

A drop in the nickel sulphate market in China decreased Terafame's operating result while basic production remained at a good level

The financial information presented about Terafame Ltd in this release consists of unaudited FAS figures. The figures in brackets refer to the corresponding period of the previous year unless otherwise stated.

April–June 2023 in brief:

- Net sales from the battery chemicals business operations decreased to EUR 32.1 (53.4) million, or around 35% of the company's total net sales. The decline was due to a significant drop in the nickel sulphate market in China, which resulted in Terafame's decision to stop production at its battery chemicals plant in June–July.
- Net sales from the metal intermediates business operations totalled EUR 59.3 (78.8) million. The decrease in net sales was primarily due to a significant fall in the market prices of nickel and zinc.
- Total net sales were EUR 91.4 (132.2) million.
- EBITDA decreased to EUR -17.7 (32.4) million as a result of the decline in net sales.
- The operating result was EUR -32.8 (17.9) million.
- Free cash flow from operating activities was EUR -33.9 (16.4) million.

January–June 2023 in brief:

- Net sales from the battery chemicals business operations were at the previous year's level, totalling EUR 98.3 (97.4) million, or around 38% of the company's total net sales.
- Net sales from the metal intermediates business operations totalled EUR 165.8 (161.8) million.
- Total net sales were EUR 264.1 (259.2) million, representing an increase of 1.9% year-on-year.
- EBITDA decreased to EUR 24.8 (60.1) million, or 9.4% (23.2) of net sales.
- The operating result was EUR -5.3 (31.4) million.
- Free cash flow from operating activities was EUR -22.0 (-7.3) million.
- The total accident frequency rate on the industrial site was 5.7 (7.9).

Financial key figures	Q2 2023	Q2 2022	Change	H1 2023	H1 2022	Change	2022
Net sales, EUR million	91.4	132.2	-30.9%	264.1	259.2	1.9%	584.4
Battery chemicals business operations	32.1	53.4	-39.9%	98.3	97.4	0.9%	207.1
Metal intermediates business operations	59.3	78.8	-24.7%	165.8	161.8	2.5%	377.3
EBITDA, EUR million	-17.7	32.4	N/A	24.8	60.1	-58.7%	152.1
Operating result, EUR million	-32.8	17.9	N/A	-5.3	31.4	N/A	93.9
Work in progress, EUR million	249.2	220.3	13.1%	249.2	220.3	13.1%	241.8
Free cash flow from operating activities, EUR million ¹	-33.9	16.4	N/A	-22.0	-7.3	N/A	9.8
Total investments, EUR million	36.6	21.6	69.2%	59.2	39.3	50.5%	83.0
Sustaining capital expenditure, EUR million	30.4	18.8	61.7%	50.7	31.2	62.7%	69.9
Investments in productivity improvement and capacity growth, EUR million	6.2	2.8	121.4%	8.5	8.1	4.9%	13.1
Shareholders' equity, EUR million	563.7	416.4	35.4%	563.7	416.4	35.4%	439.1
Balance sheet total, EUR million	1,205.1	1,018.5	18.3%	1,205.1	1,018.5	18.3%	1,128.1
Own personnel, active	887	869	2.1%	887	859	2.1%	763
Partner companies' personnel, FTE	1046	653	60.2%	1046	653	60.2%	783
Accident frequency rate, total 12-month LTIFR1	5.7	7.9	-27.8%	5.7	7.9	-27.8%	6.4
Own personnel	4.3	6.3	-31.7%	4.3	6.3	-31.7%	4.3
Partner companies' personnel	6.7	9.5	-29.5%	6.7	9.5	-29.5%	8.5

1) Free cash flow from operating activities after sustaining capital expenditure = EBITDA – change in net working capital – sustaining capital expenditure

Joni Lukkaroinen, CEO of Terrafame:

“The first half of 2023 was marked by two opposite trends for Terrafame. The year began favourably with good progress in the ramp-up of the battery chemicals plant and strong volumes in basic production. However, in the second quarter, company’s business was very negatively impacted by the weaker than expected development in the electric car market in China.

Markets expected the strong growth seen in electric car sales in 2022 to continue also in the early part of 2023. However, in the first quarter, sales of electric passenger cars in China dropped by more than 30% compared to the fourth quarter of 2022. As a result, inventories increased in the electric car supply chain. In the second quarter, the producers of cathode active materials (pCAM/CAM) restricted their own production to reduce inventories, which significantly cut demand for battery chemicals and lowered prices.

