In accordance with ISO14025 and EN15804:2012 + A2:2019 for Lithium Silicate-Based Surface Hardener

Programme:
EPD Turkey, a fully aligned regional programme
www.epdturkey.org

Programme operator:
EPD Turkey: SÜRATAM – Turkish Centre for Sustainable Production Research & Design
Nef 09 B Blok No:7/15
34415 Kağıthane/Istanbul, TURKEY

EPD registration number: S-P-02228

Publication date: 10.02.2021

Validity date: 09.02.2026

Geographical scope: Turkey
EPD Turkey, a fully aligned regional programme

SÜRATAM – Turkish Centre for Sustainable Production Research & Design
Nef 09 B Blok No:7/15
34415 Kağıthane-Istanbul/TURKEY

www.epdturkey.org
info@epdturkey.org

The International EPD® System
EPD International AB
Box 210 60
SE-100 31
Stockholm/SWEDEN

www.environdec.com
info@environdec.com

EN 15804:2012 + A2:2019 Sustainability of Construction Works

Independent third-party verification of the declaration and data, according to ISO 14025:2006

EPD process certification  EPD verification ✔

Third party verifier: Vladimír Kočí, PhD

Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier:

Yes ✔ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.
MYFIX brand has been under the roof of Yıldız Yapı Kimyasalları San. ve Tic. Ltd. Şti. since 2011. By following the changing and developing technology, it has grown steadily and gained a respectable place in the sector. It is taking firm steps towards becoming a leading company in the sector with strong administrative and domestic capital.

In achieving the current position of the MYFIX brand; the right knowledge, field experience, young and dynamic staff who are experts in their fields, and the strategies developed by them have been effective. With its strong R&D and production infrastructure, our company has created a quality product variety and service network that will meet all the expectations of the domestic and international market. By closely following the developments in the sector, we offer fast and precise solutions with a superior quality production approach that meets the requirements of internationally accepted standards. With this principle, we stand behind every job we respect.
LITHIUM SILICATE BASED SURFACE HARDENER

Solid and smooth surface

HIGH ABRASION RESISTANCE
WATER REPELLENT
DOES NOT DISPERSE AND SPAL

EASILY CLEANED
PRODUCT INFORMATION

Product name: Lithium silicate based surface hardener

Product identification: Dust-proof, water-based, glossy, lithium silicate-based, liquid surface hardener designed for application on concrete and cement-based floors.

UN CPC code: 37560

Geographical scope: Turkey

Product composition: Lithium silicate: 99%
Water: 1%

Technical Properties

• Single component, easy to apply.
• Could be applied on old and new concrete surfaces.
• Abrasion resistance is high and hardness increases over time.
• By penetrating into the concrete, it reacts with lime (calcium hydroxide) that causes the concrete to dusting and hardens the surface by preventing the concrete from dusting. As it fills the pores in the concrete, it also increases water impermeability.
• The surface applied with Lithium silicate based surface hardener is opened to pedestrian traffic after 1-3 hours.
• Does not require another coating after application.
• Fully hardening time is 7 days.
• Dust impermeable.
• Water based.
• Has a transparent and bright appearance.
• Water repellent.
• Provides ease of cleaning.
• Does not scatter and spill.
The system boundary covers the production of raw materials, all relevant transport down to factory gate and manufacturing by MYFIX (A1-A3). Besides, A4 stage that refers ‘Transport to Site’ is also added. These products are integral part of concrete that can not be separated at their end of life stage, therefore C (EoL Stages) and D modules were not declared.


Production starts with raw materials. Raw material stage includes raw material extraction/preparation and pre-treatment processes before production.

**Core Process (A2:Transportation and A3:Manufacturing)**

Transport is relevant for delivery of raw materials and other materials to the plant and the transport of materials within the plant. ‘Manufacturing’ starts with the mixing of raw materials according to product formulation. The end products are then packaged in bags to be sold. Electric energy is consumed during manufacturing stage.

**Downstream Processes (A4: Transport to Site)**

Transport of final product to site is taken as the weight average values for transportation for the year of 2019.
LCA INFORMATION

Declared Unit: 1 kg of Lithium Silicate-Based Surface Hardener

Time Representativeness: Average data for the year of 2019

Database(s) and LCA Software Used: TLCID ver. 1.0 (Turkish Lifecycle Inventory Database), Ecoinvent 3.5, SimaPro 9.0

System Boundary of the LCA Study:

- Raw Materials
- Raw Material Transport
- Production
- Packaging
- Manufacturing
- Construction/Installation
- Transport to Site
- Deconstruction/Demolition
- Waste Processing
- Benefits and Loads

System Boundary
The results of the LCA with the indicators as per EPD requirement are given in the LCA result tables. All energy calculations were obtained using Cumulative Energy Demand (LHV) methodology, while fresh water use is calculated with selected inventory flows in SimaPro according to the PCR.

