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Survey of end of life Finnish industrial battery metal sites that have potential acid mine drainage impacts

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Abstract

Finland has had an industrial and mining ecosystem for centuries. There are many historical legacy sites of interest that may still contain valuable metals. Many of these historical sites were decommissioned before some technologies were developed that required metals like cobalt, lithium, or rare earth elements. There could well be these elements in the waste dumps at economically viable concentrations. There are also a number of sites that may be having a negative impact of the environment (Acid Mine Drainage in particular).

This report collates a list of old mine sites and decommissioned industrial sites, some of which date back to the year 1530. Metal mines, industrial minerals and carbonate rock mines were all examined. A list of historical decommissioned industrial sites was also compiled from references (all listed in Appendices A to D).

Keywords

mines, waste, historical industrial sites, legacy sites, environmental impacts, Acid Mine Drainage

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1 INTRODUCTION

Finland has had an industrial and mining ecosystem for centuries. There are many historical legacy sites of interest that may still contain valuable metals. Many of these historical sites were decommissioned before some technologies were developed that required metals like cobalt, lithium, or rare earth elements. There could well be these elements in the waste dumps at economically viable concentrations.

There are also a number of sites that may be having a negative impact of the environment (Acid Mine Drainage in particular).

This report collates a list of old mine sites and decommissioned industrial sites, some of which date back to the year 1530.

This work was part of the BATCircle 2.0 project, which is joint industry-academia project that develops a Finland-based Circular Ecosystem of battery metals. This report was prepared as a deliverable (D1.4.1) in Work Package WP1.4 Enhanced battery metals extraction from industrial side streams.

2 ACID MINE DRAINAGE

An environmental impact of doing any industrial action is how that environment interacts with the legacy waste dumps, stockpiles and facilities left behind after the operation has been decommissioned. Acid mine drainage (AMD) is one of those impacts that need to be understood, then managed. The effective management of these historical industrial sites can involve actions to reduce AMD, some of which could result in the recovery of useful metals. Two examples of AMD in Finland could be the historical mine sites Orijärvi and Aijala.

Abandoned mine drainage is water that is polluted from contact with mining activity, and normally associated with coal mining (United States Environmental Protection Agency). It is a common form of water pollution in areas where mining took place in the past. There are several issues with abandoned mines that impact water quality:

- acid mine drainage (the most prevalent)
- alkaline mine drainage (this typically occurs when calcite or dolomite is present)
- metal mine drainage (high levels of lead or other metals drain from these abandoned mines)

Acid mine drainage is the formation and movement of highly acidic water rich in heavy metals. This acidic water forms through the chemical reaction of surface water (rainwater, snowmelt, pond water) and shallow subsurface water with rocks that contain sulfur-bearing minerals, resulting in sulfuric acid. Heavy metals can be leached from rocks that come in contact with the acid, a process that may be substantially enhanced by

bacterial action. The resulting fluids may be highly toxic and, when mixed with groundwater, surface water and soil, may have harmful effects on humans, animals, and plants.

AMD has been used as a metric to classify the environmental impact and legacy footprint of industrial sites national governments. It has been useful in classifying the waste plumes of extractive industries like mining, and quarries. AMD has also been a tool to assess industrial sites like foundries, smelters and factories. Conventionally these industries are considered separately. According to the Finnish government (Ministry of the Environment Finland 2013), extractive waste can be classified as inert (extractive waste includes waste rock, soil, topsoil, and tailings), among other criteria, if (Rytkönen 2022):

- Sulfide sulfur is equal to or less than 0.1 %
- Sulfide sulfur equal to or less than 1%, when neutralization potential ratio (NP/AP) is greater than 3
- As an addition the aqua regia (AR) extraction rates of semimetals and metals should not exceed the threshold values. AR test ISO 11466 (Luodes et al. 2011)
- AR-test is the most used extraction analysis used in Finland which especially dissolve elements bound to sulfide phases (Karlsson et al., 2021)
- Sulfidic sulfur can be determined with EN 14582 / ISO 15178 (Luodes et al. 2011)
- NP/AP with EN 15875 (Luodes et al. 2011)
- If classified as non-inert, the waste usage and deposition require further investigation (Luodes et al. 2011)

It becomes clear that the most problematic are the sulfide minerals. Table 1 (parts 1 and 2) show the threshold and guideline values for the concentrations of some common harmful substances in soil as total concentration per dry matter (Ministry of the Environment Finland 2007). The guideline values have been defined on the basis of either ecological risks (e) or health risks (t). If the risk of groundwater contamination is higher than normal in concentrations below the lower guideline value, the substances are marked with the letter (p).

Traditionally, AMD legacy footprint studies would consider just mining operations in isolation, or industrial site operations in isolation. The reality is the same area of land could interact with many different industrial sites, mines, quarries, factories, and farms, through the movement of water in the water table and regional freshwater catchment movement. Thus, it is recommended that all possible contaminants are examined and considered. Table 1 shows all contaminates of interest, with naturally occurring concentrations normally associated with mining and quarrying, shown in blue.

Presence of these elements in higher concentrations shown in Table 1 are considered to be a target for removal and/or long-term management.

Table 1.1. Threshold and guideline values for the concentrations of harmful substances in soil (Ministry of the Environment Finland 2007)

Substance (symbol)	Natural concentration[1] (mg/kg)	Threshold value (mg/kg)	Lower guideline value (mg/kg)	Higher guideline value (mg/kg)
Metals and semimetals[2]				
Antimony (Sb) (p)	0,02 (0,01-0,2)	2	10 (t)	50 (e)
Arsenic (As) (p)	1 (0,1-25)	5	50 (e)	100 (e)
Mercury (Hg)	0,005 (< 0,005-0,05)	0,5	2 (e)	5 (e)
Cadmium (Cd)	0,03 (0,01-0,15)	1	10 (e)	20 (e)
Cobalt (Co) (p)	8 (1-30)	20	100 (e)	250 (e)
Chrome (Cr)	31 (6-170)	100	200 (e)	300 (e)
Copper (Cu)	22 (5-110)	100	150 (e)	200 (e)
Lead (Pb)	5 (0,1-5)	60	200 (t)	750 (e)
Nickel (Ni)	17 (3-100)	50	100 (e)	150 (e)
Zinc (Zn)	31 (8-110)	200	250 (e)	400 (e)
Vanadium (V)	38 (10-115)	100	150 (e)	250 (e)
Other inorganic				
Cyanide (CN)		1	10	50
Aromatic hydrocarbons				
Benzene (p)		0,02	0.2 (t)	1 (t)
Toluene (p)			5 (t)	25 (t)
Ethylbenzene (p)			10 (t)	50 (t)
Xylenes[3] (p)			10 (t)	50 (t)
TEX[4]		1		
Polycyclic aromatic hydrocarbons				
Anthracene		1	5 (e)	15 (e)
Benzo(a)anthracene		1	5 (e)	15 (e)
Benzo(a)pyrene		0,2	2 (t)	15 (e)
Benzo(k)fluoranthene		1	5 (e)	15 (e)
Phenanthrene		1	5 (e)	15 (e)
Fluoranthene		1	5 (e)	15 (e)
Naphthalene		1	5 (e)	15 (e)
PAH[5]		15	30 (e)	100 (e)
Polychlorinated biphenyls (PCB) and polychlorinated dibenzo-p-dioxins and furans (PCDD/F)				
PCB[6]		0,1	0.5 (t)	5 (e)
PCDD-PCDF-PCB[7]		0,00001	0.0001 (t)	0.0015 (e)

Table 1.2. Threshold and guideline values for the concentrations of harmful substances in soil (Ministry of the Environment Finland 2007)

Substance (symbol)	Natural concentration[1] (mg/kg)	Threshold value (mg/kg)	Lower guideline value (mg/kg)	Higher guideline value (mg/kg)
Chlorinated aliphatic hydrocarbons				
Dichloromethane (p)		0,01	1 (t)	5 (t,e)
Vinyl chloride (p)		0,01	0.01 (t)	0.01 (t)
Dichloroethenes3 (p)		0,01	0.05 (t)	0.2 (t)
Trichloroethene (p)		0,01	1 (t,e)	5 (e)
Tetrachloroethene (p)		0,01	0.5 (t)	2 (t)
Chlorobenzenes				
Trichlorobenzenes[3]		0,1	5 (t)	20 (e)
Tetrachlorobenzenes[3]		0,1	1 (t)	5 (e)
Pentachlorobenzene		0,1	1 (t)	5 (e)
Hexachlorobenzene		0,01	0.05 (t)	2 (e)
Chlorophenols				
Monochlorophenols[3] (p)		0,5	5 (e,t)	10 (e)
Dichlorophenols[3] (p)		0,5	5 (t)	40 (e)
Trichlorophenols[3] (p)		0,5	10 (e,t)	40 (e)
Tetrachlorophenols[4] (p)		0,5	10 (e,t)	40 (e)
Pentachlorophenol (p)		0,5	10 (e,t)	20 (e)
Pesticides and biocides				
Atrazine (p)		0,05	1 (e)	2 (e)
DDT-DDD-DDE[8]		0,1	1 (e)	2 (e)
Dieldrin		0,05	1 (e)	2 (e)
Endosulphan[9] (p)		0,1	1 (e)	2 (e)
Heptachlorine		0,01	0.2 (t)	1 (e)
Lindane (p)		0,01	0.2 (t)	2 (e)
TBT-TPT[10]		0,1	1 (e)	2 (e)
Petroleum hydrocarbon fractions and oxygenates				
MTBE-TAME11		0,1	5 (t)	50 (t)
Petrol fractions (C5-C1012)			100	500
Middle distillates (>C10 - C2112)			300	1000
Heavy petroleum fractions (>C21-C4012)			600	2000
Petroleum fractions (>C10 - C4012)		300		

Notes for Table 1:

1. The median and range of the natural concentration of fines in moraine when defined by extraction with aqua regia, except pyrolytically defined mercury. It must be taken into account in site-specific analyses that especially in clay soils the natural concentrations may be clearly higher than those measured from moraine.

2. The guideline values for metals and semimetals defined on ecological grounds are derived by adding the average natural concentration of the mineral soil to the calculated concentration describing the acceptable ecological risk of the substance. Correspondingly, the natural concentration of the soil in the area can be taken into account in site-specific analyses if it has been analyzed with a reliable method.

3. Total concentration including the structural isomers of the substance.

4. Total concentration including the following compounds: toluene, ethylbenzene and xylene.

5. Total concentration of PAH compounds including the following compounds: anthracene, acenaphthene, acenaphthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, phenanthrene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, chrysene, naphthalene and pyrene.

6. Total concentration including PCB congeners 28, 52, 101, 118, 138, 153, 180.

7. Total concentration stated as WHO toxicity equivalent including PCDD/F compounds and dioxin-like PCB compounds.

8. Total concentration including the following compounds: dichlorodiphenyltrichloroethane (DDT), dichlorodiphenyldichloroethane (DDD) and dichlorodiphenyldichloroethylene (DDE).

9. Total concentration including the following compounds: alpha-endosulphane and beta-endosulphane.

10. Total concentration including the following compounds: tributyl tin (TBT) and triphenyl tin (TPT).

11. Total concentration including the following compounds: methyl tert-butyl ether (MTBE) and tert-amyl methyl ether (TAME).

12. Series of n paraffins in gas-chromatographic analysis.

3 HISTORICAL MINING TAILINGS DAMS AND WASTE DUMPS

Finland has had an industrial and mining ecosystem for centuries. There are many historical legacy sites of interest that may still contain valuable metals. Appendix A contains a list of metal mines that operated in Finland between the year 1530 and 2001 (Puustinen 2013). Appendix B contains a list of industrial mineral mines operating in the same time period and Appendix C contains a list of carbonate rock mines (Puustinen 2013).

In 2011–2013, Finland surveyed the implementation of the EU Extractive Waste Directive (2006/21 / EC) (Tornivaara 2022). This "Mine waste directive" stated that every EU country has to list mine waste facilities that might cause serious negative environmental impacts or threat to human health. The project was the Closed and abandoned serious pollution or the environment potentially hazardous extractive waste sites (the so-called KAJAK I project).

One of the conclusions of the report was that for a serious environmental impact to happen, there had to be a mine waste dump (containing sulfide minerals or asbestos) of more than 10 000 tonnes in quantity (Tornivaara 2022). The first project identified 37 historical mine sites that could require further study and possible rehabilitation (Shown in Figure 1, Table 2 and 3). This project was extended in a follow-up project (KAJAK II) in which the objectives were to identify or evaluate (Räisänen *et al.* 2013):

- the current state of the extractive waste sites and the initial need for rehabilitation,
- the environmental impact of waste facilities and their run-off,
- any hazardous waste contained in the extractive waste facilities; and
- the effectiveness of the rehabilitation measures taken.

The KAJAK II report (Räisänen *et al.* 2013) described the impact of each mining site on land use and presented recommendations for further actions. Based on this survey, the mining areas were classified into 5 groups in accordance with environmental load and impacts (using data until 1/5/2012). Tables 2 and 3 are presented into these 5 groups:

1. Mining areas that produce acidic mine drainage
2. Mining areas that produce neutral/almost neutral metal-bearing water
3. Mining areas on which very little researched data exists with regard to environmental load

4a. Locations where a mining concession is active or where licensed remediation is under way

4b. Mining areas where the environmental load is low based on the available data.

5. Sites in the EU extractive waste addressed in the project and which are recommended to be removed from the list

The KAJAK II report (Räisänen *et al.* 2013) also addresses the problems related to the remediation of old and/or bankrupted and insolvent mining sites and proposes the clarification of the responsibilities for determining the current status of these sites, and remediation and monitoring them (Table 4 parts 1 and 2).

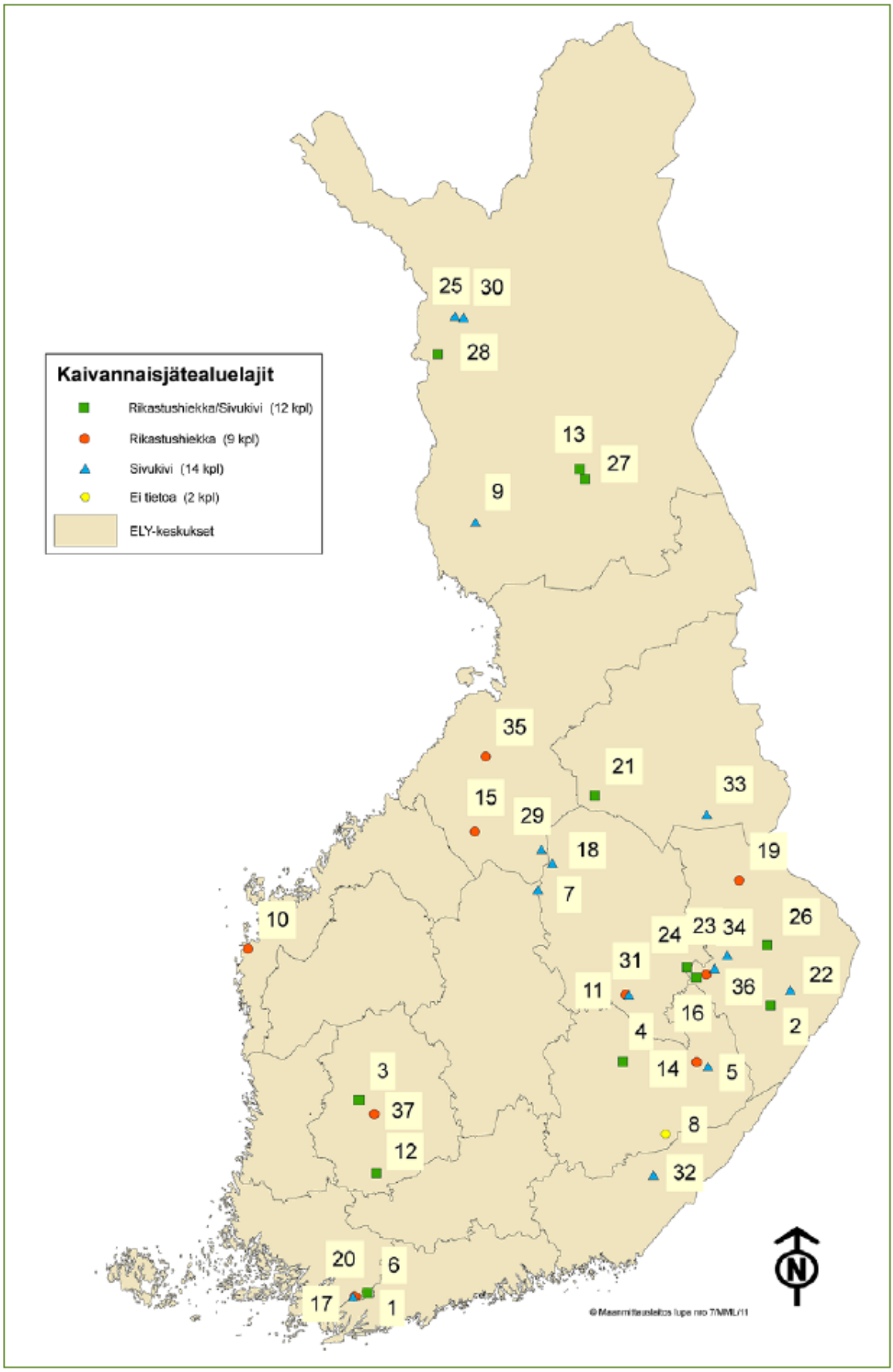


Figure 1. Extractive waste areas of closed and abandoned mines by type of waste in Finland. The numbering corresponds to the extractive waste sites numbering used in Tables 2, 3 and 4 (Source: Räisänen *et al.* 2013).

Table 2. EU list of closed and abandoned metal ore and asbestos mines. The table shows the mining area regional ELY center responsible for mining control, location (according to 2011), years of operation of the mine, ore metals and mining site map coordinates (REE = rare earths: yttrium, scandium and various lanthanides) (Source: Räisänen *et al.* 2013)

Mine Site*	ELY Center	Municipality (2017)	Years of Operation	Ore metals (deposit type)	X (Northing)	Y (Easting)
Group 1: Mining areas producing acid run-off water						
1. Aijala	Varsinais-Suomi	Salo	1948-1961	Cu, Zn (Sulfides)	6681288	3298496
3. Haveri	Pirkanmaa	Ylöjärvi	1942-1962	Au, Cu (Sulfides)	6850437	3301730
4. Hällinmäki	Etelä-Savo	Pieksämäki	1966-1984	Cu, Zn (Sulfides)	6883600	3529050
5. Hälvälä	Etelä-Savo	Kerimäki	1988-1992	Ni, Cu (Sulfides)	6879406	3602494
7. Kangasjärvi	Pohjois-Savo	Keitele	(1984)1986	Zn, Cu (Sulfides)	7031950	3455780
20. Orijärvi	Varsinais-Suomi	Salo	1758-1882, 1929-1955	Cu, Pb, Zn (Sulfides)	6684772	3308429
23. Outokumpu (Keretti, museokaivosalue)	Pohjois-Karjala	Outokumpu	1910-1989	Cu, Zn, Co, S (Sulfides)	6958833	3601070
29. Ruostesuo	Pohjois-Savo	Kiuruvesi	1988-1990	Zn, Cu (Sulfides)	7054660	3468160
31. Särkiniemi	Pohjois-Savo	Leppävirta	2007-2008	Ni (Sulfides)	6941150	3534260
33. Tipasjärvi	Kainuu	Sotkamo	1918-1920	S (Sulfides)	7096514	3601431
37. Ylöjärvi	Pirkanmaa	Ylöjärvi	1943-1966	Cu, W, As, Ag (Sulfides)	6838481	3314498
Group 2. Mining areas producing neutral or near-neutral metallic waters and for which studies on the current condition and rehabilitation are recommended						
10. Korsnäs	Etelä-Pohjamaa	Korsnäs	1958-1973	Pb (Sulfides) REE	6980800	3206689
12. Kylmäkoski	Pirkanmaa	Akaa	1971-1974	Ni, Cu (Sulfides)	6787330	3316151
13. Kärväsvaara	Lappi	Kemijärvi	1921, 1937, 1959-1967	Fe (Oxides)	7394610	3491630
15. Makola	Pohjois-Pohjanmaa	Nivala	1941-1954	Ni, Cu, Co (Sulfides)	7081799	3401261
17. Metsämonttu	Varsinais-Suomi	Salo	1951-1974	Zn, Cu, Pb, Au, Ag (Sulfides)	6680970	3297340
36. Vuonos	Pohjois-Karjala	Outokumpu	1967-1986	Cu, Zn, Ni, Co, S (Sulfides)	6964272	3608225
Group 3. Mining areas for which little information is available on the environmental impact						
19. Mätäsvaara	Pohjois-Karjala	Lieksa	1903, 1910-1919, 1920-1922, 1932-1933, 1939-1947	Mo (Sulfides)	7039958	3629459
27. Raajärvi	Lappi	Kemijärvi	1962-1975	Fe (Oxides)	7385940	3496430
Group 4a. Sites with a valid mining district or rehabilitation in progress and an environmental permit for the rehabilitation. If remedial action is noted after follow - up and / or after further rehabilitation or mining operations begin, it is proposed to remove the waste areas of the mining site from the EU list of extractive waste updated on 20.11.2012						
2. Hammaslahti	Pohjois-Karjala	Joensuu	1971-1986	Cu, Zn, Au (Sulfides)	6932244	3656496
Hitura	North Ostrobothnia	Nivala	1965 - 2015	Ni, (Cu)		
11. Kotalahti	Pohjois-Savo	Leppävirta	1957-1987	Ni, Cu (Sulfides)	6941350	3531480
14. Laukunkangas	Etelä-Savo	Enonkoski	1985-1994	Ni, Cu (Sulfides)	6883361	3592761
21. Otanmäki	Kainuu	Kajaani	1949-1985	Fe, Ti, V (Oxides)	7113000	3505050
22. Otravaara	Pohjois-Karjala	Joensuu	1828, 1918-1924	S (Sulfides)	6945286	3673595
25. Pahtavuoma	Lappi	Kittilä	1974-1976, 1989-1993	Cu, Ag (Sulfides)	7526196	3384221
30. Saattopora	Lappi	Kittilä	1988-1995	Au, Cu (Sulfides)	7524951	3391721
32. Telkkälä	Kaakkois-Suomi	Taipalsaari	1969-1970, 1988-1992	Ni, Cu (Sulfides)	6786050	3555450
35. Vihanti	Pohjois-Pohjanmaa	Vihanti	1951-1992	Zn, Cu, Pb, Ag (Sulfides)	7146622	3410694
Group 4b. Mining areas with a low environmental impact that are proposed to be removed from the EU list of extractive waste updated on 20.11.2012						
6. Iilijärvi	Varsinais-Suomi	Salo	1700's, 1833, 1852-1853, 1974	Zn, Au, (Sulfides)	6685574	3307544
8. Kitula	Etelä-Savo	Puumala	1970	Ni (Sulfides)	6821300	3566000
9. Kivimaa	Lappi	Tervola	1969-1970	Cu (Sulfides)	7348737	3401865
Group 5. Mining sites excluded from the KAJAK II project and recommended for removal from the EU Mining Waste List updated on 20.11.2012						
Hokka	North Karelia	Kontiolahti	Early 1900's	Cu		
Kirakkajuppura	Lapland	Tervola	2000 - 2003	Pt, Pd, Au		
16. Maljasalmi	Pohjois-Karjala	Outokumpu	1943-1953	Asbestos	6956429	3592526
18. Mullikkoräme	Pohjois-Pohjanmaa	Pyhäjärvi	1990-2000	Zn, Cu, Pb	7066600	3458800
Tainiovaara	North Karelia	Lieksa	1975 - 2012	Ni, (Cu)		
24. Paakkila	Pohjois-Savo	Tuusniemi	1904-1975	Asbestos	6965226	3584603
26. Paukkajanvaara	Pohjois-Karjala	Joensuu	1958-1961	U (Oxides)	6984109	3653560
28. Rautuvaara	Lappi	Kolari	1962-1988	Fe (Oxides), Cu (Sulfides)	7493474	3369307
34. Vasarakangas	Pohjois-Karjala	Polvijärvi	1977-1982	Talc, Ni (Sulfides)	6975541	3619204

* Mine site number refers to numbers on Figure 1 map

Table 3.1. Total mining of closed and abandoned metal ore and asbestos mines, quantities of tailings and waste rocks, type of waste and number of waste facilities per mine in brackets. Facilities for non-hazardous and inert extractive waste do not pose a major-accident hazard according to the Extractive Waste Directive (2006/21/EC) (Source: Räisänen *et al.* 2013).