As a result, the SPOT price of nickel sulphate (SPOT China) used in electric car batteries decreased in the second quarter of 2023 and was approximately 29% lower than in the second quarter of 2022.

Due to the price drop in nickel sulphate, Terrafame decided to stop production at its battery chemicals plant in June–July, following a scheduled maintenance shutdown in May. The shutdown did not affect agreed customer deliveries, and we also utilised it for the maintenance of our production process and for eliminating bottlenecks in our production.

As a result of the shutdown at the battery chemicals plant and the sharp fall in the market prices, Terrafame's net sales in the second quarter decreased by around 31% to EUR 91.4 (132.2) million. Net sales from the battery chemicals business operations decreased by around 40% to EUR 32.1 (53.4) million, or around 35% of Terrafame's total net sales. Net sales from the metal intermediates business operations decreased to EUR 59.3 (78.8) million. As a result of the significant decrease in net sales, the company's EBITDA was EUR -17.7 (32.4) million. The operating result was EUR -32.8 (17.9) million.

During the second quarter, we restructured Terrafame's financing. In June, we agreed with Finnish Minerals Group (FMG) on a new revolving credit facility of EUR 40 million. In addition, Terrafame's minority shareholders, the Galena funds managed by Trafigura and Sampo plc, exercised their option rights to subscribe for new shares in Terrafame, totalling EUR 32.6 million.

Significant business developments included an agreement signed with Fortum in June on cooperation in recycling battery materials. We will use the metals recycled by Fortum from electric car batteries in Terrafame's battery chemicals production. Our cooperation with Fortum is the first step towards wider battery chemicals production based on recycling. The carbon footprint of the battery chemicals we produce is already the smallest in the market, and recycling enables us to further develop the sustainability of our products while we are expanding our raw material base.

According to several studies, Terrafame has the lowest carbon footprint among the world's nickel producers. Despite this, Terrafame is continually striving to reduce its own carbon footprint, and in our sustainability program, we are committed to carbon-neutral battery chemicals production by 2039. We believe that our small carbon footprint will create significant added value to our customers.

Towards the end of 2022, we decided to invest around EUR 20 million in starting the recovery of uranium by the summer of 2024. The preparations have progressed as planned, and we continued to recruit key personnel during the second quarter.

Safety is one of the core values at Terrafame, and the continuous development of a safety culture has been one of the main priorities since the company was established. At the end of June, the combined 12-month accident frequency rate on the industrial site was 5.7 (7.9). Our work to reduce the accident frequency rate continues.

According to an analysis by Rho Motion, the global sales of electric cars in 2023 are estimated to reach almost 14 million cars, which would represent an increase of 33% compared to the previous year. Additionally, the nickel sulphate and electric car market in China is estimated to recover during the latter part of this year. At the moment, the global production of electric cars is heavily focused on China. However, the estimates suggest that cathode material production (PCAM/CAM) as well as battery cell and electric car production will increase significantly over the coming years in Europe. Europe's electric car market will become the main market area for Terrafame."

Market environment

Electric vehicle and battery markets

According to Rho Motion's Q2/2023 EV & Battery Quarterly Outlook, in January–May 2023, a total of around 4.5 (3.3) million electric passenger cars and light duty vehicles were sold worldwide, which represents an increase of around 37% year-on-year.

Around 2.5 (1.8) million electric passenger cars and light duty vehicles were sold in China in January–May 2023. This represents around 55% of their global sales. Although the sales of electric cars in China increased by around 36% compared to January–May 2022, the sales were some 32% lower than in the last quarter of 2022, and clearly below market expectations.

In the rest of the world, the sales of electric cars were in line with expectations. The sales of electric cars were particularly strong in the United States and Canada, where the total sales of electric passenger cars and light duty vehicles increased by 59%. In Europe, the sales of these vehicle categories grew by 20% year-on-year.

According to Rho Motion, the global sales of electric cars are expected to continue to grow in 2023. The sales are expected to grow by 33% to 13.9 million cars. In 2022, in total some 10.5 million electric cars were sold.

In May 2023, including all vehicle categories, the sales-weighted average pack size was 50.0 (46.1) kWh.

The electric car battery markets are clearly dividing into NCM batteries, which have a high nickel content, and LFP batteries. The market share of NCM 811 batteries, which have a high nickel content, increased from 17% in May 2022 to 19% in May 2023. In May, the market share of LFP batteries was 38%, while it was 32% a year ago.

