

TIMELINE

1959

Arvo Puumala, a prospector from Kaustinen finds samples that catch the attention of Suomen Mineraali Oy. The discovery is verified to be spodumene, a rare lithium mineral.

1960s

Extensive boulder mappings in Kaustinen and neighboring municipalities. Lithium deposits are discovered in Emmes and Jänislampi in Alaveteli, as well as in Länttä in Ullava.

1976-1982

Exploitation of lithium deposits is studied extensively by Partek Oy (former Parainen Kalkkivuori Oy).

2006

Keliber Resources Ltd Oy is founded in 2001 and the name is changed to Keliber Oy in 2006.

2019

Keliber decides to change its end product from lithium carbonate to lithium hydroxide, build a concentrator in Päiväneva instead of Kalavesi, close to the main mining sites, and a refinery in the Kokkola Industrial Park.

2023-2026

Construction of the lithium refinery and concentrator starts in 2023 and is completed in early 2026.

2024

Environmental permits become legally valid for the commencement of integrated production.

2026 ->

The staged ramp-up of the integrated production begins.

What does the Ore Sample Contain?

The main minerals in this sample are:

1. **Spodumene:** pale greenish, plank-like crystals
2. **Feldspar (Albite):** white crystals occurring between the spodumene crystals

3. **Quartz:** light-coloured and light grey translucent crystals
4. **Muscovite:** thin, silvery reflective flakes
5. **Apatite:** small, deep green accessory mineral crystals

The sample represents a coarse-grained pegmatite, in which minerals have grown into large, well-formed crystals.

PROCESS

Mining

Spodumene ore (1) is mined from the bedrock in an open pit mine.

Beneficiation (Concentration)

The ore is crushed, sorted from the waste rock (2), and flotated. This results in spodumene concentrate (3).

Transportation

Spodumene concentrate is transported by truck from the concentrator in Kaustinen to the lithium refinery in the Kokkola Industrial Park, a distance of 66 km. At full production, around 25 round trip truck journeys will take place each day. The trucks can be identified from our logo.

Refining

The concentrate is heated in a rotary kiln to over 1000 degrees celsius. At the refinery, soda pressure leaching technology developed by Keliber and Metso is used, in which soda and water are added to the concentrate. Then milk of lime is added, and analcime sand (5) is separated. The remaining lithium hydroxide undergoes crustallisation, centrifugation, and drying, after which the final product – lithium hydroxide monoydrate (6) resembling table salt – is packaged for delivery to end users.

ENVIRONMENT TEXTS

The main principles of our environmental work are the proactive consideration of environmental aspects and the minimisation of impacts. Key areas include, for example, promoting water protection, biodiversity, circular economy, and chemical safety. Our operations are guided by valid environmental permits, which were granted following comprehensive environmental impact assessment procedures.

Examples of environmental actions implemented in practice:

Golden Eagle (*Aquila crysateos*)

The Syväjärvi and Rapasaari mining areas have been identified as part of the territory of the golden eagle. This species is endangered and strictly protected. We have built artificial nests outside the mining area and arranged winter feeding to support the golden eagle's habitat alongside mining operations.

Nesting boxes

Approximately 30 nesting boxes near the Keliber mining area have been installed to support local birdlife. The boxes provide nesting sites and contribute to the area's biodiversity.

Moor Frog (*Rana arvalis*)

Syväjärvi mining area has been identified as moor frog territory. Several ponds have been constructed to provide safe breeding and resting habitats for the protected species. Listen through the headphones to hear the moor frog's croak.

Promoting water protection

The quality of water discharged into the environment is safeguarded through careful planning, effective water treatment, and continuous monitoring.

Most of the water used in the mines and production facilities is recycled for reuse. The remaining water is purified before returning to the environment.

SHOWCASE CABINET

1. Lithium ore: Spodumene pegmatite

Spodumene is a mineral containing lithium. Spodumene often occurs as long, prismatic crystals, ranging in colour from white and pale green to pink and lilac shades.

2. Waste rock

Waste rock generated at the mines is easy to separate from the ore. Waste rock from Syväjärvi has been used in the base structures of the concentrator and ponds, as well as in road construction. Part of the waste rock is stockpiled.

3. Spodumene concentrate (Kaustinen)

A lithium-containing product produced at the concentrator that can either be transported to the Keliber lithium refinery in Kokkola for further processing or sold as such.

4. Quartz-feldspar sand (tailings)

Quartz-feldspar sand generated as a by-product in spodumene concentrate production can be utilised in construction materials (4.1) and civil engineering or stockpiled in the tailings pond.

4.1 Quartz-feldspar sand brick

An example of the utilisation of quartz-feldspar sand in construction materials. The quartz-feldspar sand gives the bricks an attractive light colour and a smooth surface.

5. Analcime sand

Fine-grained, reddish analcime sand is produced as a by-product during the lithium refining process when lithium is separated. It can be utilised in construction materials and earthworks or placed in the Hoikkaneva area in Kaustinen.

6. Lithium hydroxide monohydrate (LiOH.H₂O)

Lithium hydroxide is a white, fine-grained substance that is the final product of lithium refining.

Lithium hydroxide is an important material, especially in battery technology, such as electric car batteries and energy storage. Lithium makes it possible to store a large amount of energy in a small space.