There are no co-products in the production. Hence, there is no need for co-product allocation.

Energy consumption and transport datasets were allocated based on the average production figures for the year of 2019, and weighted average of environmental impacts for the Lithium Silicate-Based Surface Hardener were presented.

Accordingly, hazardous and non-hazardous waste amounts were also allocated based on the average waste arisings for the period of 2019.

All the waste resulting from the main production and related processes is managed as per Waste Management Plan of MYFIX in accordance with Turkish laws and regulations.

No substances included in the Candidate List of Substances of Very High Concern for authorisation under the REACH Regulations are present in the surface hardener manufactured by MYFIX, either above the threshold for registration with the European Chemicals Agency or above 0.1% (wt/wt).
LCA RESULTS
## LCA RESULTS

### Environmental Impacts for 1 kg of Lithium Silicate-Based Surface Hardener

<table>
<thead>
<tr>
<th>Impact Category</th>
<th>Unit</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>A1-A3</th>
<th>A4</th>
</tr>
</thead>
<tbody>
<tr>
<td>GWP - Fossil</td>
<td>kg CO₂ eq</td>
<td>131E-3</td>
<td>9.02E-3</td>
<td>93.9E-3</td>
<td>234E-3</td>
<td>8.31E-3</td>
</tr>
<tr>
<td>GWP - Biogenic</td>
<td>kg CO₂ eq</td>
<td>241E-6</td>
<td>2.66E-6</td>
<td>-60E-3</td>
<td>59.7E-3</td>
<td>2.48E-6</td>
</tr>
<tr>
<td>GWP - Luluc</td>
<td>kg CO₂ eq</td>
<td>81.9E-6</td>
<td>2.58E-6</td>
<td>101E-6</td>
<td>185E-6</td>
<td>2.43E-6</td>
</tr>
<tr>
<td>GWP - Total</td>
<td>kg CO₂ eq</td>
<td>131E-3</td>
<td>9.02E-3</td>
<td>34.1E-3</td>
<td>174E-3</td>
<td>8.31E-3</td>
</tr>
<tr>
<td>ODP</td>
<td>kg CFC-11 eq</td>
<td>12.1E-9</td>
<td>2.07E-9</td>
<td>2.09E-9</td>
<td>16.3E-9</td>
<td>1.91E-9</td>
</tr>
<tr>
<td>AP</td>
<td>mol H+ eq</td>
<td>904E-6</td>
<td>38.5E-6</td>
<td>387E-6</td>
<td>1.33E-3</td>
<td>34.0E-6</td>
</tr>
<tr>
<td>EP - Freshwater</td>
<td>kg P eq</td>
<td>86.7E-6</td>
<td>715E-9</td>
<td>12.7E-6</td>
<td>100E-6</td>
<td>666E-9</td>
</tr>
<tr>
<td>EP - Marine</td>
<td>kg N eq</td>
<td>321E-6</td>
<td>11.6E-6</td>
<td>77.0E-6</td>
<td>409E-6</td>
<td>9.95E-6</td>
</tr>
<tr>
<td>EP - Terrestrial</td>
<td>mol N eq</td>
<td>2.36E-3</td>
<td>128E-6</td>
<td>822E-6</td>
<td>3.31E-3</td>
<td>110E-6</td>
</tr>
<tr>
<td>POCP</td>
<td>kg NMVOC eq</td>
<td>466E-6</td>
<td>38.5E-6</td>
<td>376E-6</td>
<td>880E-6</td>
<td>33.3E-6</td>
</tr>
<tr>
<td>ADPE</td>
<td>kg Sb eq</td>
<td>931E-9</td>
<td>26.1E-9</td>
<td>49.1E-9</td>
<td>1.01E-6</td>
<td>24.7E-9</td>
</tr>
<tr>
<td>ADPF</td>
<td>MJ</td>
<td>1.42E+0</td>
<td>137E-3</td>
<td>2.73E+0</td>
<td>4.28E+0</td>
<td>127E-3</td>
</tr>
<tr>
<td>WDP</td>
<td>m³ depriv.</td>
<td>109E-3</td>
<td>929E-6</td>
<td>30.0E-3</td>
<td>140E-3</td>
<td>862E-6</td>
</tr>
<tr>
<td>PM</td>
<td>disease inc.</td>
<td>9.30E-9</td>
<td>683E-12</td>
<td>4.20E-9</td>
<td>14.2E-9</td>
<td>582E-12</td>
</tr>
<tr>
<td>IR</td>
<td>kBq U-235 eq</td>
<td>9.18E-3</td>
<td>666E-6</td>
<td>1.22E-3</td>
<td>11.1E-3</td>
<td>615E-6</td>
</tr>
<tr>
<td>ETP - FW</td>
<td>CTUe</td>
<td>5.51E+0</td>
<td>96.2E-3</td>
<td>380E-3</td>
<td>5.98E+0</td>
<td>89.2E-3</td>
</tr>
<tr>
<td>HTTP - C</td>
<td>CTUh</td>
<td>114E-12</td>
<td>2.86E-12</td>
<td>33.5E-12</td>
<td>150E-12</td>
<td>2.64E-12</td>
</tr>
<tr>
<td>HTTP - NC</td>
<td>CTUh</td>
<td>4.32E-9</td>
<td>111E-12</td>
<td>597E-12</td>
<td>5.03E-9</td>
<td>104E-12</td>
</tr>
<tr>
<td>SQP</td>
<td>Pt</td>
<td>1.16E+0</td>
<td>90.5E-3</td>
<td>5.09E+0</td>
<td>6.34E+0</td>
<td>85.3E-3</td>
</tr>
</tbody>
</table>

