

Carbon footprints of Terraframe's nickel products now even smaller

The carbon footprints of the nickel products produced by Terraframe have decreased since the 2020 assessment. This positive development has been achieved by improving the chemical and energy efficiency of the production process.

Key results:

- The carbon footprint of nickel sulphate used as a battery chemical has decreased by approximately 10 per cent compared to the first assessment conducted in 2020. The carbon footprint of the nickel sulphate remains one of the smallest in the industry globally.
- The carbon footprint of the nickel intermediate – i.e., nickel-cobalt sulphide – decreased by around 11 per cent compared to the previous assessment.
- The reduction in the carbon footprint has been driven especially by the improved chemical and energy efficiency of the metals recovery plant. In addition, Terraframe's bioleaching-based production method is energy-efficient by design.

At its battery chemicals plant, Terraframe produces nickel sulphate, which is used as a battery chemical in the manufacture of electric vehicle batteries. The battery chemicals plant uses Terraframe's nickel intermediate, i.e., nickel-cobalt sulphide from the metals production plant, as its raw material.

According to the updated assessment, the carbon footprint of the nickel sulphate produced by Terraframe is 1.6 CO₂e/kg, whereas in the previous assessment completed in 2020, it was 1.75 CO₂e/kg. The carbon footprint of nickel-cobalt sulphide is now 2.94 CO₂e/kg, compared to 3.31 CO₂e/kg in the previous assessment. The amount is stated in CO₂ equivalents per kilogram of product. The CO₂ equivalent represents the combined climate-warming effect of various greenhouse gases.

Veli-Matti Hilla, Chief Sustainability Officer at Terraframe, is pleased with the achievements.

"The results of the updated life cycle assessment of our nickel products are excellent. We have successfully improved the efficiency of chemical use, particularly at the metals recovery plant. Energy efficiency projects implemented across various stages of the process have also enabled us to reduce carbon dioxide emissions. We are very pleased that we can offer our customers responsibly produced nickel products with an even lower carbon footprint," Hilla says.

At the core of Terrafame's unique and energy-efficient production process is bioleaching, which consumes 90 per cent less energy than conventional production methods. Ore processing consumes less energy than usual because, for bioleaching, the ore does not need to be finely ground; crushing to a particle size of about 8 millimetres is sufficient. The metal recovery and refining stages are also energy-efficient as they do not require high temperatures. All process stages are located on the same industrial site, so moving material between the stages is efficient. For these reasons, the greenhouse gas emissions of the production process are lower than in conventional nickel production methods.

Background information on the life cycle assessment

The carbon footprints of the nickel products – nickel sulphate and nickel-cobalt sulphide – produced at Terrafame's industrial site in Sotkamo, Finland, were evaluated in life cycle assessments (LCA) in 2020 and 2025. The assessments are limited to the cradle-to-gate production of the nickel products, covering Terrafame's production process from mining to the point when the product leaves the factory gate.

The life cycle assessment completed in 2020 was based on data collected from 2018 on, among other things, production volumes, energy consumption, fuel and chemical consumption, water treatment, and waste. For the battery chemicals plant, the assessment used production and consumption data based on design parameters, as the plant was not yet in operation.

The latest life cycle assessment, updated in autumn 2025, used actual measurement data from 2024 for the entire process, from mining to battery chemicals. The calculation included CO₂ emissions from own operations (Scope 1), purchased energy (Scope 2), and purchased services and raw materials (Scope 3). This means that, for example, the CO₂ emissions from the fuels used by partners, as well as from the production of fuels and chemicals, were taken into account in the calculation. CO₂ emissions from transport to customers are not included in the calculation.

Both life cycle assessments were prepared by an independent expert organisation, Sphera Solutions GmbH, in accordance with the ISO 14040 and ISO 14044 standards. In addition, the 2025 assessment was prepared in compliance with the ISO 14067 standard. Both life cycle assessments were critically reviewed and verified by Prof. Dr. Matthias Finkbeiner. The latest life cycle assessment has also been audited by SGS.

For further information, please contact:

Veli-Matti Hilla, Chief Sustainability Officer, tel. +358 20 7130 800 (switchboard), [veli-matti.hilla\[at\]terrafame.fi](mailto:veli-matti.hilla[at]terrafame.fi)

[Image bank for media](#)

Terrafame enhances low-carbon mobility by delivering responsibly produced battery chemicals to the global battery industry. One of the world's largest production lines for chemicals used in electric vehicle batteries is located on Terrafame's industrial site. The plant is capable of producing nickel sulphate for around 1 million EVs per year. The carbon footprint of the nickel sulphate produced by Terrafame is among the smallest in the industry.

Terrafame's integrated, unique and energy-efficient production process from the mine to battery chemicals is located on a single industrial site. It provides customers with a transparent, traceable and truly European battery chemical supply chain.

Terrafame Ltd was founded in 2015. Its net sales in 2025 were EUR 556.1 million. Around 1,800 people work on its industrial site, approximately half of whom are employees of partner companies.