

MEASURING THE IMPACT OF CARBON AVOIDING SOLUTIONS IN THE CONSTRUCTION INDUSTRY

SikaFiber® helps avoid emissions in concrete reinforcement

20% CO₂ reduction

per 150 m³ slab by using Sika's macro synthetic fibers SikaFiber®

1,7 million tons of CO₂ avoided

between 1990 and 2023 with synthetic macro fibers compared to steel concrete reinforcement

Business-as-usual Scenario

- Commonly used steel mesh for concrete reinforcement, directly applied at the construction site without adding synthetic macro fibers
- A sample 1,000 m² x 150 mm concrete slab on ground was defined as the functional unit to compare scenarios, and for the same performance 3,750 kg steel (light) mesh reinforcement was calculated

Low Carbon Scenario

- SikaFiber® is a method of reinforcing concrete using macro synthetic fibers
- The carbon footprint of fiber reinforcement is lower than that of steel mesh and material consumption is lower, leading to a lower carbon footprint per m² of slab with fiber reinforcement compared to steel reinforcement
- The fibers are added when the concrete is mixed at the concrete producer site; this saves construction time and costs when compared to steel mesh installed by the contractor on the construction site



Capturing Avoided Emissions

Assessment Details

Functional Unit (FU): kg CO₂e/150 m³ concrete slab on ground

Impact: 0.4 t CO₂e avoided per FU

Approach: Year-on-year

Scope: EU

System Boundaries: Production of macro synthetic fibers to be mixed into the concrete used on construction sites

Lifecycle Emissions:

Solution 21 t CO₂e per FU (35 years)

Reference Scenario 35 t CO₂e per FU (35 years)

WBCSD Avoided Emission Eligibility Gates

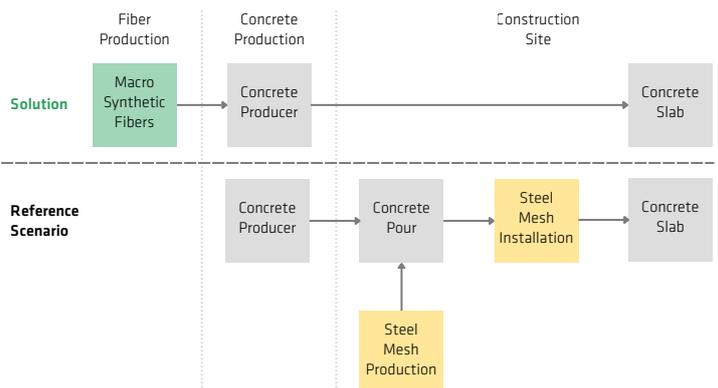
- Gate 1 (Climate Action Credibility)
- Gate 2 (Climate Science Alignment)
- Gate 3 (Contribution Legitimacy)

Environmental and Social Side Effects

Savings of time and resources needed for the installation of steel mesh at construction site, increase in worker's safety, increase of slab durability

How It Works

System Boundaries



Offers a lower carbon solution to reduce Scope 3 of contractors and construction.

Assumption

The end of life scenarios are similar for the solution and the reference*, with the difference that steel needs to be separated from the concrete while macro-synthetic fibers remain encapsulated inside the concrete structure.

* Landfill (the concrete is thrown away), concrete down-cycling (roadwork), recycling (only approx. 5kg of fibres per m³ of concrete are contained).

- We assessed the potential negative side effects of our solution(s) in terms of environmental trade-offs and sustainability goals beyond GHG impact.
- We assessed and shared the potential rebound effects of our solution(s).



Sika's Avoided Emissions

Scan for more details and further information.

Third-Party Verification

Calculation is based on the data from the following EPDs: [SikaFiber® Force EPD](#), [EPD Reinforcing mesh Tibnor AB](#)

Based on the WBCSD Avoided Emissions Framework: [Avoided Emissions](#) | [WBCSD](#)

Contact