Mine Site*	Ore metals (instance type)	Total Mining (Mt)	Tailings (Mt)	Waste Rock (Mt)	Type of waste (waste facilities number)
Group 1: Mining areas producing acid run-off water					
1. Aijala	Cu, Zn (Sulfides)	0,93	1,98	No waste rock	Normal (1)
3. Haveri	Au, Cu (Sulfides)	1,56	1,40	0,005	Normal (2)
4. Hällinmäki	Cu, Zn (Sulfides)	5,33	4,10	0,51	Normal (2)
5. Hälvälä	Ni, Cu (Sulfides)	0,54	Located in the waste basin of Laukunkangas	0,18	Normal (1)
7. Kangasjärvi	Zn, Cu (Sulfides)	0,75	Located in the Pyhäsalmi waste basin	0,60	Normal (1)
20. Orijärvi	Cu, Pb, Zn (Sulfides)	1,35	1,00	0,4	Normal (2)
23. Outokumpu (Keretti, museokaivosalue)	Cu, Zn, Co, S (Sulfides)	34,9	1,00	Underground mine backfill	
29. Ruostesuo	Zn, Cu (Sulfides)	0,56	Located in the Pyhäsalmi waste basin	As quarry filling	
31. Särkiniemi	Ni (Sulfides)	0,29	Located in the Hitura waste basin	0,12	Normal (1)
33. Tipasjärvi	S (Sulfides)	0,001	No tailings	0,0002	Normal (1)
37. Ylöjärvi	Cu, W, As, Ag (Sulfides)	4,15	2,77	Underground mine backfill	Normal (2)
Group 2. Mining areas producing neutral or near-neutral metallic waters and for which studies on the current condition and rehabilitation are recommended					
10. Korsnäs	Pb (Sulfides) REE	0,93	0,77	No waste rock	Normal (1)
12. Kylmäkoski	Ni, Cu (Sulfides)	0,84	0,65	0,15	Normal (2)
13. Kärväsvaara	Fe (Oxides)	1,22	0,34	0,16	Normal (2)
15. Makola	Ni, Cu, Co (Sulfides)	0,43	0,38	No waste rock	Normal (1)
17. Metsämonttu	Zn, Cu, Pb, Au, Ag (Sulfides)	1,71	Located in the Aijala waste basin	0,3	Normal (1)
36. Vuonos	Cu, Zn, Ni, Co, S (Sulfides)	15,6	(Concentration pool in operation)[2)]	4,00	Normal (3)
Group 3. Mining areas for which little information is available on the environmental impact					
19. Mätäsvaara	Mo (Sulfides)	1,19	1,00	No waste rock	Permanent (1)
27. Raajärvi	Fe (Oxides)	7,82	2,2	1,26	Normal (2)

* Mine site number refers to numbers on Figure 1 map
(1) Waste volumes, circulated mine production
(2) Concentration sand from talc production is placed in the waste basin
(3) Landfill crushed stone for construction use

Table 3.2. Total mining of closed and abandoned metal ore and asbestos mines, quantities of tailings and waste rocks, type of waste and number of waste facilities per mine in brackets. Facilities for non-hazardous and inert extractive waste do not pose a major-accident hazard according to the Extractive Waste Directive (2006/21/EC) (Source: Räisänen *et al.* 2013).

Mine Site*	Ore metals (instance type)	Total Mining (Mt)	Tailings (Mt)	Waste Rock (Mt)	Type of waste (waste facilities number)
Group 4a. Sites with a valid mining district or rehabilitation in progress and an environmental permit for the rehabilitation. If remedial action is noted after follow - up and / or after further rehabilitation or mining operations begin, it is proposed to remove the waste areas of the mining site from the EU list of extractive waste updated on 20.11.2012					
2. Hammaslahti	Cu, Zn, Au (Sulfides)	7,89	5,30	1,8	Normal (2)
Hitura	Ni, (Cu)				
11. Kotalahti	Ni, Cu (Sulfides)	13,7	9,40	No waste rock	Normal (1)
14. Laukunkangas	Ni, Cu (Sulfides)	8,39	6,60	No waste rock	Normal (1)
21. Otanmäki	Fe, Ti, V (Oxides)	33,1	11,80	0,58[3)]	Normal (2)
22. Otravaara	S (Sulfides)	0,03	No tailings	0,01	Normal (1)
25. Pahtavuoma	Cu, Ag (Sulfides)	0,63	Located (0.26 Mt) in Rautuvaara to the waste basin	0,23	Normal (2)
30. Saattopora	Au, Cu (Sulfides)	5,73	Located (2.05 Mt) in Rautuvaara to the waste basin	3,57	Normal (2)
32. Telkkälä	Ni, Cu (Sulfides)	0,95	Located in the Laukunkangas waste area	0,14[3)]	Normal (1)
35. Vihanti	Zn, Cu, Pb, Ag (Sulfides)	30,8	1,37	Underground mine backfill	Normal (1)
Group 4b. Mining areas with a low environmental impact that are proposed to be removed from the EU list of extractive waste updated on 20.11.2012					
6. Iilijärvi	Zn, Au, (Sulfides)	0,03	Located in the Aijala waste basin	No information	Normal (-)
8. Kitula	Ni (Sulfides)	0,06	Located at the Hällinmäki waste basin	No information	Normal (-)
9. Kivimaa	Cu (Sulfides)	0,03	Located in the Vegetable Waste Basin	0,008	Normal (1)
Group 5. Mining sites excluded from the KAJAK II project and recommended for removal from the EU Mining Waste List updated on 20.11.2012					
Hokka	Cu		No information	No information	
Kirakkajuppura	Pt, Pd, Au		Elsewhere	No information	
16. Maljasalmi	Asbestos	0,05	0,01	0,02	Normal (2)
18. Mullikkoräme	Zn, Cu, Pb	1,59	Located in the Pyhäsalmi waste basin	As quarry filling	Normal (1)
Tainiovaara	Ni, (Cu)		Elsewhere	0,001	
24. Paakkila	Asbestos	4,92	0,24	4,3	Normal (2)
26. Paukkajanvaara	U (Oxides)	0,07	0,04	0,03	Normal (1)
28. Rautuvaara	Fe (Oxides), Cu (Sulfides)	12,9	8,02	1,23	Normal (2)
34. Vasarakangas	Talc, Ni (Sulfides)	1,79	Located in the Vuonos waste basin	0,7	Normal (1)
Total (Mt)		**207,8**	**60,4 Mt**	**20,7 Mt**	

* Mine site number refers to numbers on Figure 1 map
(1) Waste volumes, circulated mine production
(2) Concentration sand from talc production is placed in the waste basin
(3) Landfill crushed stone for construction use

Table 4.1. Selected closed and abandoned metal ore and asbestos mines in Finland, grouped according to environmental impact and recommendations for further action (Source: Räisänen *et al.* 2013).

Mine Site*	Ore metals (instance type)	Recommendation and criteria for the follow-up of the KajakII project to be included in or removed from the list of extractive waste
Group 1: Mining areas producing acid run-off water		
1. Aijala	Cu, Zn (Sulfides)	Current condition survey recommendation for rehabilitation measures; possible recovery of tailings
3. Haveri	Au, Cu (Sulfides)	Current condition survey recommendation for rehabilitation measures; possible recovery of tailings
4. Hällinmäki	Cu, Zn (Sulfides)	Recommendation for the rehabilitation of an ore loading area with an impact on the environment, evaluation recommendation on the environmental impact of roadway operations on the state of extractive waste
5. Hälvälä	Ni, Cu (Sulfides)	Research recommendation on the quality of surface and groundwater around a side rock pile
7. Kangasjärvi	Zn, Cu (Sulfides)	Current condition survey recommendation as a basis for further rehabilitation measures
20. Orijärvi	Cu, Pb, Zn (Sulfides)	Current state survey recommendation for rehabilitation measures, taking into account the museum values of the mining area
23. Outokumpu (Keretti, museokaivosalue)	Cu, Zn, Co, S (Sulfides)	The recommendation is to investigate the impact of waste areas on groundwater quality
29. Ruostesuo	Zn, Cu (Sulfides)	Current mapping and water load assessments of the waste area are recommended
31. Särkiniemi	Ni (Sulfides)	Renovation planning in the area is underway by the ELY Center
33. Tipasjärvi	S (Sulfides)	Remote location and small amount of rocks, recommended to study the environmental load
37. Ylöjärvi	Cu, W, As, Ag (Sulfides)	Current status survey recommendation as a basis for waste site remediation measures
Group 2. Mining areas producing neutral or near-neutral metallic waters and for which studies on the current condition and rehabilitation are recommended		
10. Korsnäs	Pb (Sulfides) REE	Exploration recommendations for runoff management and treatment method solutions
12. Kylmäkoski	Ni, Cu (Sulfides)	A water load assessment is recommended as a basis for assessing the need for additional rehabilitation
13. Kärväsvaara	Fe (Oxides)	Recommendation for the current status mapping and water load assessment of the waste area
15. Makola	Ni, Cu, Co (Sulfides)	Current status report recommendation for rehabilitation measures
17. Metsämonttu	Zn, Cu, Pb, Au, Ag (Sulfides)	A study of the current state of the environmental impact of the mining area is recommended
36. Vuonos	Cu, Zn, Ni, Co, S (Sulfides)	It is recommended to update the current status report of the side rock areas to assess the need for further rehabilitation

* Mine site number refers to numbers on Figure # map

Table 4.2. Selected closed and abandoned metal ore and asbestos mines in Finland, grouped according to environmental impact and recommendations for further action (Source: Räisänen *et al.* 2013).

Mine Site*	Ore metals (instance type)	Recommendation and criteria for the follow-up of the KajakII project to be included in or removed from the list of extractive waste
Group 3. Mining areas for which little information is available on the environmental impact		
19. Mätäsvaara	Mo (Sulfides)	It is recommended that the environmental impact of the use of the waste area and its possible recovery be taken into account in assessing the need for rehabilitation
27. Raajärvi	Fe (Oxides)	Current status survey recommendation for environmental impact and remediation needs assessment
Group 4a. Sites with a valid mining district or rehabilitation in progress and an environmental permit for the rehabilitation. If remedial action is noted after follow - up and / or after further rehabilitation or mining operations begin, it is proposed to remove the waste areas of the mining site from the EU list of extractive waste updated on 20.11.2012		
2. Hammaslahti	Cu, Zn, Au (Sulfides)	It is recommended to expand the follow-up of rehabilitation measures and the need for additional rehabilitation evaluation
Hitura	Ni, (Cu)	Renovation is underway in part of the area by the ELY Center, without monitoring
11. Kotalahti	Ni, Cu (Sulfides)	It is recommended to expand the follow-up of rehabilitation measures and the need for additional rehabilitation evaluation
14. Laukunkangas	Ni, Cu (Sulfides)	Mining district. An assessment of the need for further refurbishment is recommended
21. Otanmäki	Fe, Ti, V (Oxides)	A resumption of mining is planned
22. Otravaara	S (Sulfides)	Renovated with the permission of the Environment Agency, performance monitoring is recommended
25. Pahtavuoma	Cu, Ag (Sulfides)	Refurbished and follow-up in progress
30. Saattopora	Au, Cu (Sulfides)	Closure process in progress, environmental impact studies are recommended as a basis for rehabilitation
32. Telkkälä	Ni, Cu (Sulfides)	Mining district. Environmental impact assessments for rehabilitation needs assessments are recommended
35. Vihanti	Zn, Cu, Pb, Ag (Sulfides)	Renovated according to the decision of the Waste Management Act, it is recommended to revise the monitoring program
Group 4b. Mining areas with a low environmental impact that are proposed to be removed from the EU list of extractive waste updated on 20.11.2012		
6. Iilijärvi	Zn, Au, (Sulfides)	The mining areas have been left under new functions
8. Kitula	Ni (Sulfides)	Small, forested waste area, no acid mine runoff
9. Kivimaa	Cu (Sulfides)	The small area that served as the research site is not an acid mine runoff
Group 5. Mining sites excluded from the KAJAK II project and recommended for removal from the EU Mining Waste List updated on 20.11.2012		
Hokka	Cu	Conventional waste, test mining (0.01 Mt), no significant environmental impact
Kirakkajuppura	Pt, Pd, Au	nert waste, test mining (0.06 Mt), no significant environmental impact
16. Maljasalmi	Asbestos	Rehabilitated, functionality is being monitored
18. Mullikkoräme	Zn, Cu, Pb	Rehabilitated, functionality is being monitored
Tainiovaara	Ni, (Cu)	Conventional waste, test mining (0.02 Mt), no significant environmental impact
24. Paakkila	Asbestos	Renovated area, functionality is being monitored
26. Paukkajanvaara	U (Oxides)	Renovated area, STUK monitoring
28. Rautuvaara	Fe (Oxides), Cu (Sulfides)	Currently part of Hannukainen Mining Oy's mining plan
34. Vasarakangas	Talc, Ni (Sulfides)	The mining district in force in the area, the area is related to the operating mining area of Karnuka

* Mine site number refers to numbers on Figure # map

4 HISTORICAL INDUSTRIAL WASTE DUMPS

Most of the historical waste dumps in Finland have been generated as an outcome of the extractive industries (mining and quarrying). However, a large number of sites are associated with decommissioned industrial activity. Most of these sites would be comparatively small.

There is a dynamic and symbiotic relationship between operating mines and industrial sites like smelters. Ore is mined and then mineral concentrate is produced at the mine site. That concentrate is feedstock to a smelter (usually the mine and the smelter operations are on different continents). So potentially valuable metals mined at a mine site could be part of the industrial waste plume at a smelter.

There is an interesting example of this in Finland. At the mine site of Kevitsa (owned by Boliden), the economic metals being mined are nickel (Ni) and copper (Cu), with some platinum group elements (PGE), and cobalt (Co). The mineral concentrate is processed at the Harjavalta site (also in Finland) for flash smelting. Most of the cobalt is mineralogically hosted in Pentlandite, which is also the main Ni mineral, with smaller quantities in pyrrhotite, pyrite, chalcopyrite, and silicates. This means that most of the cobalt is recovered in the Ni concentrate.

Extraction and recovery of that cobalt from the nickel mineral concentrate often poor (Dehaine 2022), which results in significant Co losses into the tailings/Fe sulphide concentrate at the Harjavalta smelter. Boliden do not report Co metal production from Harjavalta, and thus no recovery can be estimated but smelting in general, especially flash smelting, is notorious for metal losses in slags, especially Co.

According to a published paper regarding process efficiency at the Harjavalta smelter (Mäkinen & Taskinen 2008), only 23% of the Co is recovered in the flash smelting (FSF) matter. Metal losses to the FSF slag are significant, representing 77% of Co in the concentrate. However, treating these slags in a process step after FSF with an electric furnace (EF) smelting without converting, would allow the recovery 46% of the cobalt in the FSF slag resulting. So, in total about 69% of the Co is recovered to the mattes (FSF+EF). This means that, at least 31% Co from the feedstock mineral concentrate is lost in the waste slags.

Overall taking the full picture from mine to product (Dehaine 2022), using the cobalt (Co) in the Kevitsa ore as a reference (100%):

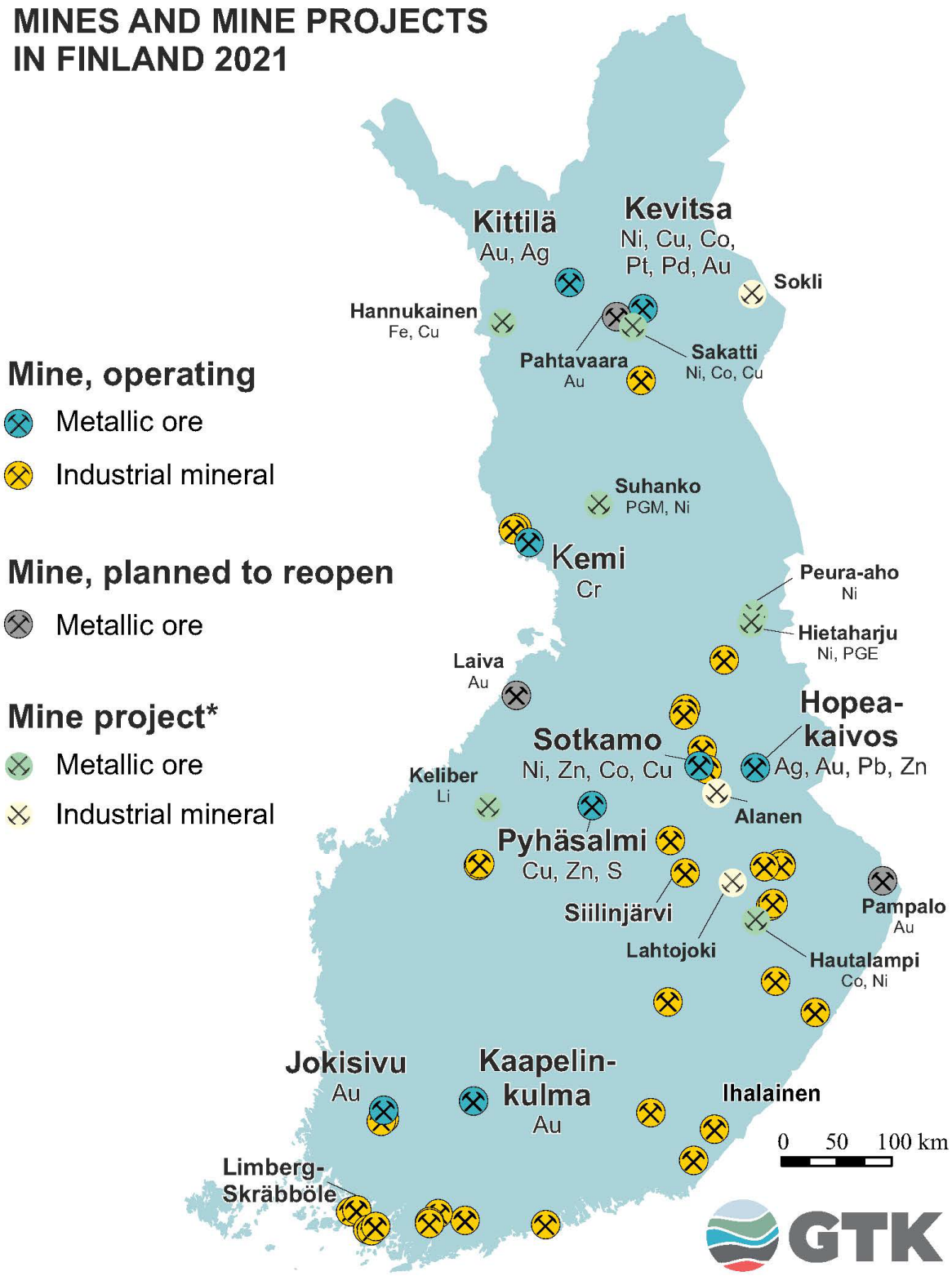
- ~40-50% Co losses in flotation tailings (Fe sulphides, others)
- ~16-19% Co losses in the waste slags (31% * [50-60%])
- ~34-41% Co recovered in matte (69% * [50-60%])

This represents an opportunity as the Co not recovered will be in the Kevitsa mine tailings and in the Harjavalta slag waste dumps. Given an approximate estimate that at least 30% of Kevitsa's Co production goes to the "waste slag", then in 2021, approximately 180 tonnes Co of the 592 tonnes Co may have ended up in slags but that does not mean that the remaining 412 tonnes of cobalt ended up in a Co product (Co Powder), due to other downstream process inefficiencies (Dehaine 2022).

Appendix D shows a list of historical industrial sites that were in operation in Finland, between the years 1530 and 2001. This list has been drawn from a larger study (Puustinen 2003). There was little contextual data available for these historical sites. A useful future study would be to compile a characterization-based data base to determine what minerals are present at each of these sites.

5 MINES THAT ARE OPERATING NOW

Figures 2 to 5 and Tables 5 and 6 show the mines and mining projects active in 2021.



*'Mine project' refers here to a project, which is actively developed towards the start-up of mine production and, as main rule, environmental impact assessment programme has been submitted to the contact authority.

Figure 2. Map of mines and mine projects in Finland 2021 (Source: GTK, Jussi Pokki)

Table 5. Mines und quarries that operate under Mining Act and extracted ore and/or leftover rocks in 2021. Source: Finnish Safety and Chemicals Agency (Tukes).