**Acronyms**
- GWP-total: Climate change
- GWP-fossil: Climate change - fossil
- GWP-biogenic: Climate change - biogenic
- GWP-luluc: Climate change - land use and transformation
- ODP: Ozone layer depletion
- AP: Acidification terrestrial and freshwater
- EP-freshwater: Eutrophication freshwater
- EP-marine: Eutrophication marine
- EP-terrestrial: Eutrophication terrestrial
- POCP: Photochemical oxidation
- ADPE: Abiotic depletion - elements
- ADPF: Abiotic depletion - fossil resources
- WDP: Water scarcity
- PM: Respiratory inorganics - particulate matter
- IR: Ionising radiation
- ETP-FW: Ecotoxicity freshwater
- HTTP-c: Cancer human health effects
- HTTP-nc: Non-cancer human health effects
- SQP: Land use related impacts, soil quality

**Legend**
- A1: Raw Material
- A2: Raw Material Transport
- A3: Manufacturing
- A1-A3: Sum of A1, A2 and A3
- A4: Transport to Site
### Resource Use for 1 kg of Lithium Silicate-Based Surface Hardener

<table>
<thead>
<tr>
<th>Impact Category</th>
<th>Unit</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>A1-A3</th>
<th>A4</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERE</td>
<td>MJ</td>
<td>115E-3</td>
<td>1.43E-3</td>
<td>764E-3</td>
<td>881E-3</td>
<td>1.33E-3</td>
</tr>
<tr>
<td>PERM</td>
<td>MJ</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PERT</td>
<td>MJ</td>
<td>115E-3</td>
<td>1.43E-3</td>
<td>764E-3</td>
<td>881E-3</td>
<td>1.33E-3</td>
</tr>
<tr>
<td>PENRE</td>
<td>MJ</td>
<td>1.42E+0</td>
<td>137E-3</td>
<td>2.73E+0</td>
<td>4.28E+0</td>
<td>127E-3</td>
</tr>
<tr>
<td>PENRM</td>
<td>MJ</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PENRT</td>
<td>MJ</td>
<td>1.42E+0</td>
<td>137E-3</td>
<td>2.73E+0</td>
<td>4.28E+0</td>
<td>127E-3</td>
</tr>
<tr>
<td>SM</td>
<td>kg</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RSF</td>
<td>MJ</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NRSF</td>
<td>MJ</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>FW</td>
<td>m³</td>
<td>1.79E-3</td>
<td>22.1E-6</td>
<td>228E-6</td>
<td>2.05E-3</td>
<td>20.6E-6</td>
</tr>
</tbody>
</table>