In gigawatt hours, the demand for NCM batteries grew by 48% to 28.6 (19.3) GWh compared to May 2022. The share of NCM 811 batteries increased by 67%, to 9.7 (5.8) GWh. The share of LFP batteries grew over 83% to 19.8 (10.5) GWh.

Nickel market

The price of nickel on the London Metal Exchange (LME) in the first half of 2023 was markedly lower than in the first half of 2022.

The average market price of nickel in January–June 2023 was 24,415 (27,380) USD/t, which is around 11% lower than in the corresponding period of 2022. The average market price of nickel in April–June 2023 was 22,308 (28,940) USD/t, which is around 23% lower than in the corresponding period of 2022. Compared with the first quarter of 2023, the average market price of nickel decreased by around 14%.

Also the price of the nickel sulphate used in batteries decreased significantly in April–June 2023. The average price of nickel sulphate was 19,285 USD/t, which was around 29% lower than in the corresponding period of 2022, and 13% lower than in the first quarter of 2023. The spot price of nickel sulphate (SPOT China) has not been fully linked to the LME price since 2022.

The total combined nickel stocks on the London Metal Exchange (LME) and the Shanghai Futures Exchange (SHFE) at the end of June 2023 were 42,186 tonnes, which is significantly lower than at the end of June 2022 (68,448). Nickel stocks have decreased sharply since the second quarter of 2021, and the stock level at the end of June was lower than the stock level at the end of the first quarter of 2023 (44,875). The stock level at the end of June 2023 corresponded to demand for 0.7 (1.0) weeks.

Net sales and financial performance

April–June 2023

Net sales in April–June were EUR 91.4 (132.2) million, representing a decrease of 31% year-on-year. Net sales from the battery chemicals business operations totalled EUR 32.1 (53.4) million, or around 35% (39) of the company's total net sales. After the scheduled maintenance shutdown at the battery chemicals plant in May, the company decided to stop production at its battery chemicals plant for about two months due to the drop in the nickel sulphate market in China. The maintenance shutdown in June–July reduced production volumes and net sales from the battery chemicals business operations clearly.

Net sales from the metal intermediates business operations totalled EUR 59.3 (78.8) million. The decrease in net sales was primarily due to a significant fall in the market prices of nickel and zinc.

EBITDA was EUR -17.7 (32.4) million, and the operating result was EUR -32.8 (17.9) million. The decrease in EBITDA and the operating result was due to a significant decline in net sales.

Free cash flow from operating activities* was EUR -33.8 (16.4) million. The decrease was primarily due to the shutdown at the battery chemicals plant. The shutdown reduced production volumes and net sales from the battery chemicals business operations clearly. The decrease in net sales from the metal intermediates business operations, which resulted from the sharp decline in the market prices of nickel and zinc also had a negative impact on the cash flow from operating activities.

January–June 2023

Net sales in January–June were EUR 264.1 (259.2) million, representing an increase of 2% year-on-year. Net sales from the battery chemicals business operations totalled EUR 98.3 (97.4) million, or around 38% (39) of the company's total net sales. Net sales from the battery chemicals operations developed favourably during the first quarter, but the maintenance shutdown and the stoppage at the plant in the second quarter caused net sales to decrease clearly. Net sales from the metal intermediates business operations totalled EUR 165.8 (161.8) million.

EBITDA was EUR 24.8 (60.1) million, or 9.4% (32.2) of net sales. The operating result was EUR -5.3 (31.4) million. The decrease in EBITDA and the operating result was due to a decline in net sales in the battery chemicals business.

Free cash flow from operating activities* was EUR -22.2 (-7.3) million. The decrease was primarily due to the scheduled maintenance shutdown and the stoppage at the battery chemicals plant, which reduced production volumes and net sales from the battery chemicals business operations clearly.

* Free cash flow from operating activities after sustaining capital expenditure = EBITDA – change in net working capital – sustaining capital expenditure

Key events in April-June

Fortum and Terrafame to cooperate on recycling battery materials

In June 2023, Fortum and Terrafame signed an agreement on a pilot operation, in which metals recovered from the black mass of EV batteries recycled by Fortum will be utilised in Terrafame's battery chemical production. The cooperation between Fortum and Terrafame enables an even more sustainable value chain for the European battery industry.