Mine / Quarry	Municipality	Main Commodities	Company	Total Mined (tonnes)	Ore (tonnes)	Waste Rock (tonnes)
Metal ores						
Kittilä	Kittilä	Au	Agnico Eagle Finland Oy	2 776 196	2 089 535	686 661
Jokisivu	Huittinen	Au	Dragon Mining Oy	339 330	339 330	0
Kaapelinkulma	Valkeakoski	Au	Dragon Mining Oy	52 290	22 795	29 495
Pampalo	Ilomantsi	Au	Endomines Oy	80 885	12 504	68 381
Laiva	Raahe	Au	Otso Gold Oy	1 168 199	288 930	879 269
Hopeakaivos	Sotkamo	Ag, Au, Pb, Zn	Sotkamo Silver Oy	850 564	567 703	282 861
Kevitsa	Sodankylä	Ni, Cu, PGE	Boliden Kevitsa Mining Oy	33 772 455	9 801 408	23 971 047
Kemi	Keminmaa	Cr	Outokumpu Chrome Oy	2 525 372	2 273 857	251515
Pyhäsalmi	Pyhäjärvi	Cu, Zn, S	Pyhäsalmi Mine Oy	668 400	668 400	0
Terrafame	Sotkamo, Kajaani	Zn, Cu, Ni	Terrafame Oy	40 887 022	16 079 838	24807184
Total of 10 operations				**83 120 713**	**32 144 300**	**50 976 413**
Carbonate rocks						
Reetinniemi	Paltamo	Dolomite	Juuan Dolomiittikalkki Oy	39 300	36 800	2500
Kalkkisilta	Salo	Calcite	Lesel Oy	10 000	2 000	8000
Matkusjoki	Huittinen	Dolomite	Nordkalk Oy Ab	84 317	67 582	16735
Putkinotko	Huittinen	Calcite	Nordkalk Oy Ab	69 949	62886	7 063
Äkäsjoensuu	Kolari	Calcite	Nordkalk Oy Ab	12 219	12 219	0
Ihalainen	Lappeenranta	Calcite, wollastonite	Nordkalk Oy Ab	2 092 708	1 511 411	581297
Tytyri	Lohja	Calcite	Nordkalk Oy Ab	166 129	156 958	9171
Limberg-Skräbböle	Parainen	Calcite	Nordkalk Oy Ab	2 120 505	1 495 370	625 135
Sipoo	Sipoo	Dolomite, Calcite	Nordkalk Oy Ab	24 660	24 400	260
Ryytimaa	Vimpeli	Dolomite	Nordkalk Oy Ab	67 552	65 632	1 920
Vesterbacka	Vimpeli	Dolomite	Nordkalk Oy Ab	27 624	27 624	0
Ankele	Pieksämäki	Dolomite	SMA Mineral Oy	56 867	47 712	9 155
Kalkkimaa	Tornio	Dolomite	SMA Mineral Oy	129 629	129 629	0
Total of 13 operations				**4 901 459**	**3 640 223**	**1 261 236**
Other industrial minerals						
Siilinjärvi	Siilinjärvi	Apatite	Yara Suomi Oy	22 962 527	10 539 855	12 422 672
Horsmanaho	Polvijärvi	Talc, Ni	Elementis Minerals B.V.	408 703	91 317	317 386
Punasuo	Sotkamo	Talc, Ni	Elementis Minerals B.V.	1 483 374	437 935	1 045 439
Uutela	Sotkamo	Talc, Ni	Elementis Minerals B.V.	352 310	168 887	183 423
Karnukka	Polvijärvi	Talc, Ni	Elementis Minerals B.V.	1269414	335488	933926
Lipasvaara	Polvijärvi	Talc, Ni	Elementis Minerals B.V.	2000	2000	0
Joutsenenlampi	Lapinlahti	Al	Paroc Oy Ab	100512	85132	15380
Lehlampi	Mäntyharju	Olivine	Paroc Oy Ab	15509	15509	0
Sallittu	Salo	Al, Mg, Fe, Feldspar	Paroc Oy Ab	19 267	19 267	0
Ybbersnäs	Parainen	Al, Mg, Feldspar, Quartz	Paroc Oy Ab	11 321	11 321	0
Sälpä	Kemiönsaari	Feldspar	Sibelco Nordic Oy Ab	82 258	25 210	57048
Kyrkoberget	Kemiönsaari	Feldspar	Sibelco Nordic Oy Ab	20 044	20 044	0
Lemnästräsk	Kemiönsaari	Quartz, Feldspar	Sibelco Nordic Oy Ab	15 392	0	15392
Kinahmi	Kuopio	Quartz	Sibelco Nordic Oy Ab	45 000	45 000	0
Ristimaa	Tornio	Quartz	SMA Mineral Oy	394 849	160 140	234709
Total of 15 operations				**27 182 480**	**11 957 105**	**15 225 375**
Industrial stones and others						
Lampivaara	Pelkosenniemi	Gem	Kaivosyhtiö Arctic Ametisti Oy	3	0	3
Tevalaisen spektrol.louh.	Lappeenranta	Gem	Tielinen Teuvo ym.	10	0	10
Nunnanlahti	Juuka	Soapstone	Nunnanlahden Uuni Oy	21676	18811	2865
Koskela	Juuka	Soapstone	Tulikivi Oyj	264390	39390	225000
Kivikangas	Suomussalmi	Soapstone	Tulikivi Oyj	58284	58284	0
Mörönmuori	Savonlinna	Soapstone	Polarstone Oy	5	5	0
Total of 6 operations				**344 368**	**116 490**	**227 878**
A total of 44 mines / quarries				**115 549 020**	**47 858 118**	**67 690 902**

Source: Finnish Safety and Chemicals Agency (Tukes)

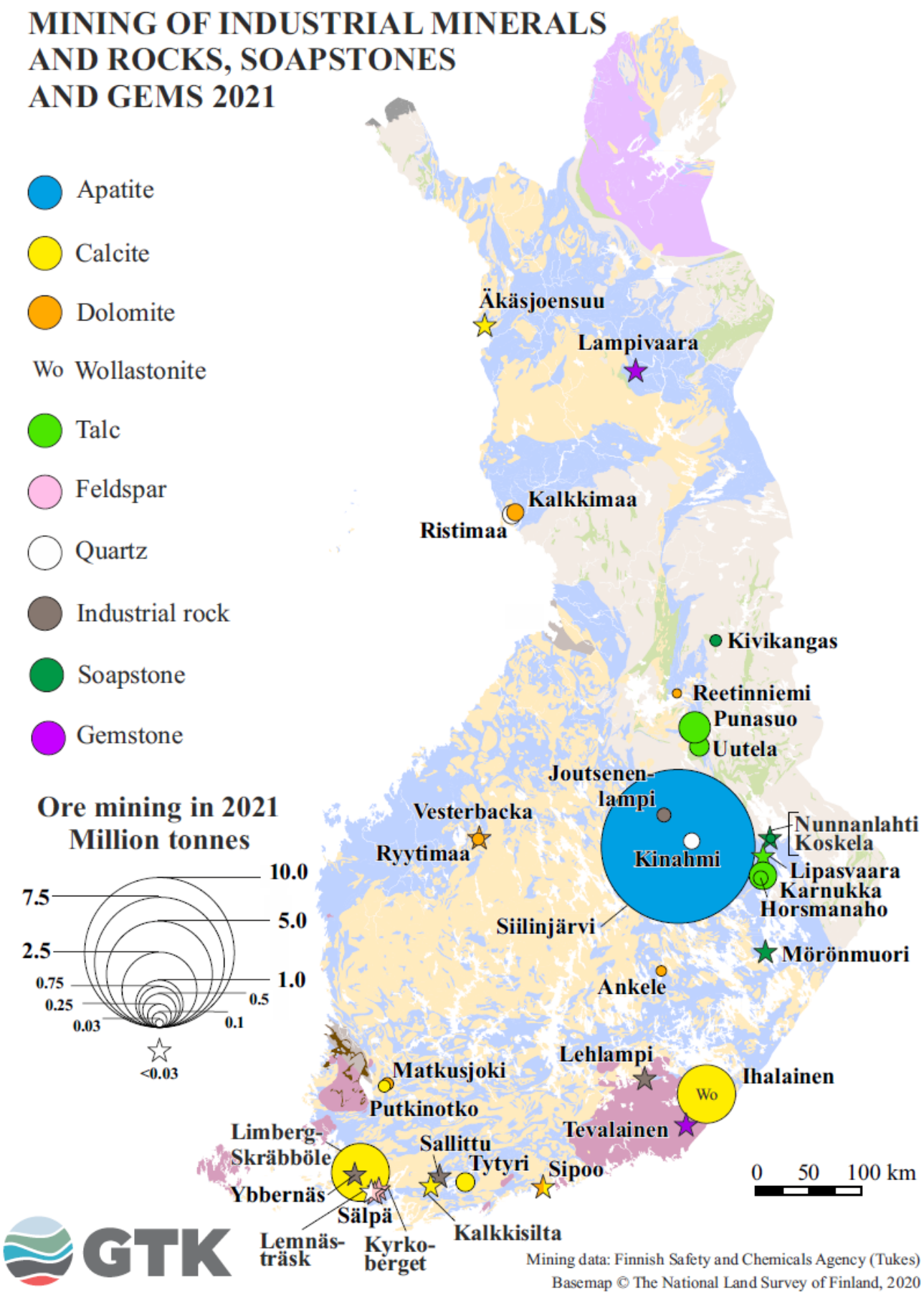


Figure 3. Map of industrial mineral deposits and mines in Finland 2021 (Source: GTK, Jussi Pokki)

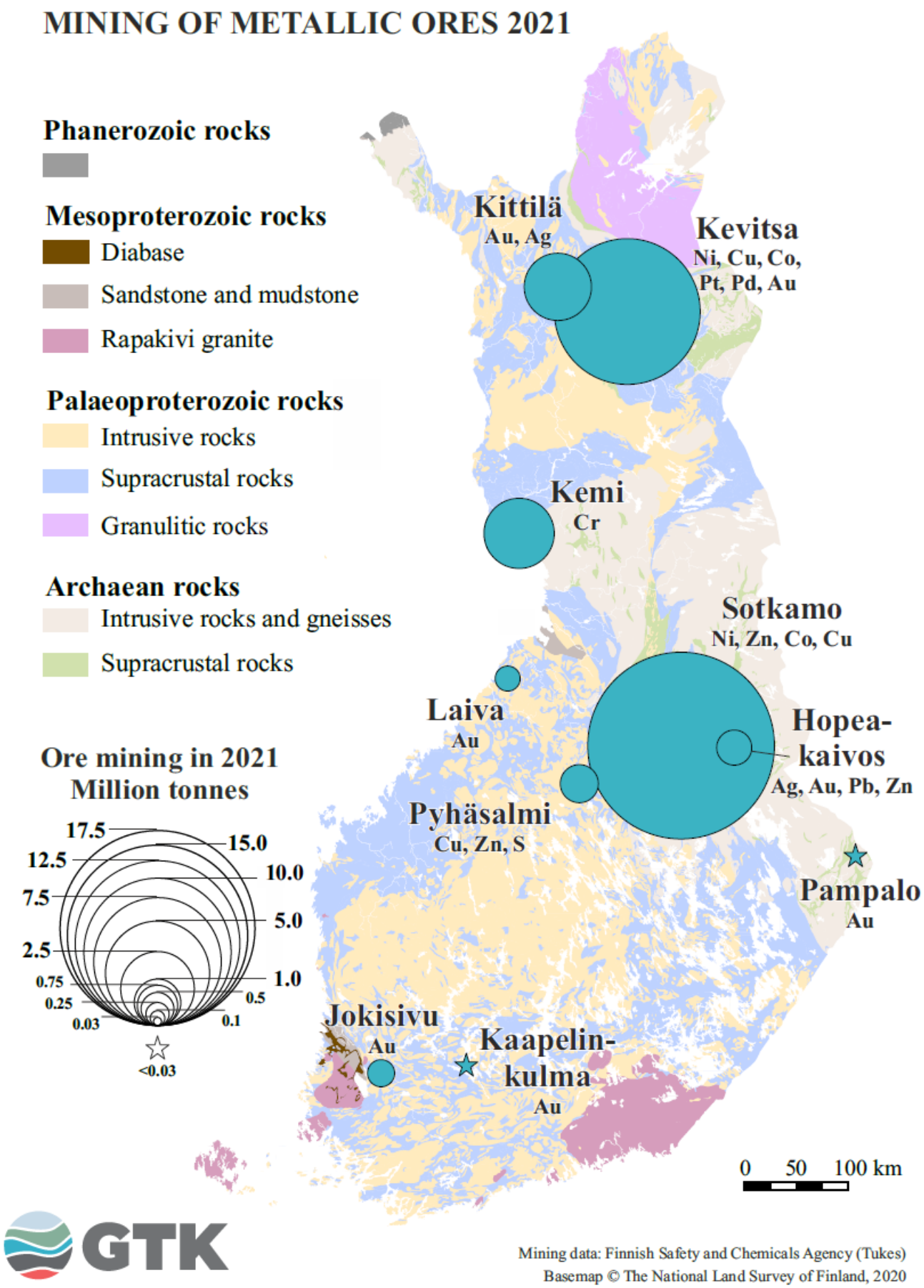


Figure 4. Map of metallic mineral deposits and mines in Finland 2021 (Source: GTK, Jussi Pokki)

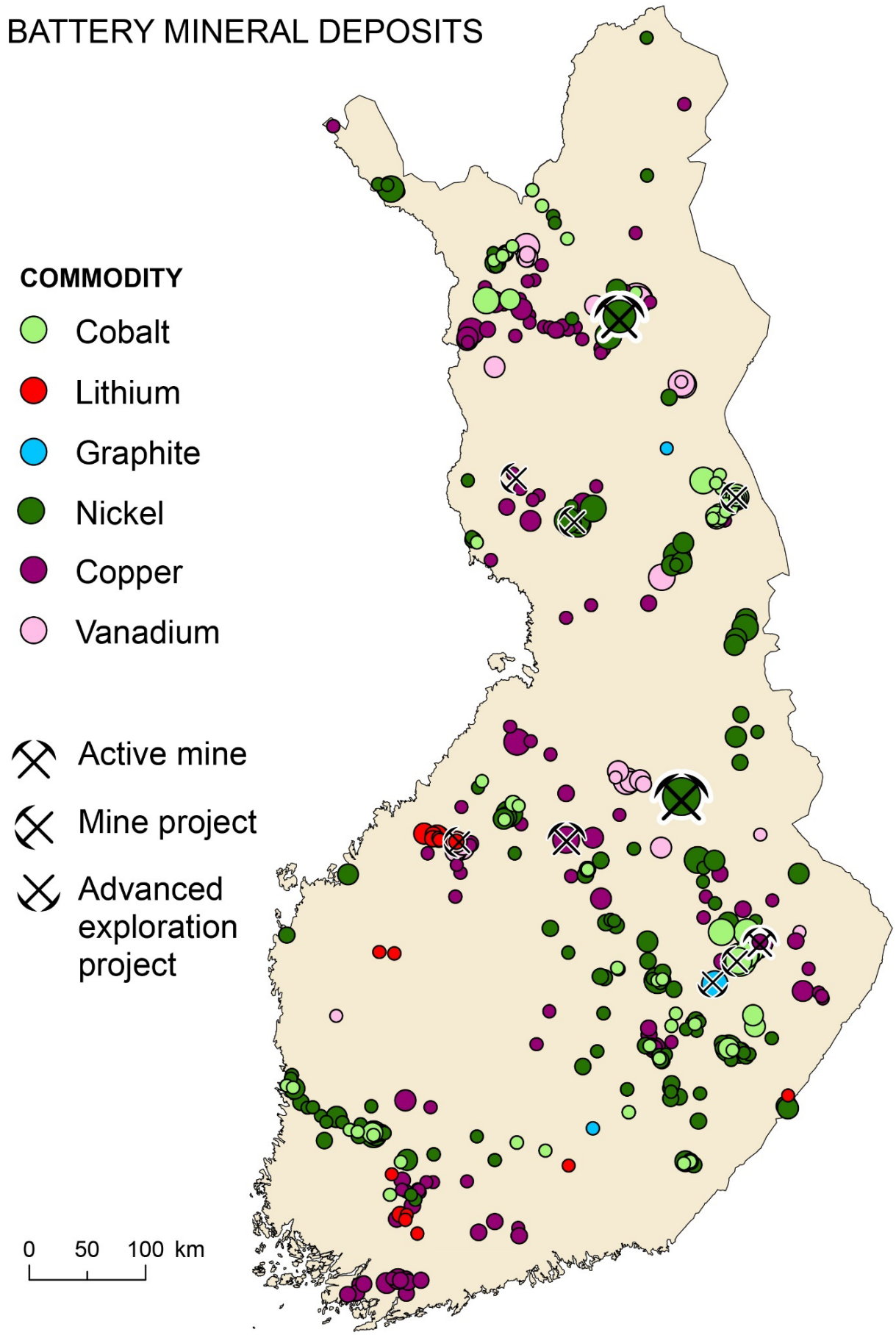


Figure 5. Map of battery mineral deposits and mines in Finland 2020 (Source: GTK, Jussi Pokki)

Table 6. Mines und quarries that operate under Mining Act and extracted ore and/or leftover rocks in 2021 (Source: Mining statistics 2021)

Mining / Quarry	Municipality	Main commodities	Company	Total Mined (tonnes)	Ore (tonnes)	Waste Rock (tonnes)
Metal ores						
Kittilä	Kittilä	Au	Agnico Eagle Finland Oy	2 776 196	2 089 535	686 661
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Terrafame	Sotkamo, Kajaani	Zn, Cu, Ni	Terrafame Oy	40 887 022	16 079 838	24807184
Total of 10 operations				**83 120 713**	**32 144 300**	**50 976 413**
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Matkusjoki	Huittinen	Dolomite	Nordkalk Oy Ab	84 317	67 582	16735
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Äkäsjoensuu	Kolari	Calcite	Nordkalk Oy Ab	12 219	12 219	0
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Tytyri	Lohja	Calcite	Nordkalk Oy Ab	166 129	156 958	9171
Limberg-Skräbböle	Parainen	Calcite	Nordkalk Oy Ab	2 120 505	1 495 370	625 135
Sipoo	Sipoo	Dolomite, Calcite	Nordkalk Oy Ab	24 660	24 400	260
Ryytimaa	Vimpeli	Dolomite	Nordkalk Oy Ab	67 552	65 632	1 920
Vesterbacka	Vimpeli	Dolomite	Nordkalk Oy Ab	27 624	27 624	0
Ankele	Pieksämäki	Dolomite	SMA Mineral Oy	56 867	47 712	9 155
Kalkkimaa	Tornio	Dolomite	SMA Mineral Oy	129 629	129 629	0
Total of 13 operations				**4 901 459**	**3 640 223**	**1 261 236**
Other industrial minerals						
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Uutela	Sotkamo	Talc, Ni	Elementis Minerals B.V.	352 310	168 887	183 423
Karnukka	Polvijärvi	Talc, Ni	Elementis Minerals B.V.	1269414	335488	933926
Lipasvaara	Polvijärvi	Tlk, Ni	Elementis Minerals B.V.	2000	2000	0
Joutsenenlampi	Lapinlahti	Al	Paroc Oy Ab	100512	85132	15380
Lehlampi	Mäntyharju	Olivine	Paroc Oy Ab	15509	15509	0
Sallittu	Salo	Al, Mg, Fe, Feldspar	Paroc Oy Ab	19 267	19 267	0
Ybbersnäs	Parainen	Al, Mg, Feldspar, Quartz	Paroc Oy Ab	11 321	11 321	0
Sälpä	Kemiönsaari	Feldspar	Sibelco Nordic Oy Ab	82 258	25 210	57048
Kyrkoberget	Kemiönsaari	Feldspar	Sibelco Nordic Oy Ab	20 044	20 044	0
Lemnästräsk	Kemiönsaari	Quartz, Feldspar	Sibelco Nordic Oy Ab	15 392	0	15392
Kinahmi	Kuopio	Quartz	Sibelco Nordic Oy Ab	45 000	45 000	0
Ristimaa	Tornio	Quartz	SMA Mineral Oy	394 849	160 140	234709
Total of 15 operations				**27 182 480**	**11 957 105**	**15 225 375**
Industrial stones and others						
Lampivaara	Pelkosenniemi	Gem	Kaivosyhtiö Arctic Ametisti Oy	3	0	3
Tevalaisen spektrol.louh.	Lappeenranta	Gem	Tielinen Teuvo ym.	10	0	10
Nunnanlahti	Juuka	Soapstone	Nunnanlahden Uuni Oy	21676	18811	2865
Koskela	Juuka	Soapstone	Tulikivi Oyj	264390	39390	225000
Kivikangas	Suomussalmi	Soapstone	Tulikivi Oyj	58284	58284	0
Mörönmuori	Savonlinna	Soapstone	Polarstone Oy	5	5	0
Total of 6 operations				**344 368**	**116 490**	**227 878**
A total of 44 mines / quarries				**115 549 020**	**47 858 118**	**67 690 902**

Source: Finnish Safety and Chemicals Agency (Tukes)

6 INDUSTRIAL SITES OPERATING NOW

Figure 6 shows a map of the Finnish battery industrial ecosystem as it was in 2019.

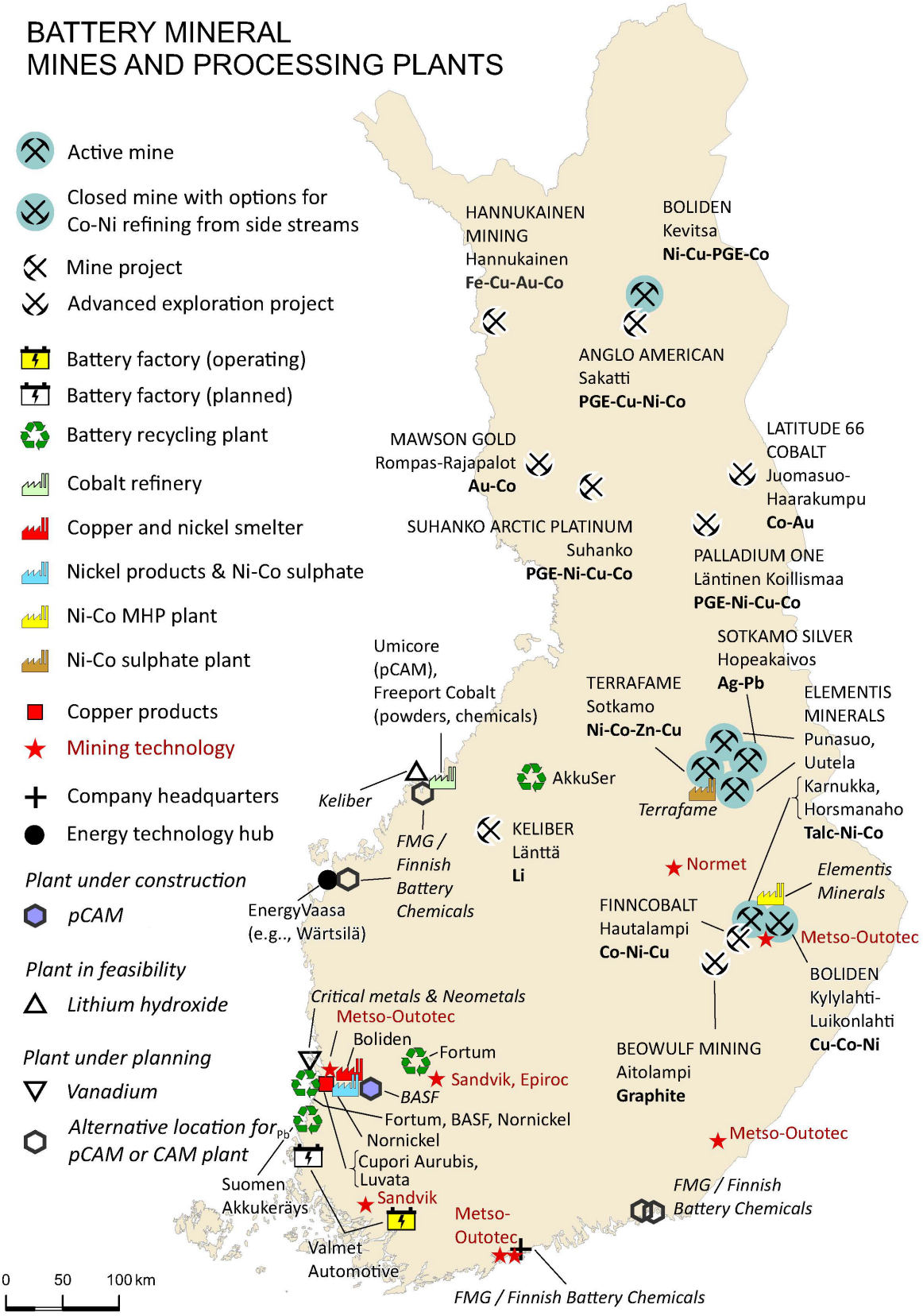

Figure 6. Map of battery industrial ecosystem in Finland 2019 (Source: GTK, Jussi Pokki)

7 DISCUSSIONS AND RECOMENDATIONS

It is recommended to do the following:

- Map all of the sites listed in Tables 4.1 and 4.2 in context of Section 7.1 below, starting with Group 1.

- Conduct a study to connect all historical mine sites with their downstream process industrial operations where the mined minerals were refined, smelted then used in manufacturing.

- Use the outcomes of the above characterization studies to develop a materials flow network for a possible Circular Economy (European Commission 2019) or a Resource Balanced Economy (Michaux 2021).

7.1 Proposed characterization of industrial legacy site

- Characterize for mineral content. Many of these historical sites were decommissioned before some technologies were developed that required metals like cobalt, lithium, or rare earth elements. There could well be these elements in the waste dumps at economically viable concentrations.

- Characterize for Acid Mine Drainage (AMD) potential, referencing Tables 1.1 and 1.2. Sulfide minerals and asbestos mineral content is of interest.

- Characterize for water quality. Study the water table in context of hydrogeology (samples collected at depth will have a different profile to those taken at the surface) and in context of water movement in the water catchment (rainfall, creeks, ponds). For example, higher heavy metals make the water condition more acidic (for example with a pH value of about 2-5) (Brooshan 2022).

- Characterize the interface between mineral systems (rock & soil), water systems (creeks, ponds, surface, and depth) and life systems (flora and fauna) for metal toxicity. Plants for example will retain metal context extracted from the environment as they develop. This could stunt their growth. They could contain characterization markers for a wider impact. The true size of the waste dump may not be known. Analysis steps to consider could be:
    - Soil food web analysis. Mineral balance content and organic matter content needed for healthy biosystems.
    - Ecosystem evaluation adaptation strategies
    - Life systems remediation strategies
    - What forest/biomass products are present and in what form
    - Forest succession vs. biomass sourcing across waste dump area refenced against local regional area

- In some circumstances, remote sensing could be used, but only where the tailings and piles have fresh mineral surfaces (Middleton 2022). It is complex and situation specific, but it could be possible to integrate satellite remote sensing data, with drone InSAR, Lidar and hyperspectral data. For this to work the minerals need to have spectral features but also other properties could be measured, and a 3D model then constructed.

7.1.1 Proposed sample collection

- Go out to the site. Map it from the air with a drone to examine the terrain. Consider what plants and trees are visible (do they look different to the surrounding land?). Study the positioning of creeks and water catchments like ponds. How much of the waste dump is exposed rock?

- Do a grid sampling across the whole area. Collect soil samples as well as rock samples. Use your judgment for appropriate sampling grid spacing.

- Drill historical piles into metal casings, then cut the cores into half, let them dry and then image them with hyperspectra instrumentation. This is standard procedure in characterizing lake sediments. One half of each of these collected cores should be stored as part of the GTK core library. The other half could be used for mineralogical characterization.