### Waste & Output Flows for 1 kg of Lithium Silicate-Based Surface Hardener

<table>
<thead>
<tr>
<th>Impact Category</th>
<th>Unit</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>A1-A3</th>
<th>A4</th>
</tr>
</thead>
<tbody>
<tr>
<td>HWD</td>
<td>kg</td>
<td>0</td>
<td>0</td>
<td>3.43E-6</td>
<td>3.43E-6</td>
<td>0</td>
</tr>
<tr>
<td>NHWD</td>
<td>kg</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RWD</td>
<td>kg</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CRU</td>
<td>kg</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MFR</td>
<td>kg</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MER</td>
<td>kg</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>EE (Electrical)</td>
<td>MJ</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>EE (Thermal)</td>
<td>MJ</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Acronyms:
- PERE: Use of renewable primary energy excluding resources used as raw materials
- PERM: Use of renewable primary energy resources used as raw materials
- PERT: Total use of renewable primary energy
- PENRE: Use of non-renewable primary energy excluding resources used as raw materials
- PENRM: Use of non-renewable primary energy resources used as raw materials
- PENRT: Total use of non-renewable primary energy
- SM: Secondary material
- RSF: Renewable secondary fuels
- NRSF: Non-renewable secondary fuels
- FW: Net use of fresh water
- HWD: Hazardous waste disposed
- NHWD: Non-hazardous waste disposed
- RWD: Radioactive waste disposed
- CRU: Components for reuse
- MFR: Material for recycling
- MER: Materials for energy recovery
- EE (Electrical): Exported energy electrical
- EE (Thermal): Exported energy, Thermal

Legend:
- A1: Raw Material
- A2: Raw Material Transport
- A3: Manufacturing
- A4: Transport to Site

### Result per functional/declared unit

<table>
<thead>
<tr>
<th>Biogenic Carbon Content</th>
<th>Unit</th>
<th>A1-A3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biogenic carbon content in product</td>
<td>kg C</td>
<td>0</td>
</tr>
<tr>
<td>Biogenic carbon content in packaging*</td>
<td>kg C</td>
<td>0.015</td>
</tr>
</tbody>
</table>

(*): It is assumed that bio-based products, such as wood, hemp and straw, contain circa 50% carbon by dry mass (Hoxha, E., et al., 2020).
REFERENCES


/ISO 14020:2000/ Environmental labels and declarations — General principles

/EN 15804:2012+A2:2019/ Sustainability of construction works - Environmental Product Declarations — Core rules for the product category of construction products

/ISO 14025/ DIN EN ISO 14025:2009-11: Environmental labels and declarations - Type III environmental declarations — Principles and procedures


/PCR for Construction Products and CPC 54 Construction Services/ Prepared by IVL Swedish Environmental Research Institute, Swedish Environmental Protection Agency, SP Trä, Swedish Wood Preservation Institute, Swedisol, SCDA, Svenskt Limträ AB, SSAB, The International EPD System, 2019:14 Version 1.1 DATE 2019-12-20

/The International EPD® System/ The International EPD® System is a programme for Type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. www.environdec.com


/Ecoinvent / Ecoinvent Centre, www.ecoinvent.org

/SimaPro/ SimaPro LCA Software, Pré Consultants, the Netherlands, www.pre-sustainability.com

/TLCID/ Turkish Life Cycle Inventory Database, Turkish Center for Sustainable Production Research and Design (SURATAM), www.suratam.org
VERIFICATION & REGISTRATION

Programme
EPD registered through fully aligned regional programme:
EPD Turkey
www.epdturkey.org

The International EPD® System
www.environdec.com

Programme operator
EPD Turkey:
SÜRATAM – Turkish Centre for Sustainable Production Research & Design
Nef 09 B Blok No:7/15,
34415 Kağıthane - Istanbul / TURKEY

EPD International AB
Box 210 60
SE-100 31 Stockholm / Sweden

www.epdturkey.org
info@epdturkey.org

www.environdec.com
info@.environdec.com

Owner of the declaration
Yıldız Yapı Kimyasalları San. ve Tic. Ltd. Şti.
Icerenkoy Mh. Hakki Erdogan Sk. No:31/1
Atasehir- İstanbul / TURKEY

Contact: Zozan İlter
Documentation and Quality Control Officer
Phone: (+90) 216 469 66 33
Fax: (+90) 216 469 21 91

www.myfixyapikim.com
info@myfixyapikim.com

LCA practitioner
Turkey:
Laleğül Sok. No:7/18 Kağıthane
34415 4. Levent – İstanbul / TURKEY
+90 212 281 13 33

The United Kingdom:
4 Clear Water Place
Oxford OX2 7NL, UK
0 800 722 0185

www.metsims.com
info@metsims.com

3rd party verifier

Vladimír Kocí, PhD
LCA Studio
Šárecká 5, 16000
Prague 6 - Czech Republic
www.lcastudio.cz