

Cement and Concrete

First Movers Coalition – Cement and Concrete commitment

The mission of the First Movers Coalition (FMC) is to advance the most **critical emerging climate technologies** required for deep decarbonization of the world's heavy-emitting sectors. To do this, FMC is building early market demand for such technologies by 2030, in order to help scale and catalyse their mainstream adoption for carbon-intensive sectors.¹

The First Movers Coalition (FMC) has set ambitious commitments for purchasers and specifiers of cement and concrete:

- **All members:** "We commit to purchasing/ensuring at least 10% (by volume) of our, or our projects', cement/concrete per year as low-emissions cement/concrete."

Commitment details

Members of the FMC commit to purchasing low-emissions cement or concrete satisfying the following criteria:

- Cement with embodied carbon below **184kg CO₂ e/ton¹**
- Concrete that meets the embodied carbon limits below:

Specified compressive strength (f'c in psi) ²	Specified compressive strength (Mpa)	Embodied carbon (kg CO ₂ e/m ³)
0 – 2500 psi	0 - 17.24 Mpa	70 kg CO ₂ e/m ³
2501 – 3000 psi	17.25 - 20.68 Mpa	78 kg CO ₂ e/m ³
3001 – 4000 psi	20.69 - 27.58 Mpa	96 kg CO ₂ e/m ³
4001 – 5000 psi	27.59 - 34.47 Mpa	117 kg CO ₂ e/m ³
5001 – 6000 psi	34.48 - 41.37 Mpa	124 kg CO ₂ e/m ³
6001 – 8000 psi	41.38 - 55.16 Mpa	144 kg CO ₂ e/m ³
8001 – 10000 psi	55.17 – 68.95 Mpa	164 kg CO ₂ e/m ³
10001 – 12000 psi+	68.96 – 82.74 Mpa+	184 kg CO ₂ e/m ³

Cement and concrete meeting the FMC thresholds above can be produced using any technological pathway. Leading analysis identifies these thresholds are most likely to be met with cement or concrete produced using breakthrough technologies – such as carbon capture and alternative cement chemistries.

Mixed chain of custody

The FMC cement and concrete sector allows identity preserved³ and segregated⁴ chain of custody models. Controlled blending⁵, mass balance⁶, and book & claim⁷ may also be used given that emission claims are tracked (e.g., via a registry) and verified by a third party to provide transparency, avoid double counting, and ensure accuracy. Decisions made within the transport sector regarding alternative chain of custody approaches can also be applied to the transport-related emissions of materials in other FMC sectors such as cement and concrete. An overview of which chain of custody model is allowed in which sector can be found [here](#).

In addition, the First Movers Coalition has established high-level, cross-sector guardrails that must be followed when implementing chain of custody models and can be found [here](#).

Carbon offsets

The FMC commitment cannot be met through the purchase of carbon offsets (i.e., coming from outside of the emissions boundary).

Emissions boundary

The FMC boundary includes emissions from modules A1, A2, A3 in lifecycle analysis (cradle-to-gate) as per EPD standards for Portland cement and/or ready-mix concrete. The FMC boundary includes the emissions impact from non-biogenic waste fuels (i.e., requires “gross” emissions⁸ accounting for fuel).

Building Life Cycle Information Modules																
Product stage			Construction stage		Use stage							End-of-life stage				
Raw Material supply	Transport	Manufacturing	Transport	Construction/Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	De-Construction/ Demolition	Transport	Waste processing	Disposal	
																A1

Disclaimers

Voluntary commitments made by members of the First Movers Coalition are subject to the availability of material(s), fuel(s), service(s) supply and regulatory approvals. Members acknowledge that procuring the material(s), fuel(s), or service(s) needed to meet these commitments may come at a premium cost.

Commitment design process

The original cement & concrete commitment was launched in 2022 with support from [Concrete Action for Climate initiative \(Mission Possible Partnership\)](#), Clean Energy Ministerial [Industrial Deep Decarbonisation Initiative](#) (UNIDO), [ConcreteZero](#) (Climate Group) and [Global Cement and Concrete Association](#). The commitment was revised in 2024 through the biennial Commitment Review process.