- Collect appropriate plant samples in a sampling grid. Dry and desiccate those samples into a powder. Characterize them in the same manner as mineral samples (Chemical Assay, XRF, XRD).

- Collect water samples if possible, both in running creeks, and in still ponds. On the surface and if possible, at depth (grab samples from down a mine shaft). Usually, the initial measurements at the site are temperature, acidity (pH), dissolved solids (specific conductance), particulate matter (turbidity), dissolved oxygen, and hardness.

7.1.2 Proposed experimental laboratory test work

Tests recommended for each sampling point (use judgement) are:

- Chemical assay (Lecio S, Lecio C, 4 acid digest, Fire Assay)
- Test for asbestos content
- XRF (bulk element concentration)
- XRD (bulk mineral concentration)
- MLA (automated mineralogy micro scale rock texture)
- Optical microscopy (meso scale gangue texture)
- AMD acid mine drainage
    - Aqua regia (AR) extraction rates of semimetals and metals
    - ABA test suite includes:
        - AP = acid potential (AP has been calculated from total S method)
        - NP = neutralization potential
        - NPR = NP/AP, neutralization potential ratio
        - NNP = net neutralization potential
    - NAG test

7.1.3 Proposed process testwork

- Leaching
- Magnetic separation
- Gravity separation

8 REFERENCES

1. Brooshan, E. (2022): Personal Communication

2. Dehaine, Q. (2022): Personal Communication

3. European Commission (2019 March 4th): REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS - on the implementation of the Circular Economy Action Plan, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52019DC0190&from=EN

4. Karlsson, T., et al. (2021): A Test of Two Methods for Waste Rock Drainage Quality Prediction: Aqua Regia Extraction and Single-addition Net-acid Generation Test Leachate Analysis

5. Luodes, H., et al. (2011): Kaivannaisjätteen luokittelu pysyväksi (Classification of extractive permanent waste), ISBN 978-952-11-3919-2 (PDF), THE ENVIRONMENT OF FINLAND, MINISTRY OF THE ENVIRONMENT

6. Mäkinen, T. and Taskinen, P. (2008): State of the art in nickel smelting: direct Outokumpu nickel technology, AusIMM, Mineral Processing and Extractive Metallurgy (Trans. Inst. Min. Metall. C), DOI 10.1179/174328508X290867

7. Michaux, S. P. (2021): Restructuring the Circular Economy into the Resource Balanced Economy, GTK Open File Work Report, Report serial 3/2021, ISBN 978-952-217-412-3, https://tupa.gtk.fi/raportti/arkisto/3_2021.pdf

8. Middleton, M. (2022): Personal Communication

9. Mining statistics (2021): https://tukes.fi/documents/5470659/6373016/Tilastotietoja+vuoriteollisuudesta+2021.pdf/69f56696-f742-4ed4-c0a0-95f153dfbeec/Tilastotietoja+vuoriteollisuudesta+2021.pdf?t=1648131561359

10. Ministry of the Environment Finland (2007): Government Decree on the Assessment of Soil Contamination and Remediation Needs

11. Ministry of the Environment Finland (2013): Government Decree on Extractive Waste (2013), Enacted under the Environmental Protection Act (86/2000) and the Waste Act

12. Puustinen, K. (2003): Suomen kaivosteollisuus ja mineraalisten raaka-aineiden tuotanto vuosina 1530–2001, historiallinen katsaus erityisesti tuotantolukujen valossa. Geological Survey of Finland, Archive Report M10.1/2003/3. 578 p. Available: https://tupa.gtk.fi/raportti/arkisto/m10_1_2003_3.pdf

13. Räisänen, M. L., Tornivaara, A., Haavisto, T., Niskala, K. and Silvola, M. (2013): Closed and abandoned mines mapping of extractive waste areas, Reports of the Ministry of the Environment 24. Department of Environmental Protection. Ministry of the Environment, 45 p

14. Rytkönen S. (2022): Personal Communication

15. Tornivaara, A. (2022): Personal Communication

9 APPENDIX A – LIST OF HISTORICAL METAL MINES

Table A1-1. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Hosko	Ilomantsi	Gold	Also = Valkeasuo; Pilot excavation at Pampalo extensions to the north	1992	1999	900	900,0	Gold, Pyrrhotite, Pyrite, Arsenic	5 Gold	Eilu 1999, Mustajärvi 1999
Pampalo	Ilomantsi	Gold	Also = Ward's ore	1990	1996-1999	464 690	125 800,0	Gold	14,88 Gold	Nurmi & Sorjonen-Ward 1993, Anttonen 1999, Eilu 1999
Eversti	Inari	Gold	Laanila area, early 20th century gold mines, along Hangasoja	1890-l	1902-1904	127	*1,3*	Gold	*0 Gold*	Sarlin 1902, Sarlin 1903, Stigzelius 1986
Hartikainen	Inari	Gold	Laanila area, early 20th century gold mines, along Laanioja	1890-l	1902-1904	*15*	*0,2*	Gold	*0 Gold*	Sarlin 1902, Stigzelius 1986
Karl Gustaf	Inari	Gold	Laanila area, early 20th century gold mines, along the Kuttura road	1890-l	1902-1904	905	*9,1*	Gold	*0 Gold*	Sarlin 1902, Sarlin 1903, Stigzelius 1986
Kerkelä	Inari	Gold	Laanila area, early 20th century gold mines, along Hangasoja (Little Hangasoja)	1898	1899-1904	*200*	*1,0*	Gold	*0 Gold*	Sarlin 1902, Stigzelius & Ervamaa 1962
Laanila	Inari	Gold	Laanila area, early 20th century gold mines	1890-l	1902-1904	273	*2,7*	Gold	*0 Gold*	Sarlin 1902, Sarlin 1903, Stigzelius & Ervamaa 1962
Lutto	Inari	Gold	Laanila area, early 20th century gold mines, at the headwaters of the Laanioja and Luttojoki rivers	1890-l	1902-1904	1 196	*12,0*	Gold	*0 Gold*	Sarlin 1902, Sarlin 1903, Stigzelius 1986
Palsi	Inari	Gold	East of Palsinoja at the mouth of the ditch, open pit	1868	1870-l, 1902	94	*0,9*	Gold	*0 Gold*	Sarlin 1902, Sarlin 1903, Stigzelius 1986
Ramsay	Inari	Gold	Laanila area, early 20th century gold mines, along Kuttura Road and Tolosjoki	1890-l	1902-1904	213	*2,1*	Gold	*0 Gold*	Sarlin 1902, Sarlin 1903, Stigzelius 1986
Ruikka	Inari	Gold	At the bend of the Ivalojoki River, by a collision	1890-l	1902	130	*1,3*	Gold	*0 Gold*	Sarlin 1902, Sarlin 1903, Stigzelius 1986
Sarlin	Inari	Gold	Laanila area, early 20th century gold mines, along Laanioja	1890-l	1902-1904	*15*	*0,2*	Gold	*0 Gold*	Sarlin 1902, Stigzelius 1986
Wille	Inari	Gold	Laanila area, early 20th century gold mines, along the Kuttura road	1890-l	1902-1904	*15*	*0,2*	Gold	*0 Gold*	Sarlin 1902, Stigzelius 1986
Kutuvuoma	Kittilä	Gold	Small mine	1995	1999	26 247	6 048	Gold, Pyrrhotite, Pyrite	*5 Gold*	Eilu 1999
Saattopora	Kittilä	Gold	Also produced copper	1972	1988-1995	5 731 613	2 139 081	Gold, Chalcopyrite, Pyrrhotite	3,25 Gold, 0.26 Cu	Inkinen 1985, Anttonen et al 1989, Korvuo 1997
Juomasuo	Kuusamo	Gold	Experimental mining	1985	1992	60 235	17 635	Gold, Pyrrhotite, Pyrite	*5,0 Gold*	Pankka 1989, Pankka et al 1991
Kutemajärvi	Orivesi	Gold	Also = Orivesi, there was also an old mica quarry in Yliskylä; gold mine still in operation in 2002	1981	1990-	2 306 262	877 651	Gold, Petzite, Pyrite, Sphalerite	9,54 Gold	Ollila et al 1990, Luukkonen 1994, Grönholm 1995, Saarnio 1995, Luukkonen et al 1997
Laivakangas	Raahe	Gold	Experimental mining	1980	1985	10 600	5 600	Gold, Arsenopyrite, Loellingite, Chalcopyrite	3.9 Gold	Mäkelä & Sandberg 1985, Korkalo 1991

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table A1-2. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Pahtavaara	Sodankylä	Gold	Mining downtime since 2000	1987	1995-2000	8 474 708	1 784 099	Gold, Pyrrhotite, Chalcopyrite, Baryte	2,14 Gold	Korkiakoski 1992, Korkiakoski & Kilpelä 1997, Alaniska 1998
Haveri	Viljakkala	Gold	Gold-copper mine, also old iron mines in the area	1935	1942-1960	1 563 520	1 559 020	Gold, Chalcopyrite, Pyrrhotite	2.85 Gold, 0.39 Cu	Stigzelius 1944, Lupander 1951, Lupander & Räisänen 1954, Ollila 1977, Karvinen 1997. Lukkarinen 1997, Blomgren 1999
Ivalojoki	Inari	Gold	Ivalojoki classic rinsing gold area	1868	1869-	*0*	*0,0*	Gold	*1 Gold*	Sarlin 1902, PGoldlaharju 1923 s. 113, Laine 1952, Stigzelius 1986, Luhta 1987, Johansson et al 2000
Lemmenjoki	Inari	Gold	Lemmenjoki flushing gold area	1945	1946-	*0*	*0,0*	Gold	*1 Gold*	Stigzelius 1951, Stigzelius 1986, Johansson et al 2002
Tankavaara	Sodankylä	Gold	Tankavaara flushing gold area	1934	1934-	*0*	*0,0*	Gold	*1 Gold*	Stigzelius 1986, Johansson et al 2000
Kirakkajuppura	Tervola	Pt	Layer intrusion	1983	1988	55 620	2 165	Sperrylite	*10 Pt, 20 Pd*	Alapieti 1989, Halkoaho 1994, Huhtelin 1997
Tenkula	Alavus	Cu	Probably also = Tenhula	1910-l	1910-l	*15*	*13,5*	Pyrite, Pyrrhotite	*0.56 Cu*	Pääkkönen 1952, Turkka 1994
Johannaperi	Eno	Cu	Also = Johannaperinkallio; location inaccurate	In the early 19th century	In the early 19th century	*15*	*13,5*	Chalcopyrite		ValtGolds 1852, Holmberg 1857 s. 54, Holmberg 1958 s. 218, Eskola 1923, Laitakari 1937
Kuikkalampi	Eno	Cu	Probably also = Ahvensalmi	1799e	1799-1814	*15*	*13,5*	Chalcopyrite		Lundström 1814 s. 56, Holmberg 1857 s. 54, Holmberg 1858 s. 218, Eskola 1923, Laitakari 1937
Kuikkavaara	Eno	Cu	Eno's small copper mines	In the early 19th century	In the early 19th century	*15*	*13,5*	Chalcopyrite		Holmberg 1858 s. 218, Eskola 1923, Laitakari 1937
Mäntykallio	Eno	Cu	Probably also = Mäntylamminkallio; quarries Andrei and Adam	1799e	1809-1814, 1838-1844	*15*	*13,5*	Chalcopyrite		Tigerstedt 1892, Hultin 1897, Frosterus & Wilkman 1920, Laine 1952, Pölönen 1999
Nuottivaara	Eno	Cu	Eno's small copper mines, three quarries	In the early 19th century	In the early 19th century	*15*	*13,5*	Chalcopyrite		Albrecht 1840-44, Holmberg 1858 s. 219, Lisitzin 1893, Eskola 1923, Laitakari 1937
Räsvaara	Eno	Cu	Also = Räsvaaranlaita; location inaccurate	1919	1920	*15*	*13,5*	Pyrite, Chalcopyrite, Pyrrhotite, Sphalerite	*40 S*	ValtGolds 1919, Saksela 1923, Palmunen 1937
Sikovaara	Eno	Cu	Eno's small copper mines	In the early 19th century	In the early 19th century	*15*	*13,5*	Chalcopyrite		Tigerstedt 1892
Raisjoki	Evijärvi	Cu	Also possibly mined carbonate rock	1936e	1936e	*15*	*13,5*	Pyrite, Pyrrhotite, Chalcopyrite, Arsenopyrite		Laitakari 1942 s. 62, Turkka 1994
Matkajärvi	Forssa	Cu	Also = Matkajärvi in Aka or Kölli or Haadenmaa	1558	1558, 1643	*20*	*18,0*	Pyrite	*0,5 Cu*	Tilas 1738 s. 62, Bremer 1825 s. 29, Holmberg 1858, s. 138, Furuhjelm 1886, Hultin 1897 s. 15 ja 138, 258, Kulonpalo 1947
Kytäjän HopealGoldkku	Hyvinkää	Cu	Also = Hyvinkää	1500-la	1556-1561, 1615-1629	*100*	*80,0*	Pyrrhotite, Pyrite, Chalcopyrite	*0,5 Cu*	Bremer 1825 s. 51, Westling 1828,Thoreld 1852-1861, Holmberg 1858 s. 13, Moberg 1889, Hultin 1897, Kulonpalo 1948, Nordström 1962, Härme 1978, Härme 1980
Kytäjän Hopeavuori	Hyvinkää	Cu	Also = Hyvinkää	1500-la	1556-1561, 1615-1629	*15*	*13,5*	Pyrrhotite, Pyrite, Chalcopyrite	*0,5 Cu*	Bremer 1825 s. 51, Westling 1828,Thoreld 1852-1861, Holmberg 1858 s. 13, Moberg 1889, Hultin 1897, Kulonpalo 1948, Nordström 1962, Härme 1978, Härme 1980
Hämäläinen	Impilahti	Cu	In the villSilvere of Ruokojärvi	1814	1814	*15*	*13,5*	Chalcopyrite, Cassiterite, Galena		ValtGolds 1814
Pitkäranta	Impilahti	Cu	A combination for mines in the Pitkäranta area	1770	1772, 1810-1865, 1869-1904, 1918-1920	1 138 577	1 108 221	Chalcopyrite, Cassiterite, Sphalerite, Magnetite, Graphite	*1.50 Cu, 0.10 Sn, 2 Zn, 40 Silver, 40 Fe*	Holmberg 1858 s. 244, Furuhjelm 1886, Trüstedt 1907, Trüstedt 1909b, Trüstedt 1914, Laitinen 1938, Palmunen 1939, Palmunen et al 1942, Laine 1952, Koponen 1982, Lukkarinen 1997 s. 56
Pitkäranta-vanha	Impilahti	Cu	Shafts Schwartz (including 120 tons of graphite), Meyer, Omeljanoff, Kleé, Cross	1770	1772, 1810-1865, 1869-1904	*15*	*13,5*	Chalcopyrite, Cassiterite, Sphalerite, Magnetite, Graphite		Holmberg 1858 s. 244, Furuhjelm 1886, Trüstedt 1907, Trüstedt 1914, Laitakari 1925 s. 52, Laitinen 1938, Palmunen 1939, Palmunen et al 1942, Koponen 1982, Lukkarinen 1997 s. 56
Dahls	Inkoo	Cu	Location inaccurate	1839e	In the early 19th century	*15*	*13,5*	Pyrite, Pyrrhotite		Westling 1824-39, Holmberg 1858 s. 37
Finnböle	Inkoo	Cu	Abandoned mine as early as 1824; location inaccurate	1824e	1824e	*15*	*13,5*	Pyrrhotite, Pyrite		Westling 1824, Holmberg 1858 s. 38, Furuhjelm 1884

Table A1-3. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Långbro	Inkoo	Cu	Location inaccurate	1839e	1839e	*15*	*13,5*	Pyrrhotite		Westling 1841, Holmberg 1858 s. 38
Hirvijärvi	Jalasjärvi	Cu	Also = Jussila mine	1957	1957	*15*	*13,5*	Pyrite, Pyrrhotite, Chalcopyrite		Pääkkönen 1958, Turkka 1994
Mustajärvi	Jalasjärvi	Cu	Also = Mustalammi mine or Tenhosen monttu	1946	1946	*90*	*81,0*	Pyrite, Chalcopyrite		Vaasjoki 1948, Turkka 1994
Honkavaara-Juankoski	Juankoski	Cu	An old mining company	1792e	In the 18th century	*15*	*13,5*	Chalcopyrite, Pyrite		Rinman 1792, Westling 1830, Hobin 1833, Wathén 1856, Holmberg 1858 s. 213, Eskola 1923
Kristianvuori	Juuka	Cu	Location inaccurate	1816	1816	*15*	*13,5*	Chalcopyrite		ValtGolds 1816
Remojärvi	Juva	Cu	Copper mine in the Remojärvi quarter in Savo; location inaccurate	1520-l	1525-1533, 1557	*15*	*13,5*	Chalcopyrite		Wathén 1856, Hultin 1897 s. 15, Furuhjelm 1887, Laitakari 1942
Halsvuori	Jyväskylän mlk	Cu	Also = Halsovuori; old mining company	1736	1737	*15*	*13,5*	Arsenopyrite, Chalcopyrite, Pyrite, Pyrrhotite, Sphalerite		Tilas 1737, Gadd & Kreander 1788, Bremer 1824 s. 155, Westling 1829, Holmberg 1858 s, 121, Furuhjelm 1886, Eskola 1923
Luikonlahti	Kaavi	Cu	Outokumpu-type ore deposit	1944	1958-1983	10 046 766	6 873 618	Chalcopyrite, Sphalerite, Pyrrhotite, Cobalt Pentlanditelandite, Pyrite	0.94 Cu, 0.61 Zn, 0.11 Co, 17.22 S	Eskelinen et al 1983, Tyni 1991, Tyni 1997, Leskelä 1998, Takala 2001
Jouhineva	Kalajoki	Cu	Experimental mining	1979	1984	*6 250*	5 000	Chalcopyrite, Cobaltite, Tennantite, Electrum	*0.81 Cu, 0.18 Co, 8.0 Silver, 0.9 Gold*	ValtGolds 1979, Isokoski 1982, Saarnio 1984, Isohanni 1985
Ahvenuskallio	Kalvola	Cu	An old mining company	1737	1738	*20*	*18,0*	Pyrrhotite, Chalcopyrite, Pyrite, Magnetite, Graphite		Tilas 1737 s. 60, Gadd & Lilius 1789, Lundström 1814 s. 84, Sawenius 1825, Westling 1829, Holmberg 1858 s. 136, Furuhjelm 1887
Huuki	Kannus	Cu	Also = Tokoin mine or Hopia mine	In the early 20th century	In the early 20th century	*15*	*13,5*	Pyrrhotite, Chalcopyrite, Pyrite, Arsenopyrite		Eskola 1923, Saksela 1933, Turkka 1994
Guldholmen	Karjaa	Cu	Abandoned mine as early as 1831	1642?	1670-l	*15*	*13,5*	Pyrite, Pyrrhotite		Westling 1824, ValtGolds 1831, Holmberg 1858 s. 39
Maila-Karjalohja	Karjalohja	Cu	Also = Leppäniemi or Saarenpää or Ämmänkallio; location inaccurate	1762	In the 18th centuryo	*15*	*13,5*	Chalcopyrite		Westling 1828, Holmberg 1857 s. 17, Holmberg 1858 s. 48, Furuhjelm 1884, Eskola et al 1919 s. 47
Puujärvi	Karjalohja	Cu	Location inaccurate	1765?	1765	*15*	*13,5*	Chalcopyrite	*0,5 Cu*	Holmberg 1858 s. 48, Härme 1960
Särkjärvi-Karjalohja	Karjalohja	Cu	Also = Särkijärvi (Karjalohja) or Lönnhammar or Gammelgård	1840	1851-1855	*200*	*100*	Chalcopyrite, Pyrite, Magnetite, Scheelite	*2 Cu*	Wathén 1856, Holmberg 1857 s. 16, Holmberg 1858 s. 48, Furuhjelm 1866, Furuhjelm 1884 s. 50, Moberg 1889 s. 44, Eskola 1923, Laine 1952 s. 321 ja 516
Tallaa	Karjalohja	Cu	Location inaccurate	1800-l	1800-l	*15*	*13,5*	Pyrite, Pyrrhotite		Aatto Ratian tieto 1978
Hopiavuori-KGoldhava	KGoldhava	Cu	Location inaccurate	1833e	1833	*15*	*13,5*	Pyrrhotite, Pyrite, Graphite		LGoldraeus 1833, Holmberg 1858 s. 115, Laitakari 1925, Turkka 1994
Kalliokangas	KGoldstinen	Cu	Also = Vintturi, Vintturiberget or Kalliokangasvuori or Hopiakallio	1600-lo	1669-1670	*15*	*13,5*	Pyrite, Pyrrhotite, Graphite, Galena		Rinman 1792, Westling 1829, ValtGolds 1843, Thoreld 1852-1861, Holmberg 1858 s. 117, Saksela 1933, Lindmark 1977, Turkka 1994
Metsäkylä	KGoldstinen	Cu	Also = Tastula; the year of discovery is also said to be 1785	1600-lo	1669-1670	*15*	*13,5*	Pyrite, Pyrrhotite, Graphite		Westling 1829
Branten	Kemiö	Cu	Also mined as Pyrite ore	1833	1839, 1876-1878	*3 847*	3 206	Pyrite, Pyrrhotite, Chalcopyrite, Magnetite, Galena	*x Cu, 20 S*	Sawenius 1825, Holmberg 1858 s. 87, ValtGoldkset 1876 ja 1880, Hjelt 1880, Furuhjelm 1881, Furuhjelm 1884, Moberg 1889 s. 27, Eskola 1923, Lindroos 1987
Vestlax	Kemiö	Cu	Quarries Klåfvakärr and DamhSilver; location inaccurate	1558	1500-l, 1630-l, 1744	*15*	*13,5*	Pyrite, Pyrrhotite, Galena	*0,5 Cu*	Sawenius 1825, Holmberg 1858 s. 87, Hjelt 1880, Furuhjelm 1884, Hultin 1897 s. 278, Garberg 1981, Lindroos 1987