According to the agreement, Fortum will supply Terrafame with nickel and cobalt recovered from the used electric car batteries at the Harjavalta recycling plant. Terrafame will use the recycled raw material to produce battery chemicals for new electric car batteries. At the end of their useful lives, the batteries will be recycled again, which closes the cycle of the recovered raw materials.

Capital expenditure

Capital expenditure totalled EUR 59.2 (39.3) million in January–June 2023. Of this total, EUR 8.5 (8.1) million was used to improve productivity and increase capacity, and EUR 50.7 (31.2) million was used to sustain production.

Capital expenditure, EUR million	H1 2023	H1 2022	Change
Sustaining capital expenditure	50.7	31.2	62.7%
Investments in productivity improvement and capacity growth	8.5	8.1	4.9%
Total capital expenditure	59.2	39.3	50.5%

The most important investments in productivity improvement and capacity growth were related to the elimination of production bottlenecks at the battery chemicals plant and preparatory work to enable the exploitation of the Kolmisoppi deposit.

Investments in sustaining production mainly consisted of preparatory work related to the exploitation of the next sections of the Kuusilampi mine. Other significant investments included the start-up of the construction of a new section of the waste rock area, changes to the conveyors in the secondary pile area and preparatory work for the new secondary sections (5–6).

Financing arrangements

Terrafame reorganised its financing during the second quarter. In June, the company agreed with Finnish Minerals Group (FMG) on a new revolving credit facility of EUR 40 million.

The company also repaid and reorganised its shareholder loans, for example, by postponing the June 2023 and October 2023 repayments to the spring of 2024.

At the end of the second quarter on 30 June 2023, the Galena Funds managed by Trafigura and Sampo plc exercised their option rights to subscribe for new shares in Terrafame totalling EUR 32.6 million.

Shares and shareholders

Terrafame has one series of shares. At the end of June 2023, the company had 5,005,287 (4,993,498) shares. Its share capital was EUR 2.0 (2.0) million, and its shareholders' equity was EUR 563.7 (416.4) million.

At the end of June 2023, Finnish Minerals Group (FMG), a special-assignment company of the state of Finland, owned 66.9% (67.1), Galena Funds managed by Trafigura owned 31.0% (31.1) and Sampo plc owned 2.1% (1.9) of Terrafame. As a result of the aforementioned exercise of option rights, the ownerships of Galena Funds and Sampo will rise to 32.9% and 2.5%, respectively. The ownership of Finnish Minerals Group will decrease to 64.5%.

Finnish Minerals Group's holding may decrease to no lower than 50.1% in the future, if Trafigura and Sampo exercise all their option rights. In such a case, the holding of Trafigura would be around 45.0%, and that of Sampo would be around 5.0%.

Personnel and partner network

Around 1,500 people work regularly on Terrafame's industrial site. At the end of June 2023, Terrafame had 887 (869) employees, including around 100 summer workers.

An average of 1,046 (653) people employed by contractors and subcontractors worked on the industrial site during the review period (FTE). The increase in the number of personnel is primarily due to the scheduled maintenance shutdowns implemented during the second quarter.

Sustainability

All Terrafame's operations are based on sustainability and continuous improvement. The implementation of Terrafame's sustainability programme for 2024 has continued in 2023. The programme was further specified in 2022, when the company decided to aim for carbon neutrality in its own operations by 2039. Terrafame's Board of Directors has approved the sustainability programme and its objectives.

At Terrafame, sustainability covers the environment, social responsibility and good governance extensively. The themes of the sustainability programme are linked to the UN Sustainable Development Goals as far as applicable. Terrafame is also committed to the UN Global Compact initiative, which provides an internationally approved framework for demonstrating sustainability. The ten principles of the initiative are based on international agreements on human rights, labour rights, the environment and anti-corruption.

In addition, Terrafame's employees and partners, as well as its suppliers of services and materials, must comply with its Code of Conduct and the principles of its sustainability policy. Policy implementation is supported by Terrafame's certified management system (ISO 9001, ISO 45001 and ISO 14001) and more detailed operating guidelines.

Terrafame's latest Sustainability Review was published in June 2023 and is available at www.terrafame.com > Company > Reports and publications.

Occupational safety indicators

Safety is one of Terrafame's values, and the continuous development of a safety culture has been one of the main priorities since the company was established. Operations within the industrial site must be safe for both the company's own employees and those of its partners in all circumstances and situations. We aim for zero accidents.