Common scenarios for FMC commitment clarification

Scenario	FMC guidance	Recommended actions
1. Reported product carbon footprint does not account for raw material extraction, refining, and transport	Emissions should reflect <i>all</i> core cement / concrete production activities from raw material supply through cement / concrete manufacturing (A1-A3 in lifecycle analysis as per EPD standards)	Engage supplier for data on all emissions, including raw material extraction, refining, and transport (A1-A3 in lifecycle analysis as per EPD standards)
2. A cement producer captures and sequesters the carbon emissions from its kiln and is unsure of how to calculate the subsequent product carbon footprint	Since the emissions have not been released into the atmosphere, the product carbon footprint for cement may incorporate reductions from capture and storage of emissions ⁹	Work with supplier to ensure product carbon footprint is being accounted for accurately
3. Product carbon footprint includes offsets	Offsets are not permitted	Engage suppliers on roadmap to decarbonize core processes and/or engage additional suppliers if needed. If FMC threshold is met without the use of offsets, project

Scenario	FMC guidance	Recommended actions
		can be counted against the FMC commitment
4. Product carbon footprint states net emissions ¹⁰ for non-biogenic waste fuels	Gross emission figures should be used when analysing if a product meets the FMC threshold to include the emissions impact from non-biogenic waste fuels	Engage supplier for data on gross emissions; these are typically used by suppliers internally to be able to calculate the net emissions
5. A concrete producer claims that injecting CO2 into its concrete reduces the product carbon footprint	In the concrete's product carbon footprint, a producer may claim emissions reductions from reducing their concrete's cement content, but may not claim the additional emissions benefit from the capture and injection of CO2 to avoid double counting of avoided emissions. However, carbon dioxide removal credits for this capture process may separately count towards the member's FMC CDR sector commitment	Work with suppliers to ensure guidance is followed. If members are interested in removals, they should consider joining FMC's Carbon Dioxide Removals (CDR) sector
6. Concrete does not meet concrete-specific FMC standard but constituent cement meets cement-specific FMC standard	Signatories are allowed to choose between a cement-specific and concrete-specific commitment for a given purchase	Have internal conversations about whether a cement-specific or concrete-specific standard makes more sense for ease of measurement and communication
7. Reported emissions include recarbonation impact during concrete use	FMC emissions calculations cannot include recarbonation impact in concrete use (e.g., absorption of CO2 by concrete sidewalk over time)	Engage supplier for data on the recarbonation impact and remove it from the product carbon footprint

¹ Includes emissions from modules A1, A2, A3 in lifecycle analysis (cradle-to-gate) as per EPD standards for Portland Cement and/or ready-mix concrete.

² Water to cementitious materials ratio varies across strength classes but is generally lower for higher strength concrete mixtures (NRMCA).

³ Identity preserved: "the materials or products originate from a single source and their specified characteristics are maintained throughout the supply chain" ISO 22095:2020

⁴ Segregated: "specified characteristics of a material or product are maintained from the initial input to the final output" ISO 22095:2020

⁵ Controlled blending: "materials or products with a set of specified characteristics are mixed according to certain criteria with materials or products without that set of characteristics resulting in a known proportion of the specified characteristics in the final output" ISO 22095:2020

⁶ Mass balance: "materials or products with a set of specified characteristics are mixed according to defined criteria with materials or products without that set of characteristics" ISO 22095:2020

⁷ Book & claim: "The administrative record flow is not necessarily connected to the physical flow of material or product throughout the supply chain" ISO 22095:2020

⁸ Emissions from all fuels burned (e.g., non-biogenic waste fuels) are included in the product carbon footprint; Note: biogenic waste fuels are considered emissions-free for purposes of the FMC commitment, in alignment with typical cement/concrete EPDs.

⁹ All carbon removal processes must account for and quantify their net CO₂ emissions removals from the atmosphere (e.g., complete a lifecycle assessment which considers the greenhouse gas (GHG) emissions incurred during transportation, sequestration (including energy use), and utilization).

¹⁰ i.e., excludes emissions impact from non-biogenic waste fuels.