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table A1-4. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Östergård	Kemiö	Cu	Probably also = Östergårdsgrufvan	1877	1877	*15*	*13,5*	Pyrite		ValtGolds 1877, Svedelius 1880, Furuhjelm 1886 s. 23, Hannu Seppäsen tieto 1997
Haaramäki	Kiikala	Cu	Also = Haarunmäki; location inaccurate	1825e	In the early 19th century	*15*	*13,5*	Pyrite, Hematite, Mica, Feldspar		Sawenius 1825, Holmberg 1858 s. 147, Moberg 1889 s.44
Bondarby	Kirkkonummi	Cu	Location inaccurate	1825e	1876	*15*	*13,5*	Pyrite		Bremer 1825 s. 64, ValtGolds 1876, Furuhjelm 1884
Porkkala	Kirkkonummi	Cu	King Gustav II Adolf's Mine	1615	1615-1616	200	*8,0*	Pyrite	*0,5 Cu*	Westling 1828, Holmberg 1858 s. 21, Hultin 1897 s. 252, Furuhjelm 1884, Eskola 1923, Laitala 1961, Nordström 1962, Seppo Töllikkö 1997 suullisesti
Aijala	Kisko	Cu	In the Orijärvi ore zone	1945	1948-1961	932 867	835 453,0	Chalcopyrite, Sphalerite	1.59 Cu, 0.71 Zn, 14.1 S, 14 Silver, 0.70 Gold	Turunen 1953, Warma 1975, Mäkelä 1989, Lukkarinen 1997
Kruuhunmäki	Kisko	Cu	Also = Kruuhunmäki in Lapinkylä	1825e	1830-l	*15*	*13,5*	Pyrrhotite, Pyrite		Sawenius 1825, Holmberg 1858 s. 57, Härme 1960
Lapinkylä	Kisko	Cu	Location inaccurate	In the 18th century?	In the 18th century?	*15*	*13,5*	Chalcopyrite, Pyrrhotite, Pyrite		Sawenius 1825, Holmberg 1858 s. 57, Eskola 1923 s. 29
Orijärvi	Kisko	Cu	Gaps Old, Kijk, Central, West, Ludvig, Great, New, Lindsay, Lustig, Julin, Kitty (Skans) and others	1757	1758-1882, 1929-1955	1 352 163	924 665	Chalcopyrite, Sphalerite, Galena, Pyrrhotite, Pyrite	1.32 Cu, 1.03 Pb, 3.32 Zn	Bremer 1824 s. 38, Holmberg 1858 s. 49, Furuhjelm 1884, Hultin 1897, Trüstedt 1909, Nikander 1929, Anonymous 1938?, Laine 1952, Turunen 1957, Poutanen 1996, Lukkarinen 1997
Paavonholma	Kisko	Cu	On the island of Lake Orijärvi	1788	Vanhat, 1851-1855	*45*	10,0	Chalcopyrite, Sphalerite, Pyrite, Pyrrhotite, Galena	*1 Cu*	Holmberg 1858 s. 51, Moberg 1889 s. 41, Furuhjelm 1884, Laine 1952
Satulavaara ?	Kitee	Cu	Location inaccurate	1814	1814	*15*	*13,5*	Pyrite		ValtGolds 1814, Furman 1828, Holmberg 1858 s. 217
Kätkätunturi	Kittilä	Cu	Location inaccurate	1856	1856	*50*	*20,0*	Pyrite, Hematite		Thoreld 1857, Rein 1867
Pahtavuoma	Kittilä	Cu	Kittilä copper ore deposits	1970	1974-1976, 1989-1993	629 209	294 439	Chalcopyrite, Sphalerite, Uraninite	1.07 Cu, 26.05 Silver	Inkinen 1979, Korvuo 1997
Hokka	Kontiolahti	Cu	Also = Hokankallio or Hukkalampi	1801	1809-1814, 1905-1907, 1910	*11 600*	*1 160*	Chalcopyrite	*0,5 Cu*	Holmberg 1858 s. 216, Hultin 1897, Tigerstedt 1892a, Tigerstedt 1892b, Frosterus & Wilkman 1920, Laine 1952, Saksela 1960
Hopiavuori-Kontiolahti	Kontiolahti	Cu	Small copper mines in Kontiolahti	1799e	1799-1814, 1838-1844	*15*	*13,5*	Chalcopyrite, Pyrite		Holmberg 1857 s. 54, Holmberg 1858 s. 218, Rein 1864, Eskola 1923, Laine 1948 s. 53, Björn 1991
Jussinsuo	Kontiolahti	Cu	Small copper mines in Kontiolahti	1799e	1799-1814	*1 800*	*360,0*	Chalcopyrite	*0,5 Cu*	Holmberg 1858 s. 219, Hultin 1897, Tigerstedt 1892a, Tigerstedt 1892b, Lisitzin 1892b, Frosterus & Wilkman 1920, Laine 1952, Björn 1991, Pölönen 1999
Kyykkä	Kontiolahti	Cu	Small copper mines in Kontiolahti	1801	1809-1814, 1905-1907, 1910	*148*	98,0	Chalcopyrite	*0,5 Cu*	Tigerstedt 1892a, Tigerstedt 1892b, Lisitzin 1892b, Hultin 1897, Frosterus & Wilkman 1920, Laine 1952, Saksela 1960
Latvavaara	Kontiolahti	Cu	Small copper mines in Kontiolahti; location inaccurate	In the early 19th century	In the early 19th century	*15*	*13,5*	Pyrite, Chalcopyrite		Holmberg 1857b s. 40, Holmberg 1858 s. 216
Mäntyvaara-Kontiolahti	Kontiolahti	Cu	Small copper mines in Kontiolahti	1799e	1809-1814, 1838-1844	*15*	*13,5*	Chalcopyrite		ValtGolds 1811, Lundström 1814 s. 56, Idestam 1840, Holmberg 1957 s. 54, Holmberg 1858 s. 218, Tigerstedt 1892, Hultin 1897, Frosterus & Wilkman 1920, Laine 1952, Pölönen 1999
Rekivaara	Kontiolahti	Cu	Small copper mines in Kontiolahti; location inaccurate	In the early 19th century	In the early 19th century	*15*	*13,5*	Chalcopyrite		Holmberg 1857 s. 54, Holmberg 1858 s. 218, Eskola 1923, Laitakari 1937
Sammakkolampi	Kontiolahti	Cu	Small copper mines in Kontiolahti	In the early 19th century	In the early 19th century	*15*	*13,5*	Chalcopyrite		Tigerstedt 1892
Siikavaara	Kontiolahti	Cu	Small copper mines in Kontiolahti	In the early 19th century	In the early 19th century	*15*	*13,5*	Chalcopyrite		Holmberg 1857 s. 55, Holmberg 1858 s. 219, Eskola 1923, Laitakari 1937
Finnö	Korppoo	Cu	Also = Fornö	1847	1847	*15*	*13,5*	Pyrrhotite, Chalcopyrite, Sphalerite, Pyrite		LGoldraeus 1847, Furuhjelm 1852

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table A1-5. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Rasula	Kuortane	Cu	Also = Gamberg mine; In the forest of Rasula	In the 18th centurya	1722-1725	*15*	*13,5*	Pyrrhotite, Pyrite, Chalcopyrite, Magnetite, Sphalerite, Galena	*0,5 Cu*	Westling 1829, LGoldraeus 1833, Wathén 1856, Holmberg 1858 s. 119, Furuhjelm 1886, Hultin 1897 s. 278, Tegengren 1934, Pääkkönen 1946, Haapala 1966, Luukko 1981
Honkavaara-Kuusamo	Kuusamo	Cu	Paanajärvi mines	1843	1843,1860-1884, 1891	254	37,0	Chalcopyrite	*5 Cu*	Tigerstedt 1894, Eskola 1923, Hackman & Wilkman 1929, Laine 1952, Laine 1955
Jyrinvaara	Kuusamo	Cu	Paanajärvi mines	1843	1843	*15*	*13,5*	Chalcopyrite		Tigerstedt 1893, Eskola 1923, Hackman & Wilkman 1929, Laine 1952, Laine 1955
Kiekkivaara	Kuusamo	Cu	Paanajärvi mines	1843	1843, 1860-l, 1870-l, 1891	236	*47,2*	Chalcopyrite	0.7 Cu	Tigerstedt 1893, Eskola 1923, Hackman & Wilkman 1929, Laine 1952, Laine 1955
Malinavaara	Kuusamo	Cu	Paanajärvi mines	1843	1843	*15*	*13,5*	Chalcopyrite		Tigerstedt 1893, Eskola 1923, Hackman & Wilkman 1929, Laine 1952, Laine 1955
Peuravaara	Kuusamo	Cu	Paanajärvi mines	1843	1843	*15*	*13,5*	Chalcopyrite		Tigerstedt 1893, Eskola 1923, Hackman & Wilkman 1929, Laine 1952, Laine 1955
Pieni Kiekkilampi	Kuusamo	Cu	Paanajärvi mines	1843	1843, 1860-l, 1870-l, 1891	*15*	*13,5*	Chalcopyrite		Tigerstedt 1893, Eskola 1923, Hackman & Wilkman 1929, Laine 1952, Laine 1955
Ruotsalo	Kälviä	Cu	Also = Hopiokallio; quarries Matalamäki and Rimminkallio	In the 18th centurya	1785e	*15*	*13,5*	Pyrite		Fougt 1780-85, Holmberg 1858 s. 117, Eskola 1923, Metzger 1936b, Turkka 1994
Lyyskilä	Laihia	Cu	Also = Lyyskilän Kuparsaari	1794	1806	*120*	*60,0*	Pyrrhotite	*0,5 Cu*	Anonymous 1794, Holmberg 1858 s. 112, Furuhjelm 1886, Eskola 1923, Laitakari 1942, Turkka 1994
Liuhtari	Lapua	Cu	Location inaccurate	1670-l	1670-1680	*15*	*13,5*	Pyrite, Chalcopyrite		Westling 1829, Holmberg 1858 s. 115, Turkka 1994
Simsiö	Lapua	Cu	Probably also = Kaara from 1792 and Reduced from 1833; location inaccurate	1600-la	1646, 1660-1663, 1837?	*15*	*13,5*	Pyrrhotite	*0,5 Cu*	Rinman 1792, LGoldraeus 1833, ValtGolds 1837, Holmberg 1858 s. 115, Hultin 1897, Tegengren 1934, Laitakari 1942, Turkka 1994
Takaluoma	Lapua	Cu	Also = Hopiavuori (Lapua); location inaccurate	1670-l	1670-1680, 1720-l	*15*	*13,5*	Pyrite, Chalcopyrite		Westling 1829, Holmberg 1858 s. 115, Turkka 1994
Käsämä	Liperi	Cu	Also = Summer or Golden Mountain, Hopia-apaja	1738e	1792	*15*	*13,5*	Pyrite, Graphite		Tilas 1738, Rinman 1792, Tuneld 1794, Holmberg 1858 s. 215, Rein 1864, Lisitzin 1892, Hultin 1897 s. 279, Abrahamsson 1898, Aartovaara 1907, Vähätalo 1950
Paavola	Lohja	Cu	Lead motif called Kruuvupelto	1760	1824, 1831-1839	*954*	763	Chalcopyrite, Pyrrhotite, Galena	*1 Cu*	ValtGolds 1831, Westling 1834, Holmberg 1857 s, 18, Holmberg 1858 s. 28, Laine 1952, Latvalahti 1981
Torhola	Lohja	Cu	Also = Karkal's "silver ore"	1839e	1858e	*15*	*13,5*	Chalcopyrite, Galena		Holmberg 1858 s. 27, Furuhjelm 1884
Vappula	Lohja	Cu	Location inaccurate	1866e	1866e	*15*	*13,5*	Pyrite		Furuhjelm 1866
Ingesson	Mustasaari	Cu	A quarry in the marshland and a smelter in the villSilvere, commissioned by Korsholm Castle	1500-la	1561-1563	*150*	*30,0*	Pyrite, Galena		Holmberg 1858 s. 112, Fontell 1884, Ström 1932, Åkerblom 1935, Puukko 1972, Vasabladet 1969
Sääksjärvi	Mäntsälä	Cu	Mainly pyrite	1720	1720	*15*	*13,5*	Pyrite, Pyrrhotite, Chalcopyrite, Galena	*0,5 Cu*	Bremer 1824 s. 53, Nordenskiöld 1855, Holmberg 1858 s. 14, Furuhjelm 1884, Moberg 1889d s. 34, Härme 1978
Huhti Mössö	Nummi-Pusula	Cu	Location inaccurate	1824e	1858e	*15*	*13,5*	Pyrrhotite, Pyrite		Westling 1824, Holmberg 1858 s. 31, Furuhjelm 1884 s. 45
Seppälä-Pusula	Nummi-Pusula	Cu	Location inaccurate	1824e	1858e	*15*	*13,5*	Pyrite, Magnetite		Westling 1824, Holmberg 1858 s. 32
Tavola Hurri	Nummi-Pusula	Cu	Also = Hurri	1824e	1858e	*15*	*13,5*	Pyrrhotite, Pyrite		Westling 1824, Holmberg 1858 s. 31, Furuhjelm 1884 s. 45
Gruvberget	Oravainen	Cu	Also = Silver Mine	In the 18th centurya	1724e	*15*	*13,5*	Pyrrhotite, Chalcopyrite, Pyrite, Graphite		Gadd & Kreander 1788, Westling 1829, Tegengren 1934, Laitakari 1937, Pääkkönen 1954, Turkka 1994
Outokumpu	Outokumpu	Cu	Also = Mökkivaara and Keretti	1908	1910-1989	34 859 250	31 679 937	Chalcopyrite, Sphalerite, Pyrrhotite	3.36 Cu, 0.88 Zn, 0.23 Co, 0.8 Gold, 9 Silver	Outokummun kaivos 1928, Saksela 1948, Hakapää et al 1955, Annala 1960, Parkkinen & Reino 1985, Kuisma 1985, Ahti 1989, Kuisma 1989, Parkkinen 1997
Vuonos	Outokumpu	Cu	Extension of Outokumpu's ore deposit to the east	1965	1967-1986	15 636 669	11 001 202	Chalcopyrite, Sphalerite, Pyrrhotite	2.14 Cu, 1.31 Zn, 0.14 Co, 0.16 Ni	Parkkinen & Reino 1985, Reino et al 1992, Lukkarinen 1997 s. 263, Tyni et al 1997

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table A1-6. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Hahtola	Paltamo	Cu	Also = Hopeakallio or Hahtolanmäki; in the area of the Haapaselä quarry	1780	1780	*1 800*	*180,0*	Pyrite, Pyrrhotite, Chalcopyrite	*0,5 Cu*	Thoreld 1857, Holmberg 1858 s. 174, Rein 1867, Eskola 1923, Wilkman 1931 s. 241, Stigzelius et al 1970, T. Heino suullisesti 2000
Malmgård	Pernaja	Cu	Location inaccurate	1884e	1884e	*120*	*96,0*	Pyrrhotite		Furuhjelm 1884, Moberg 1889 s. 48
Nurkkila	Perniö	Cu	Probably also = Jakogruvan; location inaccurate	1766	1778	*15*	*13,5*	Chalcopyrite, Pyrite	*0,5 Cu*	Bremer 1824 s. 169, Sawenius 1825, Westling 1828, Holmberg 1858 s. 90, Furuhjelm 1884, Hultin 1897 s. 278
Skoila	Perniö	Cu	Also = Koila	1877	1877	*15*	*13,5*	Chalcopyrite, Galena		ValtGolds 1877, Eskola 1923, Laitakari 1937, ValtGolds 1959
Länsmansgården	Pohja	Cu	Location inaccurate	1600	1600-1610	*15*	*13,5*	Magnetite		Wathén 1856, Hultin 1897 s. 19, Furuhjelm 1884
Särkijärvi-Pohja	Pohja	Cu	Also = Särkjärvi; At the bottom holder	In the 18th century	Vanhat, 1851-1861	*9*	*7,0*	Chalcopyrite, Pyrite, Pyrrhotite	*2 Cu*	Sawenius 1825, TKK 1855, Eskola 1923, Laine 1950 s. 64, Laine 1952 s. 516
Tuorholtti	Pohja	Cu	Location inaccurate	1800-l	1800-l	*15*	*13,5*	Chalcopyrite, Pyrite, Pyrrhotite		Aatto Ratian tieto 1978
Iinattivaara	Pudasjärvi	Cu	Also = VArsenopyritevaara; an old mining company in northern Finland	1721	1725-1729, 1767-1770, 1779, 1788	*50*	*45,0*	Chalcopyrite	*1 Cu*	Linder 1769, Gadd & Kreander 1788, Bremer 1824 s. 171, Thoreld 1856, Holmberg 1857 s. 47, Wathén 1858, Holmberg 1858 s. 154, Hultin 1897 s. 277, Schalin 1905, Tegengren 1934
Mäntyvaara-Pudasjärvi	Pudasjärvi	Cu	Experimental mining	1856	1856	*15*	*13,5*	Chalcopyrite		Thoreld 1856, Holmberg 1858 s. 154, Wathén 1858, Laitakari 1937
Lukkarinvaara	Puolanka	Cu	Probably also = Ruunakangas	1848	1852-1856	*15*	*13,5*	Chalcopyrite		Thoreld 1857, Holmberg 1858 s. 154, Wathén 1858, Eskola 1923, Laitakari 1937, Enkovaara et al 1953
Hammaslahti	Pyhäselkä	Cu	Also = Source basket	1968	1971-1986	7 888 863	5 591 860	Pyrrhotite, Chalcopyrite, Sphalerite	1.11 Cu, 1.26 Zn	Pelkonen et al 1973
Yläluosta Laajakallio	RGoldtavaara	Cu	Saastamoinen Oy excavated	1905	1905	*30*	*20,0*	Chalcopyrite	*0,5 Cu*	ValtGolds 1905, Laitakari 1921, Eskola 1923, Malmiesiintymäkortisto 1997 (A. Laitakarin päiväkirja 1921)
Ahola-Salla	Salla	Cu	Several local test mines	1902	1902, 1920?	16	*14,4*	Chalcopyrite, Pyrite		ValtGolds 1902, Eskola 1919, Eskola 1923, Hackman & Wilkman 1929 s. 130, Laitakari 1937, Stigzelius & Ervamaa 1962, Matti Lemmitti suullisesti 1996
Heposelkä	Salmi	Cu	Mining companies in the Goldnus mountain administration and the Pitkäranta mine	1860e	1860-1861, 1873-1877	*500*	400,0	Chalcopyrite, Pyrite, Fluorite	*2 Cu*	ValtGolds 1860, Solitander 1884, Lisitzin 1892 s. 154, Palmunen 1939, Laine 1952
Takvedaholmen	Sipoo	Cu	Location inaccurate	1858e	1858e	*15*	*13,5*	Chalcopyrite		Arppe 1858, Furuhjelm 1884a, Eskola 1923
Pelikko	Somero	Cu	Location inaccurate	1738e	In the 18th century, 1825	*15*	*13,5*	Chalcopyrite, Galena	*0,5 Cu, 0,5 Cu*	Tilas 1738 s. 71, Sawenius 1825, Holmberg 1858 s. 146, Furuhjelm 1886, Eskola 1923, Laitakari 1937
Jalonvaara	Suistamo	Cu	Also = KGoldniskallio and Hamutivaara, Hybiäkallio (Hyypiämäki) and Linnikka	1772	1772, 1922	*38*	*30,0*	Pyrite, Pyrrhotite, Chalcopyrite, Galena	0.5 Cu	Lundström 1814 s. 41, Bremer 1825 s. 189, Furman 1828, Holmberg 1857 s. 60, Lisitzin 1892 s. 160, Eskola 1923, HGoldsen 1930 s. 56, Hackman 1933 s. 167, Robonen & Rybakov 1976
Salittu	Suomusjärvi	Cu	An old mining company	1824e	1824e	*15*	*13,5*	Chalcopyrite		Bremer 1824 s. 44, Eskola 1923, Eskola 1923, Härme 1960
Murom	Särkisalo	Cu	An old mining company	1766	1766	*15*	*13,5*	Chalcopyrite, Pyrite, Pyrrhotite, Magnetite	*0,5 Cu*	Sawenius 1825, Westling 1835, Holmberg 1857 s. 32, Holmberg 1858 s. 90, Furuhjelm 1884, Hultin 1897 s. 278, Eskola 1923
Tessvärr	Särkisalo	Cu	Also = Tessver or Utö Silvergruva; location inaccurate	1824e	1825e	*15*	*13,5*	Pyrrhotite, Pyrite		Bremer 1824 s. 55, Sawenius 1825
KGoldhajärvi	Tammela	Cu	Also = Levonniemi, Liesjärvi or Kalajärvi	In the 18th century?	In the 18th century?	*15*	*13,5*	Pyrrhotite, Magnetite		Westling 1829, Holmberg 1857 s. 43, Holmberg 1858 s. 142, Härme 1954, Härme 1960
Kiljamonsaari	Tammela	Cu	Also = Talpia	1737e	1825e	*15*	*13,5*	Chalcopyrite, Pyrite, Pyrrhotite		Tilas 1737 s. 68, Bremer 1825, Westling 1828, Holmberg 1857 s. 43, Holmberg 1858 s. 141, Furuhjelm 1886, Härme 1960

Table A1-7. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Letku	Tammela	Cu	Also = Salmistonmäki	1829e	1829e	*15*	*13,5*	Chalcopyrite		Westling 1829, Holmberg 1857 s. 43, Holmberg 1858 s. 140-141, Furuhjelm 1886, Härme 1960
Tilasinvuori	Tammela	Cu	Quarries in Sandell and Åkerberg	1733	1737-1749	*213*	170,0	Chalcopyrite, Pyrite, Pyrrhotite, Scheelite	*0,2 Cu*	Tilas 1738 s. 65, Gadd & Lilius 1789, Holmberg 1858 s. 139, ValtGolds 1859, Furuhjelm 1886, Hultin 1897 s. 269, Pääkkönen 1949
Brutuböle-Storgruvan	Tammisaari	Cu	Also = Storgruvan; In Bromarv	1878	1878	*15*	*13,5*	Pyrite		ValtGolds 1878
Brutuböle-TenalSilverruvan	Tammisaari	Cu	Also = Tenala gruvan; In Bromarv	1878	1878	*15*	*13,5*	Pyrite		ValtGolds 1878
Frankböle	Tammisaari	Cu	Tenholassa; location inaccurate	1636	1636	*15*	*13,5*	Pyrite, Magnetite		Westling 1835, Holmberg 1858 s. 45, Furuhjelm 1884, Hultin 1897 s. 258, Eskola 1923
Svenskby	Tammisaari	Cu	Also = Eskoslät? Tenholassa; location inaccurate	1728	1728	*15*	*13,5*	Pyrrhotite, Magnetite, Pyrite		Sawenius 1825, Wathén 1856, Holmberg 1858 s. 46, Furuhjelm 1884, Eskola 1923, Laitakari 1937
Kivimaa	Tervola	Cu	Copper-gold deposit	1964	1969-1970	26 587	18 587	Chalcopyrite, Gold, Pyrite	1.20 Cu, 2.0 Gold	Rouhunkoski & Isokangas 1974
Hirvensalo	Turku	Cu	Location inaccurate	1738e	1825e	*15*	*13,5*	Chalcopyrite, Magnetite		Tilas 1738 s. 4, Gadd & GlAsbestosrg 1795, Bremer 1825 s. 64, Furuhjelm 1884 s. 194
Iso-Pukki	Turku	Cu	Also = Stora Bocken	1890e	1890e	*15*	*13,5*	Pyrite, Arsenopyrite		Moberg 1890 s. 46
Majanmaa	UusikGoldpunki	Cu	Location inaccurate	1846	1846	*15*	*13,5*	Pyrite, Pyrrhotite		LGoldraeus 1846
Hällinmäki	Virtasalmi	Cu	Also = Virtalalmi or Karsikumpu	1964	1966-1984	5 332 133	4 179 130	Chalcopyrite, Pyrrhotite	0.76 Cu, 1.11 S	Hyvärinen 1969, Ylönen 1984
Calciteila	Vähäkyrö	Cu	Also = Kotamäki; location inaccurate	1833e	1830-l	*15*	*13,5*	Chalcopyrite, Graphite, Pyrite		LGoldraeus 1833, Holmberg 1858 s. 113, Furuhjelm 1886, Eskola 1923, Laitakari 1925, Turkka 1994
Nivelax	Västanfjärd	Cu	There may also be = Östanå quarries; location inaccurate	1840	1840-l?	*15*	*13,5*	Pyrite, Pyrrhotite		Albrecht 1840, LGoldraeus 1842, Holmberg 1858 s. 86, Metzger 1960
Östanå	Västanfjärd	Cu	Location inaccurate	1825e	1876	*15*	*13,5*	Pyrrhotite, Pyrite		Sawenius 1825, LGoldraeus 1842, Holmberg 1858 s. 87, ValtGolds 1876, Furuhjelm 1880, Furuhjelm 1881, Lindroos 1987
Haapoja	Ylihärmä	Cu	Also = Swimming or Aspen	1833e	In the early 19th century	*15*	*13,5*	Pyrite, Pyrrhotite, Graphite		LGoldraeus 1833, Holmberg 1858 s. 116, Pääkkönen 1958, Turkka 1994
Lohivaara	Ylitornio	Cu	Location inaccurate	1800e	1840	*15*	*13,5*	Chalcopyrite		Julin 1800, Albrecht 1839-44, Holmberg 1857 s. 49, Holmberg 1858 s. 187, Rein 1867, Eskola 1923
Merivaara	Ylitornio	Cu	Location inaccurate	1777	1777	*44*	*35,2*	Pyrrhotite, Pyrite, Chalcopyrite	*0,5 Cu*	Julin 1800, ValtGolds 1840, Albrecht 1841, Holmberg 1858 s. 187, Wathén 1858, Eskola 1923, Mikkola 1945
Ylöjärvi	Ylöjärvi	Cu	Also = Paroistenjärvi or Paroinen	1938	1943-1966	4 153 041	4 013 449	Chalcopyrite, Scheelite	0.75 Cu, 0.11 WO3, 0, 12 As, 13.68 Silver, 0.04 Gold	Riala et al 1967, Himmi et al 1979
Kunnarinmäki	Alavieska	Pb	Also = Gunnars or Silver Mountain	1699e	1723e, 1760-l	*15*	*13,5*	Galena, Pyrite		Gadd & Kreander 1788, Thoreld 1852-1861, Wathén 1858, Hultin 1897 s. 281, Tegengren 1934, Eskola 1923
Grelsby	Finström	Pb	Also = Kungsgård	1500-lo	1610, 1674	15	13,5	Galena		Bremer 1824 s. 132, Holmberg 1858 s. 69, Furuhjelm 1884, Frosterus 1892 s. 50, Hultin 1897 s. 61, Eskola 1923, Bergman & Lindberg 1979, Törnblom 1986
Hålvik	Helsinki	Pb	Also = Degerö-silvergruva, Laajasalo or Fredriksberg, Hålvik (Kaitalahti)	1786	1787-1789	*575*	460,0	Galena, Sphalerite	*40 Pb, 72 Silver*	Thoreld 1852-1861, Holmberg 1858 s. 4, Wiik 1865, Moberg 1888, Hultin 1897, Laine 1952, Saltikoff et al 1994
Laponniemi	Impilahti	Pb	Location inaccurate	In the 18th century	In the early 19th century	*15*	*13,5*	Galena		Lundström 1814 s. 31, Bremer 1825 s. 196, Furman 1828, Holmberg 1856, Holmberg 1857 s. 63, Holmberg 1858 s. 248, Furuhjelm 1886, Lisitzin 1892 s. 150, Eskola 1923, Laine 1952

