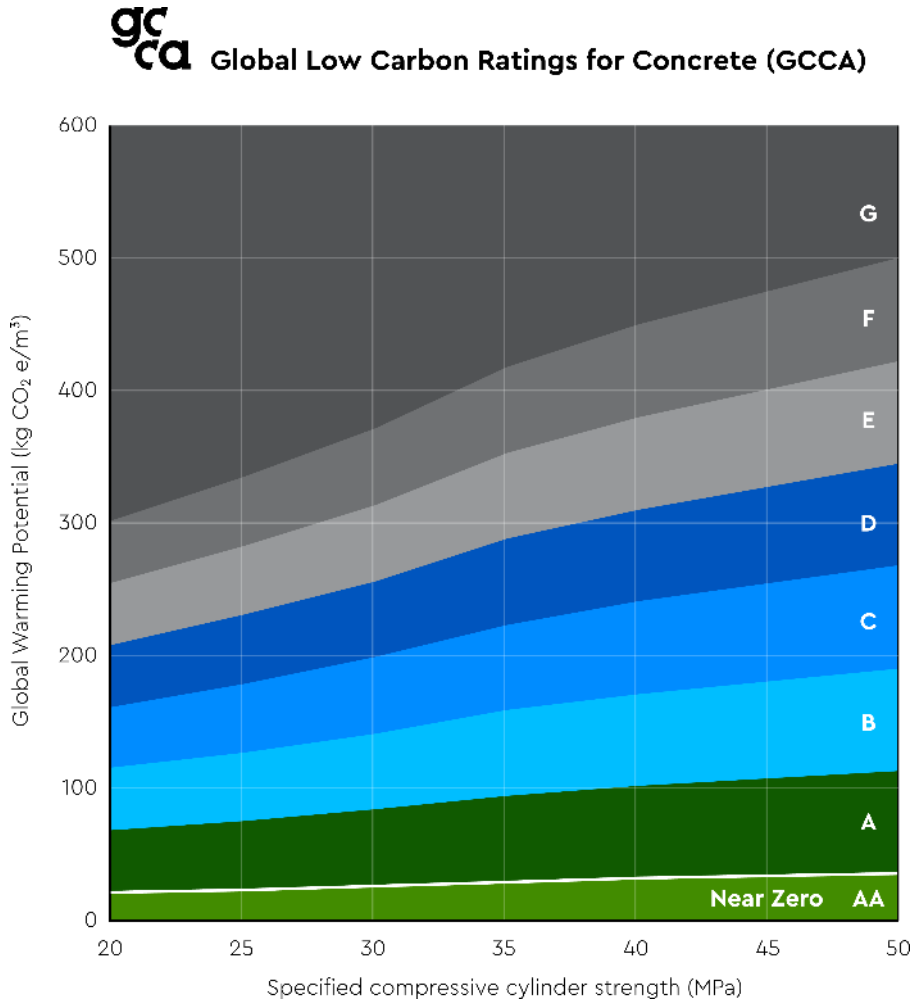

The Low Carbon Journey

- Quick Wins
  - Challenge designers on use of Minimum Cement Contents, Water Cement Ratios and Designated Concrete – these push carbon up
- Engagement
  - Engage early with your concrete supplier and explore low carbon concrete options such as evoBuild – can you go from D to C?
- Innovation
  - Near Zero Cement – evoZero can significantly reduce carbon without impacting schedules
  - Digital maturity technologies can be used to overcome contractor concerns with low carbon concretes

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NBS

Heidelberg Materials products are now available on NBS Source.

Search. Select. Specify.

Find products like our evoBuild low carbon concrete, fibre-reinforced, high-performance, waterproof and self-compacting concretes.

Search Heidelberg Materials at www.source.thenbs.com.

If you have any enquiries please contact;

- **Concrete Technical**
  - Lee Baldwin – Technical Services Manager
    - lee.Baldwin@heidelbergmaterials.com
- **Future events at Heidelberg Materials evoHub**
- www.heidelbergmaterials.co.uk/en/cpd-registration-evohub

Thank you for your time.

Any Questions?

Welcome to evoHub

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Please register here, so we can send you the handouts from today’s session