

Measuring the impact of carbon avoiding solutions in the construction industry: A Case Study

Sika®, a specialty chemicals company, is innovating sustainable solutions for the construction sector

→ 20% CO₂ reduction

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



1.7 million tons of CO₂ avoided between 1990 and 2023 with macro synthetic fibers compared to steel concrete reinforcement

Capturing avoided emissions

— assessment details

- **Functional Unit:** kg CO₂e/150 m³ concrete slab on ground
- **Impact:** 0.4 tCO₂e avoided per FU concrete slab on ground
- **Time Period:** year-on-year
- **Scope:** EU
- **System Boundaries:** Production of macro synthetic fibers to be mixed into the concrete used in construction sites

The Business-As-Usual Scenario

- Commonly used steel mesh for concrete reinforcement, directly applied at the construction site without adding synthetic macrofibers
- A sample 1000 m² x 150 mm concrete slab on ground was defined as the functional unit to compare scenarios, and for the same performance 3750 kg Steel (light) mesh reinforcement was calculated

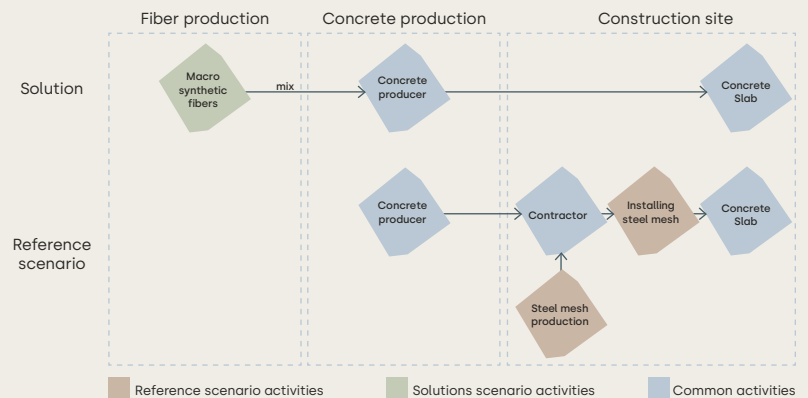


The Low-Carbon Scenario

- SikaFiber® is a technology of macro synthetic fibers used for concrete reinforcement
- The fibers have a lower carbon footprint than steel mesh and lower material consumption, which translates into a lower carbon footprint per square meter 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 if compared with steel mesh, that is installed by the contractor on the construction site

How It Works

System boundaries



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

WBCSD Avoided Emissions 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 workers safety, increase of slab's durability .

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).

Third-Party Verification

Calculation is based on the data from the following EPDs:
 SikaFiber® Force EPD, EPD Reinforcing mesh Tibnor AB



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