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table A1-8. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Voratsu	Impilahti	Pb	Location inaccurate	In the 18th century	In the early 19th century	*15*	*13,5*	Galena		Lundström 1814, Furman 1828, Holmberg 1856, Holmberg 1857 s. 63, Holmberg 1858 s. 248, Furuhjelm 1886, Lisitzin 1892 s. 150, Eskola 1923
Tolvmans	Karjaa	Pb	Also = Tolfman´s; In Österby; location inaccurate	1824e	Vanhat, 1839	*15*	*13,5*	Galena, Pyrite, Pyrrhotite, Sphalerite	*0,1 Zn, 1 Pb, 0,5 Cu*	Westling 1824, Holmberg 1858 s. 40, Furuhjelm 1884, Eskola 1923
Kattelus	Karjalohja	Pb	An old mining company	In the 18th century?	In the 18th century?	*15*	*13,5*	Galena		Furuhjelm 1884, Moberg 1889 s. 41, Eskola et al 1919 s. 49, Eskola 1923, Aartovaara 1927, Härme 1960
Markby	Kemiö	Pb	May also have another name; location inaccurate	1500-l	1558, 1703, 1707	*15*	*13,5*	Galena		Wathén 1856, Furuhjelm 1884, Lindroos 1987
Salmen	Kirkkonummi	Pb	In front of Porkkalanniemi on the island	1614	1857e	*15*	*13,5*	Galena, Pyrite, Pyrrhotite		Lundström 1814 s. 10, Westling 1838, Holmberg 1857 s. 10, Holmberg 1858 s. 21, Furuhjelm 1884
Goldrums-Aijala	Kisko	Pb	An old mining company	1681	1684-1707?, 1915-1917, 1956-1957	*20*	*18,0*	Galena, Chalcopyrite, Gold, Tennantite		Thoreld 1852-1861, Holmberg 1858 s. 57, Furuhjelm 1884, Laine 1952, Turunen 1953, Lukkarinen 1997 s. 183
Hopeamäki-Aijala	Kisko	Pb	Also = Julin's Driving Meadow or Old Silver Hill or Aijala Silfvergrufva	1677e	1677e, 1681-1692, 1707, 1916	1 050	500,0	Galena, Sphalerite, Gold, Chalcopyrite, Pyrrhotite, Pyrargyrite, Proustite		Thoreld 1852-1861, Holmberg 1858 s. 57, Hultin 1897, Laine 1952, Turunen 1953, Lukkarinen 1997 s. 49
Korsnäs	Korsnäs	Pb	Also = Svartör	1955	1958-1972	931 733	869 301	Galena, Apatite, Pyrrhotite, Baryte	3.56 Pb, 0.83 Ln2O3	Eskola et al 1961, Björklund 1967, Himmi 1975, Lukkarinen 1997 s. 244
Hyvärilä	Lemi	Pb	Also = Hyvärilä Silver Mountain	1750	1758-1760	*750*	*20,0*	Galena, Pyrrhotite, Pyrite, Chalcopyrite, Sphalerite	*1.10 Pb, 72 Silver*	von Knorring 1833, Wathén 1856, Holmberg 1858 s. 230, Furuhjelm 1886, Hultin 1897, Salenius 1909, Eskola 1923, Pääkkönen 1947, Pääkkönen 1948, Vorma 1965
Karhuniemi	Lohja	Pb	Also = Torhola	1824e	1866-1867	*15*	*13,5*	Galena, Sphalerite, Pyrite, Chalcopyrite, Pyrrhotite	*0,5 Zn, 1 Pb, 0,1 Cu*	Westling 1824, ValtGolds 1865, Furuhjelm 1884, Moberg 1889 s. 42, Aartovaara 1927, Saikkonen 1992
Lietoinen	Luumäki	Pb	Location inaccurate	1756	1760-1763	*15*	*13,5*	Galena		Holmberg 1858 s. 230, Furuhjelm 1886, Hultin 1897 s. 282, Salenius 1909, Eskola 1923
Luotola	Luumäki	Pb	Also = Lotala or Lietola	1758	1758-1760	*500*	*20,0*	Galena		Severgin 1805, Holmberg 1857 s. 57, Holmberg 1858 s. 230, Furuhjelm 1886, Salenius 1909, Eskola 1923, Härme 1980
Erlandsböle	Pernaja	Pb	Location inaccurate	1781	1781	*15*	*13,5*	Galena, Arsenopyrite	*50 Pb, x Silver*	Gadd & Bergman 1789, John 1827, Holmberg 1858 s. 17, Furuhjelm 1882 s. 40, Eskola 1923, Laitakari 1937
Forsby	Pernaja	Pb	Also = Silverberget or Varpberget or Rouhevuori	1607	1612, 1752	*15*	*14,0*	Galena, Pyrite, Pyrrhotite, Sphalerite, Arsenopyrite	*x Pb, x Silver*	Åkerberg 1752, Bremer 1824 s. 105, John 1827, Thoreld 1852-1861, Holmberg 1858 s. 16, Gylling 1888, Moberg 1888, Hultin 1897, Laine 1952, Vaasjoki 1953
Forsö	Pernaja	Pb	Forsby-type mineralization	1607	1612?, 1752?	*15*	*14,0*	Galena, Pyrite, Pyrrhotite		Bremer 1925 s. 103, Holmberg 1858 s. 17, Gylling 1888, Moberg 1888, Hultin 1897, Laine 1952, Vaasjoki 1953
Peuravuono	Petsamo	Pb	Quarries on the Arctic Ocean Basarnaja, Raissa, Victoria-Edward, Samuel, Sofia	1875	1875-1909	8 200	150,0	Galena, Sphalerite, Pyrite	*24 Pb*	Tegengren F. 1914, Eskola 1923, HGoldsen 1932, Väyrynen 1941
Silverskär	Saltvik	Pb	Also = Boxö, Båxö or Sillskär	1500-lo	1610	*15*	*13,5*	Galena	*2 Pb*	Bremer 1824 s. 132, LGoldraeus 1835,Holmberg 1858 s. 61, Furuhjelm 1884, Frosterus & Sederholm 1892 s. 29, Hultin 1897 s. 19, Pehrman 1948, Bergman & Lindberg 1979, Törnblom 1986
Vähä-Silkkilä	SGoldvo	Pb	In SGoldvossa	1824e	1870-l	*15*	*13,5*	Galena, Magnetite, Graphite		Bremer 1824 s. 27, Holmberg 1858 s. 72, Moberg 1890 s. 48
Sylvänä	Somero	Pb	Also = Silvana or Silver Mountain; location inaccurate	1738	1738	*15*	*13,5*	Galena, Pyrrhotite	*2 Pb*	Tilas 1738 s. 71, Sawenius 1825, Bremer 1825 s. 15, Furuhjelm 1886, Holmberg 1858 s. 146
Ylä-Sarka	Suistamo	Pb	Probably also = Paavolanmäki; location inaccurate	1772	1772	*72*	*60,0*	Galena, Chalcopyrite, Pyrite	*2 Pb*	Lundström 1814 s. 43, ValtGolds 1814, Bremer 1825 s. 190, Furman 1828, Holmberg 1857 s. 60, Holmberg 1858 s. 251, Furuhjelm 1886, Lisitzin 1892 s. 160, Eskola 1923
Suurikylä	Sysmä	Pb	Also = Storby or Isokylä; location inaccurate	1723	1724	*15*	*13,5*	Galena		Tilas 1737, Gadd & Ticcander 1792, Bremer 1825 s. 114, Wathén 1856, Holmberg 1858 s. 202, Furuhjelm 1887, Eskola 1923

Table A1-9. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Kurenniemi	Taipalsaari	Pb	Location inaccurate	1760e	1760	30	*15,0*	Galena	*5 Pb*	Salenius 1909
Österskär	Vårdö	Pb	Also = Österholm; location inaccurate	1790	1790	*15*	*13,5*	Galena	*2 Pb*	Vuorihallitus 1832, LGoldraeus 1835, Wathén 1856, Holmberg 1858 s. 62, Furuhjelm 1884, Eskola 1923, Metzger 1960
Lågnäs	Inkoo	Zn	An old mining company with copper ore in addition to shingles	1805	1805-1807	*15*	*13,5*	Sphalerite, Pyrrhotite, Chalcopyrite, Pyrite, Galena	*2 Zn*	Westling 1824, Tengström 1841, Holmberg 1858 s. 38, Furuhjelm 1884, Eskola 1923
Grundsjö	Karjaa	Zn	Also = Olavs ore	1642?	1670-I	*15*	*13,5*	Pyrrhotite, Sphalerite, Chalcopyrite, Magnetite		Westling 1824, Westling 1839, Bremer 1825 s. 94, Wathén 1856, Holmberg 1858 s. 39, Eskola 1923, Härme 1960, Kokkola 1991
Kangasjärvi	Keitele	Zn	Ore enriched at the Pyhäsalmi mine	1964	1984-1985	750 920	91 205	Sphalerite, Chalcopyrite, Pyrite, Galena	5.14 Zn, 0.09 Cu, 38.00 S, 41.0 Gold	Laitakari 1970, Rehtijärvi 1984, Ekdahl et al 1997
Iilijärvi	Kisko	Zn	Quarries Kultamonttu, Malmström, New	1788	In the 18th centuryo, 1833, 1852-1853, 1974	*34 758*	2 745	Sphalerite, Galena, Chalcopyrite	*1 Zn, 0.4 Cu, 0.5 Pb, 15 Silver, 1 Gold*	Gadd & Gummerus 1795, Bremer 1824 s. 44, Sawenius 1825, Holmberg 1858 s. 49, Moberg 1889 s. 42, Anonymous 1938?, Laine 1952, Isomäki 1988, Mäkelä 1989, Isomäki 1989b
Metsämonttu	Kisko	Zn	From the Aijala mine to the west	1946	1951-1974	1 713 375	1 508 238	Sphalerite, Chalcopyrite, Galena	3.34 Zn, 0.28 Cu, 0.74 Pb, 24.8 Silver, 1.4 Gold, 14.10 S	Turunen 1953, Warma 1975, Lukkarinen 1997
Ruostesuo	Kiuruvesi	Zn	Pyhäsalmi satellite mine	1959	1988-1990	559 473	238 420	Sphalerite, Chalcopyrite, Pyrite	2.63 Zn, 0.30 Cu, 0.34 Gold, 97 Silver, 31.09 S	Huhtala 1992, Reino et al 1992, Ekdahl et al 1997
Attu	Parainen	Zn	Also = Silfvergruvan or Silver Mine	1630	1630, 1890-1891	*25*	20,0	Sphalerite, Galena, Chalcopyrite, Pyrite, Pyrrhotite	1.76 Zn, 1.05 Pb, 0.16 Cu, 43 Silver	Tilas 1738, Bremer 1824 s. 29, Holmberg 1858 s. 77, Pehrman 1931, Hangala 1987
Träskböle	Perniö	Zn	An old mining company	1766	1766	*15*	*13,5*	Sphalerite, Pyrrhotite	*1,5 Zn*	Wathén 1856, Furuhjelm 1884, Eskola 1923, Eskola 1923, Härme 1960, Isomäki 1981
Brödtorp	Pohja	Zn	Gaps between Nyckeln, Graphite and Sederholm	1902	1904-1907	*551*	441,0	Sphalerite, Chalcopyrite, Galena	*15 Zn, 0.5 Cu*	ValtGolds 1902, Trüstedt 1904, Teollisuushallitus 1905, Frosterus 1905a, Eskola 1914 s. 244, Mäkinen 1920 s. 33, Eskola 1923, Laine 1955 s. 58, Isomäki 1989a
Skogböle	Pohja	Zn	Also = Skogby; Parts of Nycklen	1677	1677-1778?	*15*	*13,5*	Sphalerite, Chalcopyrite, Galena	*1 Zn, 1 Pb, 0,5 Cu*	Bremer 1824 s. 56, Westling 1828, Thoreld 1852-1861, Wiik 1888, Hultin 1897 s. 262, Furuhjelm 1884, Pehrman 1945, Laine 1955 s.58, Knorring 1955
Mullikkoräme	Pyhäsalmi	Zn	Pyhäsalmi satellite mine	1987	1989-2000	1 591 359	1 203 298	Sphalerite, Chalcopyrite, Galena	6.08 Zn, 0.30 Cu, 0.86 Pb, 1.01 Gold, 44.07 Silver, 17.05 S	Puustjärvi 1989, Puustjärvi 1992, Reino et al 1992, Ekdahl et al 1997
Pyhäsalmi	Pyhäsalmi	Zn	The ore has been found to remain deep, still in operation in 2002	1958	1959-	49 347 456	35 856 050	Sphalerite, Chalcopyrite, Pyrite, Baryte	2.38 Zn, 0.81 Cu, 0.55 Gold, 18.25 Silver, 35.22 S, 31.74 Fe	Kurppa et al 1964, Ekdahl et al 1997
Taivaljärvi	Sotkamo	Zn	Also studied as a silver deposit	1981	1989	73 180	*10 000*	Sphalerite, Galena, Freibergite, Pyrargyrite, Silver, Gold	*231 Silver, 0.12 Zn, 0.51 Pb, 0.6 Gold*	Kopperoinen & Tuokko 1984, Kopperoinen 1989, Papunen et al. 1989
Vihanti	Vihanti	Zn	Also = Lampinsaari or Alpua, also Ristonaho	1947	1952-1992	30 784 192	27 938 832	Sphalerite, Chalcopyrite, Galena, Silver, Uraninite, Baryte	5.17 Zn, 0.46 Pb, 0.40 Cu, 26.6 Silver, 0.43 Gold, 13.5 S	Laatio et al 1957, Mikkola 1963, Goldtere et al 1991, Ekdahl et al 1997
Biskopsön	DrSilversfjärd	Fe	Also = Roängen	1839?	1842	*18*	*14,0*	Magnetite, Pyrrhotite, Calcite	*40 Fe*	ValtGolds 1850, Furuhjelm 1884, Moberg 1888 s. 31, Eskola et al 1919 s. 78, Laine 1952, Knorring 1955, Raetsu 1982
Halsholmen	DrSilversfjärd	Fe	On the island in front of Purunpää	1844	1844	*15*	*13,5*	Magnetite	*25 Fe*	LGoldraeus 1844, ValtGolds 1844, Furuhjelm 1884, Raetsu 1982, MV-tiedosto
Hamnholm	DrSilversfjärd	Fe	On the island in front of Purunpää	1736	In the 18th centurya, 1835-1839	*306*	245,0	Magnetite, Pyrite	*54 Fe*	Tilas 1738, ValtGolds 1835, Westling 1828, Holmberg 1858 s. 86, Hultin 1897 s. 268, Eskola 1923, Laine 1952, Knorring 1955, Raetsu 1982
Judasholm	DrSilversfjärd	Fe	Also = Hisingsgruvan	1736	1756, 1835-1839	*15*	*13,5*	Magnetite, Pyrite	*43.5 Fe*	Tilas 1738, Bremer 1824 s. 61, Westling 1828, ValtGolds 1835, Furuhjelm 1884, Hultin 1897 s. 268, Eskola 1923, Laine 1952

Table A1-10. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Jungfrusund	DrSilversfjärd	Fe	Also = Sandhamn, Långholmen and Purunpää; location inaccurate	1661	1663, 1756	*15*	*13,5*	Magnetite	*56 Fe*	Hultin 1897 s. 268
Käringö	DrSilversfjärd	Fe	In the Hittite archipelSilvero	1842	1842-1850	*844*	676	Magnetite	*35 Fe*	ValtGolds 1842, Furuhjelm 1884, Moberg 1888 s. 31, Laine 1952
Skallerholm	DrSilversfjärd	Fe	Also = Skallro or Skallran; In the Hittites	1830-l	1830-l	*15*	*13,5*	Magnetite		LGoldraeus 1842, ValtGolds 1842, Furuhjelm 1884, Moberg 1888 s. 31, Härme 1960, Raetsu 1982
Söderkulla	DrSilversfjärd	Fe	In the Hittites; location inaccurate	1846	1846	*15*	*13,5*	Magnetite		ValtGolds 1846
Tynglax	DrSilversfjärd	Fe	Also = Dinglaks	1836	1836	*15*	*13,5*	Magnetite, Pyrrhotite	*30 Fe*	Tilas 1738, Bremer 1824 s. 61, Sawenius 1825, Albrecht 1842, LGoldraeus 1843, Holmberg 1858 s. 86, Raetsu 1982, Lindroos 1987
Ängesö	DrSilversfjärd	Fe	In the Kemiö archipelSilvero in the northern part of the Hittites	1839	1840-1844	*148*	119,0	Magnetite, Pyrite, Pyrrhotite, Chalcopyrite	*43 Fe*	LGoldraeus 1843, Holmberg 1858 s. 86, Laine 1952, Knorring 1955, Raetsu 1982
Alberga	Espoo	Fe	Also = Leppävaara	1841	1844-1851	149	119,0	Magnetite	*31 Fe*	ValtGolds 1844, LGoldraeus 1845, Laine 1959, Laine 1952, Visapää 1967, Raetsu 1982, Saltikoff et al 1994
Bemböle	Espoo	Fe	Location inaccurate	1783	1780-l	*15*	*13,5*	Magnetite, Pyrrhotite	*38.50 Fe*	Lundström 1814 s. 11, Westling 1828, Gussander 1841, Wathén 1856, Holmberg 1858 s. 19, Moberg 1888, Visapää 1967, Saltikoff et al 1994
Fannsby	Espoo	Fe	Also = Vanttila; location inaccurate	1841	1841	*15*	*13,5*	Magnetite	*38 Fe*	Albrecht 1841, Holmberg 1858 s. 18, Furuhjelm 1884, Saltikoff et al 1994
Garnetsinmäki	Espoo	Fe	In the area of Leppävaara School of Economics	1840-l	1840-l	*15*	*13,5*	Magnetite		Saltikoff et al 1994
Jupp	Espoo	Fe	Also = Gammelgård or Jupper	1819	1836	*20*	*18,0*	Magnetite	*26-33 Fe*	ValtGolds 1819, Westling 1825, LGoldraeus 1837, Holmberg 1857, Holmberg 1858 s. 19, Saltikoff et al 1994
Kilo	Espoo	Fe	Also = Gruvberget	1838	1838-1841	*20*	*18,0*	Magnetite	*26 Fe*	Holmberg 1858 s. 19, Moberg 1888, Laine 1952, Visapää 1967, Saltikoff et al 1994
Mankans	Espoo	Fe	Also = Mankkaa or Seilinmäki	1760-l	1769, 1830, 1838-1841	*32*	26,0	Magnetite, Ilmenite, Pyrite	Fe 41, TiO2 14	Westling 1828, L.G. LGoldraeus 1838, Gussander 1841, Holmberg 1858 s. 19, Moberg 1888, Grönblom 1938, Visapää 1967, Pääkkönen 1969, Raetsu 1982, Saltikoff et al 1994
Sveins	Espoo	Fe	Also = Wine, Laaksolahti (Kilo)	1846	1846	*15*	*13,5*	Magnetite, Pyrite	*30 Fe*	ValtGolds 1846, Visapää 1967, Saltikoff et al 1994
Båkskär	Hammarland	Fe	Location inaccurate	1846	1846	*15*	*13,5*	Magnetite	*37 Fe*	Holmberg 1858 s. 68, Furuhjelm 1884, Eskola 1923
Munksnäs	Helsinki	Fe	Also = Munkkiniemi in Pitäjänmäki, Electrical path	1763	1763-1765?, 1780-1788, 1836-1843	*1 960*	1 568	Magnetite, Pyrite	*34 Fe*	Wathén 1857, Holmberg 1858 s. 8, Hultin 1897, Laitakari 1937, Laine 1952, Visapää 1967, Raetsu 1982, Saltikoff et al 1994
Sandhamn	Helsinki	Fe	Also = Santahamina	1780-l	1780-l	*15*	*13,5*	Magnetite		Holmberg 1858 s. 5, Visapää 1967, Saltikoff et al 1994
Stansvik	Helsinki	Fe	Also = Tahvonlahti	1766	1766, 1787-1797, 1827-1839	*1 328*	1 063	Magnetite, Pyrrhotite	*50 Fe*	Holmberg 1958 s. 4, Hultin 1897 s. 266, Laine 1952, Virtanen 1959, Visapää 1967, Raetsu 1982, Saltikoff et al 1994
Övitsby	Helsinki	Fe	Also = Öfvitsby	1832e	1848	*15*	*13,5*	Magnetite	*30 Fe*	Helsingin yliopiston geologian laitos 1832, Holmberg 1858 s. 7, Furuhjelm 1884
Skårskär	Houtskär	Fe	Also = Nåtöby, Houtskär	1835	1835-1857	*64*	51,0	Magnetite, Pyrite	*30 Fe*	Wathén 1844, LGoldraeus 1846, Holmberg 1857 s. 33, Holmberg 1858 s. 81, Eskola 1923, Laine 1952, Raetsu 1982
Skårörn	Houtskär	Fe	Next to Skårskär is a small island with a small quarry on the west bank	1830-l	1835-1857	*15*	*13,5*	Magnetite, Pyrite	*47 Fe*	LGoldraeus 1841, Raetsu 1982
Palojoki	Hyvinkää	Fe	Also = Juva or maybe also = Ridasjärvi iron mine	1855e	1855	*15*	*13,5*	Magnetite, Pyrite	*30 Fe*	LGoldraeus 1855, Holmberg 1858 s. 14, Furuhjelm 1886, Pääkkönen 1946
Kelivaara	Impilahti	Fe	Also = Rumaviida mine; gaps Otto III	1901	1902	*50*	*40*	Magnetite, Pyrrhotite	*30 Fe*	ValtGolds 1902, Trüstedt 1904b, Trüstedt 1907 s. 287, Laine 1955 s. 38, Palmunen 1939