Accident frequency rate, 12-month LTIFR1

	30 June 2023	30 June 2022	Change
Accident frequency rate, Terrafame employees	4.3	6.3	-32%
Accident frequency rate, partner companies	6.7	9.5	-29%
Total accident frequency rate on the industrial site	5.7	7.9	-28%

Environmental monitoring

Terrafame monitors the state of the environment on the industrial site in accordance with the permit decisions and the monitoring programme approved by the authorities. Annual environmental monitoring reports for 2022 are available in Finnish on Terrafame's website at www.terrafame.fi > [Naapureille > Ympäristötarkkailuraportit](#) (in Finnish).

Sulphate loading of natural waterways is one of the most significant environmental impacts of Terrafame's production. In January–June 2023, the process solutions were in a closed circulation as in the previous year. The sulphate loading was accumulated from the treatment of runoff waters and the discharging of purified water.

Key indicators related to discharge waters	H1 2023	H1 2022
Purified discharge waters, Mm ³	3.8	5.0
Sulphate in discharge waters, tonnes (permit quota 16,300 tonnes)	4,016	6,821

Other key indicators are available in the company's sustainability review at www.terrafame.com > [Company > Reports and publications](#).

Permits

On 20 June 2022, Terrafame announced that it had submitted its environmental permit application for the exploitation of Kolmisoppi and the expansion of the mining concession to the Regional State Administrative Agency for Northern Finland. Kolmisoppi, which remains unexploited, is the second ore deposit located in Terrafame's mining concession. Including Kolmisoppi, Europe's largest nickel ore reserves are located in Terrafame's mining concession in Sotkamo. Zinc, cobalt and copper are also recovered from the ore. Since 2021, nickel and cobalt have been processed into battery chemicals at the company's battery chemicals plant for use in electric car batteries.

On 17 February 2023, the Regional State Administrative Agency for Northern Finland decided to not process the Kolmisoppi project permit application. A key obstacle to processing the permit application in accordance with the scope of the application submitted in June 2022 was the fact that the procedure to deviate from the objectives of the water management plan requires a legislative amendment, which is still under preparation.

Terrafame has decided to change the Kolmisoppi project plans so that the project will proceed in two phases. In the first phase, the company will apply for a permit to exploit the ore deposit in the Kolmisoppi land area, with mining scheduled for 2028–2033. The first-phase permit application will be submitted during 2023. In the second phase, it will apply for a permit to expand the mine into the water area, with mining scheduled for 2040–2050. Between 2033 and 2040, mining will take place in the current Kuusilampi mine.

On 26 April 2023, the Vaasa Administrative Court issued its ruling on the environmental permit decisions concerning Terrafame's battery chemicals plant and its energy production units. The administrative court amended the battery chemicals plant's permit by removing the authorisation to recycle the iron sediment generated at the plant into bioleaching. The court deemed the related reports to be insufficient. In other respects, the appeals against the decision were rejected. Terrafame has applied for a new permit for recycling from the Regional State Administrative Agency in July 2023 after the necessary studies were completed. The administrative court also further specified the energy

production units' environmental permit in terms of environmental monitoring, based on an appeal filed by Terrafame. According to the information available to Terrafame, there were no intentions for petitions for leave of appeal from the Supreme Administrative Court, meaning that the decisions would therefore have been given legal force.

On 29 June 2023, the Regional State Administrative Agency for Northern Finland granted an environmental permit for the new KL1 waste rock area and the Rajasuo landfill for soil, and a water management permit for construction projects related to these operations.

Key events after the review period

Terrafame had no significant events after the review period.

Outlook for 2023

- The production of battery chemicals will be restarted in August.
- The price development of base metals and battery chemicals involves considerable uncertainty.
- The development of operational efficiency and safety at work will continue in line with the principles of continuous improvement (Operational Excellence).
- Terrafame continues recruitment related to the decision made in late 2022 on an investment of around EUR 20 million to start uranium recovery by the summer of 2024.

For further information, please contact:

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A Finnish-language webcast will be held on 28 July 2023 at 1 pm EEST. At the event, Joni Lukkaroinen, CEO of Terrafame, and Ville Sirviö, CFO, will discuss the company's performance. The webcast can be followed live at terrafame.videosync.fi/q2-2023. Questions can be submitted using the form at the bottom of the page.

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 car batteries is located on Terrafame's industrial site. The plant is capable of producing nickel sulphate for around 1 million electric cars 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 2022 were EUR 584 million. Around 1,500 people work on its industrial site, half of whom are employees of partner companies.