Usage of Dramix® Steel Fiber in Precast and Impact on Sustainability

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Sustainability is transforming the construction industry

Construction embodied carbon share

Source OneClick LCA
Sustainability is transforming the construction industry

Construction embodied carbon share

Translates into customer needs

- Do more with less
- Improve the total cost of ownership
- Buildings with green and recycled materials
- Maximize the value of building with better sustainability

Regulations & Standards
Building Certifications
Smart and Environmental Design

Carbon Neutral Building

Value pricing

Source: OneClick LCA
Material carbon emission is becoming more and more important

LCA of average apartment building

- Emission is the highest at during construction and other phases spread out over lifetime
- Energy emission expected to reduce by 50% with insulation and green energy sourcing

➢ Material will represent a bigger portion of the total emission over buildings lifetime

Key constituents of carbon emission

Source OneClick LCA
Steel fiber – Game changing concrete reinforcement

- The role of the reinforcement is to increase load bearing capacity and limit crack opening

- Steel fibers for concrete appear in different colors, shapes and sizes

- Engineered to replace rebar and mesh in concrete

- Provides superior resistance to cracking and crack propagation
Innovative reinforcement for a sustainable future

- LOWER TOTAL COST OF OWNERSHIP
- EFFICIENT & SAFER PRODUCTION
- SUSTAINABLE
- INCREASED DURABILITY
- EASY TO HANDLE

Less concrete + steel fiber = less CO₂

- Reduction of reinforcement material
- Optimized design and reduced concrete thickness
- Advanced reinforcement solutions further decrease of tonCO₂e

LOWER TOTAL COST OF OWNERSHIP

EFFICIENT & SAFER PRODUCTION

SUSTAINABLE

INCREASED DURABILITY

EASY TO HANDLE
Steel fiber carbon footprint on different precast applications

**Utility Vaults – Electric Cabins**
Reduction of CO2 emission by ~17% achieved in a less amount of reinforcement solution with reduced wall thickness

<table>
<thead>
<tr>
<th>Solution</th>
<th>Concrete</th>
<th>Rebar (kg)</th>
<th>Dramix® (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional</td>
<td>6.228</td>
<td>249</td>
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<tr>
<td>Dramix® Solution</td>
<td>6.477</td>
<td>5.314</td>
<td>114</td>
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</table>

**Precast Sandwich Wall**
Reduction of thickness by 4 cm while increasing dosage from 20 to 25kg/m3 resulted in 18% less CO2 emission

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<th>Rebar (kg)</th>
<th>Dramix® (kg)</th>
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<tbody>
<tr>
<td>Original Solution</td>
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<td>Alternative Dramix® Solution</td>
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**Precast Pipes**
Amount of total reinforcement reduced by 20% resulting in savings in material and CO2 footprint

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<td>Dramix® Solution</td>
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Dramix® supports you along your sustainability journey