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table A1-11. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Pitkäranta-Hopunvaara	Impilahti	Fe	Winberg, Clara	1814?	1896-1902	*15*	*13,5*	Magnetite, Chalcopyrite, Cassiterite		Holmberg 1858 s. 244, Furuhjelm 1886, Trüstedt 1907, Trüstedt 1914, Laitakari 1925 s. 52, Palmunen 1939, Laine 1952, Lukkarinen 1997 s. 56
Pitkäranta-Lupikko	Impilahti	Fe	Gaps Lupikko	1856e	1896-1904, 1918-1920	*15*	*13,5*	Magnetite, Chalcopyrite, Sphalerite, Cassiterite	*31 Fe*	Holmberg 1858 s. 244, Arppe 1861, Furuhjelm 1886, Trüstedt 1907, Trüstedt 1914, Laitakari 1925 s. 52, Palmunen 1939, Laine 1952, Lukkarinen 1997 s. 56
Pitkäranta-uusi	Impilahti	Fe	Gap Herbertz	1894	1896-1904	*15*	*13,5*	Magnetite, Chalcopyrite, Cassiterite		Holmberg 1858 s. 244, Furuhjelm 1886, Trüstedt 1907, Trüstedt 1914, Laitakari 1925 s. 52, Palmunen 1939, Laine 1952, Lukkarinen 1997 s. 56
Välimäki	Impilahti	Fe	Quarries Välimäki, Härkinmäki, Tsupukanmäki, Höhkänmäki	1855	1889-1891, 1895-1906, 1910	426 794	347 717	Magnetite, Ilmenite	*32.5 Fe, 5.5 Ti*	Holmberg 1855, Holmberg 1857, Lisitzin 1892 s. 145, Blankett 1896, Eskola 1919, Hackman 1933, Laine 1955, Koponen 1982
Buskskär	Iniö	Fe	Also = Svens; location inaccurate	1852	1852	*15*	*13,5*	Magnetite	*30 Fe*	LGoldraeus 1852, Holmberg 1858 s. 82
Pattskär	Iniö	Fe	Location inaccurate	1846	1846	*15*	*13,5*	Magnetite	*30 Fe*	LGoldraeus 1852, LGoldraeus 1857, Holmberg 1858 s. 81, Furuhjelm 1884
FSilverervik	Inkoo	Fe	Location inaccurate	1825e	1825e	*15*	*13,5*	Magnetite		Gussander 1841, Bremer 1825 s. 99, Holmberg 1858 s. 38
Joddböle	Inkoo	Fe	Kitty content	1854	1854	*15*	*13,5*	Magnetite, Pyrite, Pyrrhotite	*25 Fe*	Holmberg 1858 s. 38, Furuhjelm 1884, Moberg 1889 s. 46, Eskola 1923, Härme 1960
Långvik	Inkoo	Fe	Also = Mars; quarries Smedsgruva, Gröts	1663	1663-1664, 1839-1846, 1858-1863	*617*	494	Magnetite	*30 Fe*	Westling 1824, Bremer 1825 s. 96, ValtGolds 1840, Gussander 1841, Tengström 1841, Holmberg 1858 s. 38, Furuhjelm 1884, Moberg 1889, Hultin 1897 s. 259, Laine 1952, Raetsu 1982
Långö	Inkoo	Fe	Location inaccurate	1839e	1839e	*15*	*13,5*	Magnetite		Laitala 1961
Sandvik	Inkoo	Fe	Location inaccurate	1610?	1858e	*15*	*13,5*	Magnetite		Holmberg 1858 s. 39, Furuhjelm 1884
Smeds	Inkoo	Fe	Also = Långviksholmen; location inaccurate	1856	1857	*15*	*13,5*	Magnetite	*30 Fe*	Wathén 1856, ValtGolds 1857, Furuhjelm 1884
Ström	Inkoo	Fe	An old mining company	1839e	1839e	*15*	*13,5*	Magnetite		Holmberg 1858 S. 38, Laitala 1961
Svartbäck	Inkoo	Fe	Location inaccurate	1857	1857	*15*	*13,5*	Magnetite		ValtGolds 1857
Sådö	Inkoo	Fe	Also = Såddö	1610	1610, 1839, 1843-1844	*1 153*	922	Magnetite	*30 Fe*	Hultin 1897 s. 19, Furuhjelm 1884, Pehrman 1948, Laitala 1961, Raetsu 1982
Ångestö	Inkoo	Fe	Location inaccurate	1839e	1839e	*15*	*13,5*	Magnetite		Laitala 1961
Orisberg	Isokyrö	Fe	Also = Orismala	1659	1659?	*15*	*13,5*	Magnetite, Pyrite		Westling 1829, Holmberg 1858 s. 114, Furuhjelm 1886, Eskola 1923, Luukko 1972, RGoldtaruukki 1973, Luukko 1981, Raetsu 1982, Turkka 1994
Holmbergsgrufvan	Juankoski	Fe	Also = Tiala	1840-l	1840-l	*15*	*13,5*	Magnetite, Asbestos		Wathén 1856, Holmberg 1858 s. 212, Vesasalo 1951, Goldrola & Vesasalo 1954, O. Äikäs suullisesti 1996
Kuivalanvaara	Juuka	Fe	Location inaccurate	1851	1851	*15*	*13,5*	Magnetite		ValtGolds 1851
Knasabacka	Karjaa	Fe	Also = Kansbacka or Kasabacka; location inaccurate	1642	1670,1818	*15*	*13,5*	Magnetite		ValtGolds 1818,Westling 1824, Wathén 1856, Holmberg 1858 s. 39, Eskola 1923
Svarfvarböle	Karjaa	Fe	Several mining companies	1668	1668-1703	*50*	*45,0*	Magnetite, Pyrrhotite, Ilmenite	*27 Fe*	Westling 1824, Westling 1839, Bremer 1825 s. 95, ValtGolds 1849, Wathén 1857, Holmberg 1858 s. 39, Hultin 1897, Laitakari 1937, Laine 1950
Jänisjärvi	Karjalohja	Fe	Also = Kinterö or Kintoro	1846	1852-1854	*89*	71,0	Magnetite, Pyrite, Chalcopyrite, Pyrrhotite	*30 Fe*	ValtGolds 1846, Wathén 1856, Holmberg 1857 s. 16, Holmberg 1858 s. 48, Furuhjelm 1866, Furuhjelm 1884 s. 50, Moberg 1889 s. 45, Eskola 1923, Laine 1952 s. 321 ja 516, Isomäki 1984
Kourijärvi	Karjalohja	Fe	Near the church	In the 18th century	In the 18th century	*15*	*13,5*	Magnetite	*57 Fe*	Westling 1924, Wathén 1856, Holmberg 1858 s. 47, Furuhjelm 1884
Loukmäki	Karjalohja	Fe	Iron mines in the villSilvere of Lönhammar	1851?	1852-1854?	*89*	71,0	Magnetite, Pyrite, Chalcopyrite	*30 Fe*	Furuhjelm 1866, Furuhjelm 1884, Moberg 1889 s. 45, Laine 1952 s. 516, Härme 1960

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table A1-12. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Kettulampi	Karkkila	Fe	Excavated for the Högfors blast furnace	1832e	In the early 19th century	*15*	*13,5*	Magnetite, Ilmenite, Pyrite		Helsingin Yliopiston geologian laitos 1832, Tengström 1858-1865, Tigerstedt 1892-1893, Härme 1954
Kulonsuonmäki	Karkkila	Fe	Also = RGoldtamäki or Tuorila; quarries Alexander, Elizabeth, West	1811	1817-1819, 1824-1896	*29 889*	23 915	Magnetite, Ilmenite, Pyrite	40 Fe, 1.85 Ti	ValtGolds 1817, Bremer 1825 s. 76, Wathén 1857, Holmberg 1857 s. 19, Holmberg 1858 s. 37, Furuhjelm 1866, Laine 1952, Högforsin tehdas 1953, Härme 1955, Sipilä 1981, Raetsu 1982
Mustalampi	Karkkila	Fe	Also = Kovelo; mined for the Högfors blast furnace	1840	1840	*20*	*10,0*	Magnetite, Ilmenite	*24 Fe, 6 Ti*	ValtGolds 1843, Furuhjelm 1884, Laine 1948 s. 466, Härme 1955, Laine 1952, Härme 1955, Sipilä 1981, Raetsu 1982
Pähkinämäki	Karkkila	Fe	Excavated for the Högfors blast furnace; location inaccurate	1840	1840	*15*	*13,5*	Magnetite, Pyrite	*30 Fe*	Wathén 1856, Furuhjelm 1884, Eskola 1923, Laine 1948 s. 466
Tupuri	Karkkila	Fe	Also = Tuppuri	1840	1840-1841, 1861-1868	*334*	268	Magnetite, Ilmenite, Pyrite	*32 Fe*	ValtGolds 1840, Finlands Allmänna Tidning 1841, Moberg 1889c s. 45, Laine 1952, Högforsin tehdas 1953 s. 368, Härme 1955, Sipilä 1981, Raetsu 1982
Kärväsvaara	Kemijärvi	Fe	Iron mines in the Misi area	1921	1921, 1937, 1958-1967	1 216 421	929 487	Magnetite	46.21 Fe	Runolinna 1959, Westerlund et al 1968, Siirama 1976, Raetsu 1982
Leveäselkä	Kemijärvi	Fe	Iron mines in the Misi area	1960	1969-1974	*15*	*13,5*	Magnetite	41 Fe	Siirama 1976, Raetsu 1982
Puro	Kemijärvi	Fe	Iron mines in the Misi area	1962	1962-1975	*15*	*13,5*	Magnetite		ValtGolds 1962, Siirama 1976
Raajärvi	Kemijärvi	Fe	Iron mines in the Misi area	1958	1962-1975	7 818 453	5 119 062	Magnetite	40.62 Fe	Westerlund 1964, Siirama 1976, Raetsu 1982
Trotby	Kemiö	Fe	Location inaccurate	1857	1857	*15*	*13,5*	Magnetite	*50 Fe*	Bremer 1858, Furuhjelm 1886, Laine 1948, Knorring 1955
Särämäki	Kiikala	Fe	Near the Johannislund glass factory	1824	1824	*15*	*13,5*	Magnetite, Pyrrhotite, Pyrite	*30 Fe*	Sawenius 1825, Holmberg 1858 s. 91, Furuhjelm 1884, Eskola 1923, Härme 1960
Evitskog	Kirkkonummi	Fe	Also = Övitskog, Öfvitskog or Hievala	1814e	1839-1841	*161*	128,0	Magnetite	*52 Fe*	Lundström 1814 s. 8, LGoldraeus 1842, Holmberg 1858 s. 20, Furuhjelm 1884, Moberg 1889 s. 47, Laine 1950, Laine 1952
Hånskby	Kirkkonummi	Fe	Also = Malmbacken	1824e	1824e	*15*	*13,5*	Magnetite, Pyrrhotite, Pyrite		Westling 1824, Bremer 1825 s. 64, Holmberg 1857 s. 9, Holmberg 1858 s. 21, Furuhjelm 1884, Moberg 1889 s. 27
Korkulla	Kirkkonummi	Fe	Also = Korpkulla; mining law during the reign of Queen Kristiina on 16.10.1641	1641	1641, 1888?	*15*	*13,5*	Magnetite, Pyrite, Pyrrhotite		ValtGolds 1641, Westling 1828, LGoldraeus 1838, Albrecht 1842, Thoreld 1852-1861, Holmberg 1857 s. 9, Holmberg 1858 s. 21, ValtGolds 1876, Furuhjelm 1884, Moberg 1889 s. 27, Eskola 1923
Qvarnby	Kirkkonummi	Fe	Location inaccurate	1830-l	1830-l	*15*	*13,5*	Magnetite, Pyrrhotite		Westling 1839, LGoldraeus 1848, Wathén 1856, Holmberg 1858 s. 21, Furuhjelm 1884
Aitsaari	Kisko	Fe	Location inaccurate	1829	1829, 1842	*20*	*18,0*	Magnetite	*30 Fe*	Holmberg 1858 s. 55, Furuhjelm 1884, Raetsu 1982
Björknäs	Kisko	Fe	South of the Aijala and Metsämontu mines	1830-l	1830-l	*15*	*13,5*	Magnetite, Pyrite, Chalcopyrite		Härme 1960, Latvalahti 1989 s. 21
Garnetaattinokka	Kisko	Fe	Also = Garnetath's beak	In the 18th century?	In the 18th century?	*15*	*13,5*	Magnetite, Pyrrhotite	*37 Fe*	Moberg 1889 s. 42, Eskola 1914, Knorring 1955, Mikkonen 1952, Raetsu 1982
HGoldkia	Kisko	Fe	Quarries Lower, Northern and Overhead Mining	1832	1833-1865	15 098	2 343	Magnetite	*37 Fe*	Westling 1834, Gussander 1841, Holmberg 1858 s. 52, Furuhjelm 1884, Tigerstedt 1891, Laine 1952, Knorring 1955, Sipilä 1981, Raetsu 1982
Heinäsuo	Kisko	Fe	Also = Iso-Kiskojärvi	1760	1770-l, 1824-1831	*475*	380,0	Magnetite, Ilmenite	*43.5 Fe, 7 Ti*	Gadd & Bergman 1789, ValtGolds 1833, Wathén 1857, Holmberg 1858 s. 40, Furuhjelm 1884, Hultin 1897, Laine 1952, Knorring 1955, Sipilä 1981, Raetsu 1982
Heinäsuo-eteläinen	Kisko	Fe	Also = Iso-Kiskojärvi	1770	1770-l, 1824-1831	*15*	*13,5*	Magnetite, Ilmenite	*43.5 Fe, 7 Ti*	Gadd & Bergman 1789, Wathén 1857, Holmberg 1858 s. 40, Furuhjelm 1884, Hultin 1897, Laine 1952, Knorring 1955, Sipilä 1981, Raetsu 1982
Hellboms-Aijala	Kisko	Fe	Also = Screw bog, Gravel; location inaccurate	1688	1688, 1829-1831	50	40,0	Magnetite, Pyrite	*30 Fe*	Sawenius 1825, Thoreld 1852-1862, Holmberg 1858 s. 57, Furuhjelm 1884, Laine 1952, Härme 1960
Honkaladonmäki	Kisko	Fe	Also = Kurkela or Nummela	1780	1780-1788	*149*	119,0	Magnetite, Pyrite	*23.7 Fe, 3.3 Ti*	Gadd & Gummerus 1795, Bremer 1824 s. 40, Holmberg 1858 s. 55, Furuhjelm 1884, Hultin 1897, Eskola 1923 s. 29

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table A1-13. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Kaorhaka	Kisko	Fe	Also = Jyly Kaorhaka	1834	1855-1858	*365*	292,0	Magnetite, Pyrite	*43.5 Fe*	Westling 1834, Holmberg 1858 s. 52, Furuhjelm 1884, Eskola 1923, Laine 1952, Sipilä 1981, Raetsu 1982
Kolkonmäki	Kisko	Fe	Also = Kolkudde; quarries West and East; location inaccurate	1783	1783e, 1783, 1829-1831	*99*	79,0	Magnetite	*61 Fe*	Gadd & Gummerus 1789, Bremer 1824 s. 40, ValtGolds 1830, Furuhjelm 1884, Hultin 1897 s. 268, Laine 1952
Liipola	Kisko	Fe	Also = Haapaniemi	1736e	1835	*15*	*13,5*	Magnetite, Chalcopyrite	*30 Fe*	Sawenius 1825, Thoreld 1852-1861, Holmberg 1857 s. 16, Holmberg 1858 s. 54, Furuhjelm 1884, Härme 1960
Loviseberg	Kisko	Fe	Also = New Pahalahti	1846	1846-1866	*15*	*13,5*	Magnetite	*37 Fe*	Holmberg 1858 s. 51, Moberg 1889 s. 44, Tigerstedt 1891, Laine 1952, Knorring 1955, Sipilä 1981
Malmberg	Kisko	Fe	Also = Leila or earlier also Pyymäki; quarries Long, Deep, Upper and others	1670	1670-1707?, 1813-1866	68 184	15 067	Magnetite	*24 Fe*	Lundström 1814, Sawenius 1825, Bremer 1824 s. 41, Holmberg 1858 s. 53, Furuhjelm 1866, Tigerstedt 1891, Hultin 1897, Nikander 1929, Laine 1952, Knorring 1955, Anttila et al 2001
Marjaniemi	Kisko	Fe	Known even before the discovery of Orijärvi copper ore	1757e	1780, 1831-1833	*192*	153,0	Magnetite	*33 Fe*	Sawenius 1825, Holmberg 1858 s. 56, Furuhjelm 1884, Laine 1952, Knorring 1955, Sipilä 1981, Raetsu 1982
Niemi	Kisko	Fe	On the peninsula of Leilänlahti	In the 18th century?	In the 18th century?	*15*	*13,5*	Magnetite		Furuhjelm 1866
Orijärvi-rGoldta	Kisko	Fe	Location inaccurate	In the 18th century?	In the 18th century?	*15*	*13,5*	Magnetite	*27 Fe*	Eskola 1914, Knorring 1955, Sipilä 1981, Raetsu 1982
Pahalahti	Kisko	Fe	Quarries North, South also New Pahalahti (Loviseberg)	1826	1826-1845	30 147	7 703	Magnetite	*37 Fe*	ValtGolds 1835, Holmberg 1858 s. 51, Furuhjelm 1884, Tigerstedt 1891, Laine 1952, Knorring 1955, Sipilä 1981, Raetsu 1982
Perkiö	Kisko	Fe	One kilometer east of the Orijärvi mine	1842	1842, 1845	*15*	*13,5*	Magnetite, Pyrrhotite	*30 Fe*	Thoreld 1852-1861, Holmberg 1858 s. 52, Furuhjelm 1884, Moberg 1889 s. 43, Eskola 1914, Eskola 1923
Pahtavaara-Kittilä	Kittilä	Fe	Iron ore mining companies in the Porkonen-Pahtavaara area	1857e	1865	*15*	*13,5*	Magnetite	*30 Fe*	Holmberg 1857 s. 197, ValtGolds 1865, Thoreld 1866, Hackman 1925
Porkonen-Kittilä	Kittilä	Fe	Iron ore mining companies in the Porkonen-Pahtavaara area	1857e	1865	*15*	*13,5*	Magnetite	*30 Fe*	Holmberg 1857 s. 197, ValtGolds 1865, Thoreld 1866, Hackman 1925
Hannukainen	Kolari	Fe	Also produced copper concentrate	1974	1978-1990	10 196 039	4 563 080	Magnetite, Chalcopyrite	*43 Fe, 0.88 Cu, 1 Gold*	ValtGolds 1974, Hiltunen & Hattula 1974, Juopperi et al 1982, Hiltunen 1982, Raetsu 1982, Hiltunen 1997
Juvakaisenmaa	Kolari	Fe	Also = Drinking land; at the then Ylitornio	1600-l	1662-1688?, 1764, 1840-1843, 1917	*308*	246,0	Magnetite, Pyrite, Pyrrhotite, Chalcopyrite	*53 Fe*	Brehmer 1858, Thoreld 1852-1861, Holmberg 1858 s. 189, Rein 1867, Hultin 1897 s. 261, Borgström 1918, Laine 1952, Raetsu 1982
RGoldtuvaara	Kolari	Fe	Also produced copper concentrate	1956	1962-1988	12 861 215	11 564 405	Magnetite, Chalcopyrite	46.78 Fe, 0.36 Cu	ValtGolds 1956, Tuovinen 1972, Hiltunen 1982, Raetsu 1982, Hiltunen 1997
Havukkavaara	Kontiolahti	Fe	Five test shafts	1920	1922	*15*	*13,5*	Magnetite, Pyrrhotite, Pyrite, Quartz	25 Fe (Magnetiteetiittina)	Trüstedt 1923, Eskola 1923, Raetsu 1982 no 1/4241, Nykänen 1971
Korpoström	Korppoo	Fe	Location inaccurate	1610	1610	*15*	*13,5*	Magnetite		Bremer 1824, s. 76, Wathén 1844, Eskola 1923, Laitakari 1937
Väsby	Korppoo	Fe	Also = Hväsby, Essby or Wessby, by the sea	1839	1839-1864	*4 699*	3 759,0	Magnetite, Ilmenite, Pyrite, Pyrrhotite	*32 Fe, 10.5 Ti*	LGoldraeus 1839, LGoldraeus 1844, Wathén 1844, Thoreld 1852-1861, Wathén 1857, Holmberg 1858 s. 80, Moberg 1890b s. 30, Laine 1952, Knorring 1955, Raetsu 1982
Likastenlahti	Kuru	Fe	Location inaccurate	1830	1830	*15*	*13,5*	Magnetite		ValtGolds 1830
Katavakari	Kustavi	Fe	On a small island	1846	1857 ainakin	*13*	10,0	Magnetite	*30 Fe*	LGoldraeus 1852, Wathén 1856, ValtGolds 1857, LGoldraeus 1857, Holmberg 1858 s. 81, Moberg 1890 s. 45, Eskola 1923 s. 29
Koivusaarenneva	Kälviä	Fe	Test well	1971	1999-2000	22 500	22 500	Magnetite, Ilmenite	15 Ilmenite	ValtGolds 1971, Raetsu 1982, Kärkkäinen 1999
Riuttamaa	Köyliö	Fe	Also = Vuorenmaa	1856	1856-1861	*542*	433,0	Magnetite, Ilmenite	*33 Fe*	ValtGolds 1856, LGoldraeus 1856, Holmberg 1858 s. 100, Hultin 1897 s. 15, Wilkman 1898 s. 47, Laine 1952, Koskinen 1953, Raetsu 1982

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table A1-14. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Nyhamn	Lemland	Fe	In front of Mariehamn, no production	1954	1957-1960	79 100	*1 000*	Magnetite	*20 Fe*	ValtGolds 1954, Räsänen 1959, Raetsu 1982, Törnblom 1986
Gerknäs	Lohja	Fe	Also = Kirkniemi, Kirkenes	1669	1669	*450*	*14,0*	Magnetite	*27 Fe*	Westling 1824, Bremer 1825 s. 74, Gussander 1841, Holmberg 1857 s. 18, Holmberg 1858 s. 27
Haikari	Lohja	Fe	Also = Stork	1824e	Vanhat, 1824	*200*	*180,0*	Magnetite	*25 Fe*	Westling 1824, Albrecht 1842, Holmberg 1857 s. 18, Holmberg 1858 s. 27, Furuhjelm 1884
Hermala	Lohja	Fe	Also = "Silver Ore" in the villSilvere of Hermala; On the Big Island of Lohjanjärvi	1686	1686, 1746-1748, 1762, 1847	*42*	33,0	Magnetite, Sphalerite, Pyrrhotite, Chalcopyrite	*30 Fe, x Zn*	Holmberg 1858 s. 30, Hultin 1897 s. 262, Furuhjelm 1884, Laine 1952
Karstu	Lohja	Fe	Also = Squirrel, Oravaniemi	1824	1840-1852, 1864-1865	*1 223*	978	Magnetite, Pyrite, Chalcopyrite	*40 Fe*	ValtGolds 1825, Helsingin yliopisto 1832, LGoldraeus 1840, Gussander 1841, Holmberg 1858 s. 26, Eskola 1923, Laitakari 1937, Laine 1952, Högforsin tehdas 1953, Sipilä 1981, Raetsu 1982
Lylyinen	Lohja	Fe	Also = Lyllis	1844e	1858e	*15*	*13,5*	Magnetite	*28 Fe*	Albrecht 1841-44, Holmberg 1858 s. 27, Furuhjelm 1884, Moberg 1889 s. 42, Saikkonen 1992
Morbacka	Lohja	Fe	An old mining company	1668	1668-1673	*128*	102,0	Magnetite	*30 Fe*	Bremer 1825 s. 75, Hultin 1897 s. 260
Ojamo	Lohja	Fe	In fact, the oldest known metal ore mine in Finland	1530	1533-1564, 1609-1673, 1684-1694, 1826-1863	*23 222*	11 778	Magnetite	*45 Fe*	Gadd & Bergman 1789, Westling 1828, Holmberg 1858 s. 25, Tigerstedt 1893, Hultin 1897, Neovius 1911, Laine 1952, Nordström 1962, Ylikangas & Siiriäinen 1973, Lindholm 1990
Pietilä	Lohja	Fe	At the northeastern end of Lohjansaari	1824e	Vanhat, 1842, 1848	*30*	24,0	Magnetite, Chalcopyrite, Galena	*36 Fe*	Westling 1824, Westling 1839, Gussander 1841, ValtGolds 1845, Holmberg 1857 s. 19, Holmberg 1858 s. 29, Sipilä 1981, Raetsu 1982
RGoldtniemi	Lohja	Fe	Also = Askola	1824e	Vanhat, 1826-1830, 1850-1860	1 220	976,0	Magnetite, Chalcopyrite, Pyrrhotite	*55 Fe*	Westling 1824, Albrecht 1841-61, ValtGolds 1845, Holmberg 1857 s. 19, Holmberg 1858 s. 28, Moberg 1889 s. 45, Laine 1952
Vohls	Lohja	Fe	Also = Kohloinen or Wohls	1789e	1789, 1836-1838	*227*	182,0	Magnetite, Scheelite	*51 Fe*	Gadd & Bergman 1789, ValtGolds 1831, Holmberg 1858 s. 27, Laine 1952, Högforsin tehdas 1953 s. 364, Sipilä 1981, Raetsu 1982
Topeno	Loppi	Fe	Also = Topeno, Sojaniemi, Kärpänoja, Ylitalo; location inaccurate	In the early 19th century	1800-l?	*15*	*13,5*	Magnetite		LGoldraeus 1855, Härme 1954
Osmankallio	Mäntsälä	Fe	Location inaccurate	In the 18th century	1884e	*15*	*13,5*	Magnetite		ValtGolds 1817, Wathén 1856, Holmberg 1858 s. 14, Furuhjelm 1884, Eskola 1923
Krampo	NGoldvo	Fe	Also = Kopparbergen	1610	1610	*15*	*13,5*	Magnetite		Wathén 1856, Hultin 1897 s. 19, Pehrman 1948
Böhle	Nummi-Pusula	Fe	Also = Rotate	1840	1844-1848, 1859-1866	*1 265*	1 012,0	Magnetite	*44.5 Fe*	ValtGolds 1844, LGoldraeus 1844, Holmberg 1857 s. 18, Holmberg 1858 s. 32, Furuhjelm 1866, Laine 1952, Högforsin tehdas 1953, Härme 1960, Sipilä 1981
Småmossberg	Närpiö	Fe	Ironworks cartridge Wasastjerna excavated; location inaccurate	1826	1826	*15*	*13,5*	Magnetite	*30 Fe*	ValtGolds 1826, Westling 1824-1839, Wathén 1856, Holmberg 1858 s. 111, Furuhjelm 1886
Kivesvaara	Paltamo	Fe	Location inaccurate	1781e	1781	*15*	*13,5*	Magnetite	*37 Fe*	Fought 1780, ValtGolds 1847, Rein 1867, Thoreld 1856, Holmberg 1858 s. 173, Wilkman 1931
Attu-rGoldta	Parainen	Fe	Also = Atu iron mine	1843	1844	*36*	33,0	Magnetite, Ilmenite, Pyrite	*40 Fe*	LGoldraeus 1844, Hangala 1987
Lilla Trollön	Parainen	Fe	Also = Lilltrollön, may also be = Skärholm	1738	1738	*15*	*13,5*	Magnetite		Tilas 1738 s. 2, Bremer 1824 s. 29, Wathén 1856, Furuhjelm 1884
Runholm	Parainen	Fe	Also = Attu-Runholm	1843	1843-1857	*1 657*	1 325	Magnetite, Ilmenite, Pyrite	*39 Fe, 12 Ti*	ValtGolds 1844, Holmberg 1858 s. 78, Moberg 1890b s. 30, Pehrman 1927, Laine 1952, Knorring 1955, Raetsu 1982
Påhlböle	Pernaja	Fe	Also maybe = Hello	1766	1766	*15*	*13,5*	Magnetite	*30 Fe*	Wathén 1856, Furuhjelm 1884, Eskola 1923
BSilvergböle	Perniö	Fe	Also = Malminmäki aka Perniön Malmberg; quarries Large and Small Mine	1748	In the 18th centurya, 1834-1853	657	525	Magnetite, Pyrite	*41 Fe*	Gadd & Gummerus 1795, Westling 1834, ValtGolds 1834, LGoldraeus 1841, Holmberg 1858 s. 89, Furuhjelm 1884, Hultin 1897, Laine 1952, Knorring 1955, Raetsu 1982
Kyynärä	Perniö	Fe	The quarries of Vihiniemi	1830	1830	*15*	*13,5*	Magnetite	*30 Fe*	Westling 1834, Finland Allmänna Tidning 1841, Holmberg 1858 s. 89, Furuhjelm 1884, Eskola 1923, Eskola 1923, Sipilä 1981
Liide	Perniö	Fe	The quarries of Vihiniemi	1834e	1800-l	*15*	*13,5*	Magnetite		Westling 1834, Westling 1854, Raetsu 1982

Table A1-15. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Likojärvi	Perniö	Fe	Also = Bookfish; location inaccurate	1780	1780-lo	*15*	*13,5*	Magnetite, Pyrrhotite, Pyrite		Bremer 1825 s. 33, Sawenius 1825, Wathén 1856, Holmberg 1858 s. 93
Skinnfällsskog	Perniö	Fe	Location inaccurate	1740-l	1740-l?	*15*	*13,5*	Magnetite, Pyrite		ValtGolds 1843, Furuhjelm 1884, Moberg 1888 s. 30, Eskola 1923, Härme 1960
Strömma	Perniö	Fe	Quarries Western and Eastern Mining; location inaccurate	1744	1740-l, 1780-l, 1846-1850	*997*	797,0	Magnetite, Pyrite, Chalcopyrite	*55 Fe*	Westling 1834, ValtGolds 1846, Wathén 1856, Holmberg 1858 s. 89, Moberg 1888 s. 30, Hultin 1897, Laine 1952, Sipilä 1981, Raetsu 1982, Lindroos 1987
SydänsGoldru	Perniö	Fe	Also = SGoldro or Malmimäki	1744	1744	*15*	*13,5*	Magnetite, Pyrite	*30 Fe*	Bremer 1824 s. 52, Westling 1828, Holmberg 1858 s. 89, Furuhjelm 1884, Hultin 1897 s. 267, Eskola 1923
Vihiniemi	Perniö	Fe	Quarries Charlotte, Robert, Jakob, St. Anna, Zebor, Nordling, Westra	1600-lo	1600-lo, 1825-1862	*27 276*	21 821	Magnetite	*30.9 Fe*	Westling 1828, ValtGolds 1841, Gussander 1841, Holmberg 1858 s. 89, Furuhjelm 1884, Tigerstedt 1892c, Ekman 1936, Laine 1952, Knorring 1955, Sipilä 1981, Raetsu 1982
Vihiniemi-Charlottenberg	Perniö	Fe	The quarries of Vihiniemi	1841	1842-1865	*4 310*	3 448	Magnetite	*23 Fe*	ValtGolds 1841, Holmberg 1858 s. 89, Tengström 1865, Furuhjelm 1884, Tigerstedt 1893, Laine 1952
Rahnola	Pohja	Fe	Location inaccurate	1824e	1824e	*15*	*13,5*	Magnetite		Westling 1824
Storbacka-eteläinen	Pohja	Fe	Sled quarries	In the 18th century	1840?-1864?	*15*	*13,5*	Magnetite	*32 Fe*	Tavela 1950, Knorring 1955, Sipilä 1981, Raetsu 1982
Kråkskär	Porvoo	Fe	On the island	1889e	1889e	*15*	*13,5*	Magnetite, Ilmenite		Moberg 1889, Härme 1980
Käpykylä	Porvoo	Fe	Also = Käpekylä (Askola)	1650-l	1825e	*15*	*13,5*	Magnetite		Bremer 1825 s. 109, Wathén 1856, Furuhjelm 1884
Strömsberg	Porvoo	Fe	Location inaccurate	1641	1641	*15*	*13,5*	Magnetite	*30 Fe*	Wathén 1856, Furuhjelm 1884, Eskola 1923, Laitakari 1937
Sundö	Porvoo	Fe	Also = Kalkholmen, Tirmo or Byholm	1753	1753-1790	*15*	*13,5*	Magnetite, Pyrite, Pyrrhotite, Arsenopyrite		Bremer 1825 s. 109, John 1827, Wathén 1856, Holmberg 1858 s. 16, Furuhjelm 1884, Moberg 1889c s. 20, Renvall 1934, Laitala 1984
Åkersholmen	Porvoo	Fe	Also = Sundö's second iron mine or Tirmo	1825e	1825e	*15*	*13,5*	Magnetite, Pyrite, Pyrrhotite, Arsenopyrite		Bremer 1825 s. 109, Holmberg 1858 s. 16, Furuhjelm 1884, Renvall 1934
Kurensalo	Puumala	Fe	On the island of Kurensalo	1841e	1841e	*15*	*13,5*	Magnetite		Albreht 1841, Wathén 1856, Furuhjelm 1887
Uotila	Riihimäki	Fe	Also = Ojamo or Arolampi; location inaccurate	1835	1835	*15*	*13,5*	Magnetite, Pyrite	*30 Fe*	Wathén 1856, Holmberg 1858 s. 130, Moberg 1889d s. 34, Furuhjelm 1886
Käsnäselkä	Salmi	Fe	Location inaccurate	1870	1871-1872	*681*	545,0	Hematite	*30 Fe*	ValtGolds 1870, Lisitzin 1892 s. 155, Eskola 1919, Eskola 1923, Laine 1948
Renlund	Salmi	Fe	Renlund Foundation excavation; location inaccurate	1919	1919	*15*	*13,5*	Magnetite, Pyrrhotite	*30 Fe*	ValtGolds 1926, Palmunen 1939 s. 139
Harijärvi	Sammatti	Fe	Also = Haarjärvi; location inaccurate	In the 18th century	In the 18th century	*40*	*32,0*	Pyrrhotite, Pyrite, Graphite		Westling 1824, Wathén 1856, Holmberg 1858 s. 49, Furuhjelm 1884, Eskola 1923, Laitakari 1925 s. 14
Flyth	Siuntio	Fe	Location inaccurate	1843	1843	*15*	*13,5*	Magnetite		ValtGolds 1843, Vuorihallitus 1859 Ha4
Lappträsk	Siuntio	Fe	An old mining company	1670-l	1670-l	*15*	*13,5*	Magnetite, Calcite		Bremer 1825 s. 67, Eskola 1923, Eskola et al 1919, Härme 1960, Laitala 1961
Pikkala	Siuntio	Fe	Location inaccurate	1615	1858e	*15*	*13,5*	Magnetite		Wathén 1856, Holmberg 1858 s. 23, Furuhjelm 1884
Sjundby	Siuntio	Fe	Also = Riegrufvan; several quarries	1670	Vanhat, 1837-1844	*388*	311,0	Magnetite, Pyrite, Pyrrhotite, Garnet	*57 Fe*	Bremer 1825 s. 67, ValtGolds 1843, Wathén 1856, Holmberg 1857 s. 10, Holmberg 1858 s. 23, Furuhjelm 1884, Eskola 1923, Laine 1950, Laine 1952, Raetsu 1982
Veijans	Siuntio	Fe	Also = Wäijans; in 1867 this place of the iron mine was not found; location inaccurate	1670	1670	*15*	*13,5*	Magnetite	*30 Fe*	Bremer 1825 s. 67, Wathén 1856, Holmberg 1857 s. 10, Holmberg 1858 s. 22, Furuhjelm 1884, Moberg 1889 s. 46, Eskola et al 1919
Pötsönvaara	Sortavala	Fe	Location inaccurate	1895	1895	*15*	*13,5*	Magnetite	*30 Fe*	ValtGolds 1895
RGoldtakangas	Sortavala	Fe	Location inaccurate	1895	1895	*15*	*13,5*	Magnetite	*30 Fe*	ValtGolds 1895

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table A1-16. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Hjortronskär	Sottunga	Fe	One kilometer northwest of Södö	1846	1846	*17*	*15,3*	Magnetite	*39 Fe*	Igelström 1846, Wathén 1856, Holmberg 1858 s. 65, Furuhjelm 1886
Husö	Sottunga	Fe	Also = Långnäset	1835	1846?	*15*	*13,5*	Magnetite, Galena, Pyrrhotite, Pyrite		LGoldraeus 1835, LGoldraeus 1844, Holmberg 1858 s. 66, Furuhjelm 1886, Frosterus 1895 s. 33, Eskola et al 1919 s. 111, Eskola 1923
Södö	Sottunga	Fe	Prison labor used in mining	1833	1835-1848	*842*	673,0	Magnetite, Pyrite, Galena	*47 Fe*	LGoldraeus 1835, ValtGolds 1839, LGoldraeus 1843, Igelström 1846, Wathén 1846, Holmberg 1858 s. 64, Furuhjelm 1886, Frosterus 1895 s. 33, Laine 1952, LGoldrén 1968, Saksela 1970
Tärvonvikholme	Sottunga	Fe	Also = Törvönvik or Torvonlahti	1844	1845	*15*	*13,5*	Magnetite, Pyrite	*30 Fe*	LGoldraeus 1844, ValtGolds 1845, Furuhjelm 1886, Frosterus 1895 s. 34
Isosaari-Suodenniemi	Suodenniemi	Fe	Location inaccurate	1857e	1857	*15*	*13,5*	Magnetite		LGoldraeus 1857
Kokonpesä-Hematitetiitti	Suojärvi	Fe	Hematitetite formation	1837	1839-1840, 1850	*183*	146,0	Hematite	*46 Fe*	ValtGolds 1837, Thoreld 1842-1856, Holmberg 1858 s. 253, Furuhjelm 1886, Lisitzin 1892 s. 163, Eskola 1919, Tilly 1922, Metzger 1924, Laine 1952
Pöpönsaari-rGoldta	Suojärvi	Fe	Hematitetite formation	1812	1812	*15*	*13,5*	Hematite	*30 Fe*	Lundström 1814 s. 47, Bremer 1825 s. 187, Holmberg 1857 s. 64, Holmberg 1858 s. 253, Furuhjelm 1886, Lisitzin 1892 s. 163, Eskola 1919, Tilly 1922, Eskola 1923, Metzger 1924, Laine 1952
Salmijärvi	Suomusjärvi	Fe	Also = Kitula iron mine	1812	1820-1823	*851*	681,0	Magnetite, Ilmenite, Pyrite	*24 Fe, 3.5 Ti*	Thoreld 1852-1861, Holmberg 1858 s. 56, Laine 1907 s. 262, Eskola 1923, Ekman 1936, Laine 1952, Sipilä 1981, Raetsu 1982
Mustavaara	Taivalkoski	Fe	Mined as vanadium ore	1967	1974-1985	17 799 520	13 446 100	Magnetite, Diamond	0.20 V	Vuoristo 1975, Juopperi 1977, Raetsu 1988
Harju	Tammela	Fe	Also = Levonniemi; location inaccurate	1829e	In the early 19th century	*15*	*13,5*	Magnetite, Chalcopyrite		Westling 1829, Furuhjelm 1886, Moberg 1889 s. 44, Eskola 1923, Laitakari 1937, Härme 1960
Fastarby	Tammisaari	Fe	Also = Fasterby; location inaccurate	1789	1790-I	*15*	*13,5*	Magnetite		Gadd & Bergman 1789, Wathén 1856, Furuhjelm 1884
Hermansö	Tammisaari	Fe	Also = Hermala	In the 18th century	1847	*18*	*14,0*	Magnetite, Pyrite	*37 Fe*	Westling 1835, ValtGolds 1837, Holmberg 1858 s. 41, Moberg 1891 s. 23, Knorring 1955, Raetsu 1982
Hästö-Älgö	Tammisaari	Fe	On the island	1841	1841	*15*	*13,5*	Magnetite	*30 Fe*	ValtGolds 1841, Tengström 1841
Hörsholmen	Tammisaari	Fe	Also = Hårsholm	1841	1841	*15*	*13,5*	Magnetite	*30 Fe*	Westling 1835, LGoldraeus 1844, ¨Furuhjelm 1884, Knorring 1955
Jussarö	Tammisaari	Fe	Also = Jussaari, Jouhisaari, Juurisaari, Juksare, Jussar; quarries Western, Central, Sea	1834	1834-1861, 1898-1900, 1957-1967	2 000 421	1 645 758	Magnetite	28.0 Fe	Westling 1835, Holmberg 1858 s. 42, Teollisuushallitus 1900, Laine 1929, Laine 1952, Knorring 1955, Stolpe et al 1962, Mikkola et al 1966, Raetsu 1982, Sirén 1997, Blomgren 1999
Kelkkala	Tammisaari	Fe	Quarries at least Fältberg, Kiimasuo, Quickens (Kvik) and others	1686	1690-1707, 1786-1787, 1853-1864, In the early 20th century	*2 739*	*2 191*	Magnetite, Pyrite	*35 Fe*	Sawenius 1825, ValtGolds 1840, Wathén 1856, Holmberg 1858 s. 44, Hultin 1897 s. 261, Pyhälä 1905, Tavela 1950, Laine 1952, Knorring 1955, Sipilä 1981, Raetsu 1982
Kullaa	Tammisaari	Fe	In the hospital	1728	1740-I	*15*	*13,5*	Magnetite		Bremer 1825 s. 91, Wathén 1856, Holmberg 1858 s. 46, Furuhjelm 1884, Hultin 1897 s. 268
Lerharun	Tammisaari	Fe	Old mines in the Jussarö area	1814	1817	*15*	*13,5*	Magnetite		ValtGolds 1817, Westling 1835, Holmberg 1858 s. 43, Mikkola 1966
Lökholmen	Tammisaari	Fe	Between Älgo and Jussarö	1834	1835-1841	*653*	522,0	Magnetite, Chalcopyrite	*40 Fe*	Westling 1835, ValtGolds 1835, Holmberg 1858 s. 42, Moberg 1891 s. 23, Laine 1952, Knorring 1955, Sipilä 1981, Raetsu 1982
ModermSilvera	Tammisaari	Fe	On the islet east of Älgö	1841	1841	*15*	*13,5*	Magnetite, Scheelite	*30 Fe*	ValtGolds 1841, LGoldraeus 1844, Holmberg 1858 s. 41, Knorring 1955
Nothamn	Tammisaari	Fe	On the southeast coast of the island of Bylandet	In the 18th century?	1847?	*15*	*13,5*	Magnetite		Furuhjelm 1884, Eskola 1923, Härme 1960
Näsudden	Tammisaari	Fe	In Lahti, between Kallio Näsudden and Älgo itself	1886	1886	*15*	*13,5*	Magnetite	*30 Fe*	ValtGolds 1886, Remmler 1888, Eskola 1923
Perskomböle	Tammisaari	Fe	In the hospital	In the 18th century	1829-1830, 1843, 1858-1865	*414*	331,0	Magnetite, Pyrite	*37 Fe*	Wathén 1856, Holmberg 1847 s. 13, ValtGolds 1857, Holmberg 1858 s. 44, Furuhjelm 1884, Pyhälä 1905, Laine 1948 s. 123, Laine 1950 s. 151, Laine 1952, Knorring 1955, Sipilä 1981

Table A1-17. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Pertsjö	Tammisaari	Fe	Also = PerkGolds ?; In the hospital	In the 18th century	Vanhat, 1842	*15*	2,0	Magnetite	*37 Fe*	Holmberg 1858 s. 44, Furuhjelm 1884
Stenlandet-Orrkobben	Tammisaari	Fe	New mines in the Jussarö area	1898	1898, 1919-1921, 1957-1967	*15*	*13,5*	Magnetite	*28 Fe*	Knorring 1955, Stolpe et al 1962, Mikkola 1966, Saksela 1970
Storbacka-pohjoinen	Tammisaari	Fe	Old mines in the Jussarö area	In the 18th century	1840?-1864?	*15*	*13,5*	Magnetite		Tavela 1950, Knorring 1955, Sipilä 1981, Raetsu 1982
Utterharun	Tammisaari	Fe	Old mines in the Jussarö area	1841	1841	*15*	*13,5*	Magnetite	32 Fe	ValtGolds 1841, Furuhjelm 1884
Ängsholm	Tammisaari	Fe	Between Älgo and Gullö	1846	1847-1865	*1 787*	1 429,0	Magnetite, Pyrrhotite	*35 Fe*	ValtGolds 1847, Thoreld 1852, Wathén 1853, Holmberg 1857 s. 12, Holmberg 1858 s. 41, Moberg 1891 s. 23, Laine 1952, Knorring 1955, Raetsu 1982
Runsala	Turku	Fe	Location inaccurate	1730	1730-l, 1852?	*15*	*13,5*	Magnetite		Tilas 1738 s. 4, Gadd & GlAsbestosrg 1795, Bremer 1824 s. 64, ValtGolds 1852, Wathén 1856, Holmberg 1858 s. 71, Furuhjelm 1884, Hultin 1897 s. 268
Uittamo	Turku	Fe	An old mining company	1738e	1744, 1780-l	*15*	*13,5*	Magnetite	*30 Fe*	Tilas 1738 s. 5, Gadd & Gummerus 1795, Bremer 1824 s. 3, Wathén 1856, Holmberg 1858 s. 71, Hultin 1897 s. 267, Kulonpalo 1959
Gamla Vasa	Vaasa	Fe	It is also said to have been a lead mine	1643e	1781	*15*	*13,5*	Magnetite		Fought 1780-1785, Wathén 1856, Holmberg 1858 s. 111, Tegengren 1934, Puukko 1981, Turkka 1994
Matkusjokimäki	Vampula	Fe	Also = Matkusjoki (once), probably also = Vuorenmaa; location inaccurate	1759e	1856	*15*	2,0	Magnetite, Ilmenite	*30 Fe*	Gadd & Carenius 1759, Bremer 1824 s. 125, LGoldraeus 1855, LGoldraeus 1856, LGoldraeus 1857, Härme 1960
Susimäki	Vampula	Fe	Also = Sudenmaa, Sudenmäki	1847	1855-1864	*314*	251,0	Magnetite, Ilmenite	33 Fe, 8.4 Ti, 0.2 V2O5	LGoldraeus 1855, ValtGolds 1855, Holmberg 1857 s. 35, Wathén 1857, Holmberg 1858 s, 99, Wilkman 1898 s. 47, 54, Palmunen 1925, Pääkkönen 1960, Laine 1950 s. 157, Laine 1952
Böle	Vantaa	Fe	Also = Variston Kiveliönmäki	1846	1846-1847	*36*	28,0	Magnetite	*32.8 Fe*	ValtGolds 1846, Holmberg 1857 s. 8, Holmberg 1858 s. 12, Furuhjelm 1884, Saltikoff et al 1994
Frihers	Vantaa	Fe	Also = Free space	1770?	1770, 1850-l	*15*	*13,5*	Magnetite, Pyrite		Visapää 1967, Saltikoff et al 1994
Kopparberg	Vantaa	Fe	Also = Copper lining	1841	1841-1843	*59*	47,0	Magnetite	*30 Fe*	Gussander 1841, Saltikoff et al 1994
Kårböle-itä	Vantaa	Fe	Also = Kaarela east	1747	1747, 1836-1842	*77*	61,0	Magnetite, Pyrite	*38.5 Fe*	ValtGolds 1747, 1836, Holmberg 1858 s. 8, Hultin 1897 s. 266, Härme 1980, Laine 1952, Visapää 1967, Saltikoff et al 1994
Kårböle-länsi	Vantaa	Fe	Also = Kaarela west	1747	1747, 1836-1842	*15*	*13,5*	Magnetite, Pyrite	*38.5 Fe*	Holmberg 1858 s. 8, Hultin 1897 s. 266, Härme 1980, Laine 1952, Visapää 1967, Saltikoff et al 1994
Lindö	Vantaa	Fe	Location inaccurate	1841	1841?	*15*	*13,5*	Magnetite		Albrecht 1839-44, Holmberg 1858 s. 7, Furuhjelm 1884
Mårtensby	Vantaa	Fe	Also = Martinkylä or Qmernbacka of Holmberg (1858)	1670	1769, 1825, 1840, 1860	*23*	*15,0*	Magnetite	*31 Fe*	Bremer 1825 s. 49, ValtGolds 1840, Holmberg 1858 s. 11, Visapää 1967, Saltikoff et al 1994
Sillböle	Vantaa	Fe	Also = Lindersbergs jerngruva or Kaivoksela; quarries Large, Small, New, Sloping and others	1744	1744-1770, 1786-1788, 1823-1866	*44 256*	35 405,0	Magnetite	*45 Fe*	ValtGolds 1823, Sawenius 1825, Holmberg 1858 s. 9, Hultin 1897, Tammekan 1925, Laine 1952, Knorring 1955, Visapää 1967, Raetsu 1982, Saltikoff et al 1994
Tavastby-Lönnäs	Vantaa	Fe	Also = Hämeenkylän Lönnäsgrufvan and Löfbergsgrufvan	1769	1769, 1786-1888, 1825-1860	*15*	*13,5*	Magnetite	*42.3 Fe*	Lundström 1814 s. 13, Holmberg 1858 s. 11, Wiik 1865, Moberg 1888, Laine 1952, Knorring 1955, Visapää 1967, Vantaan kGoldpunki 1981, Raetsu 1982, Saltikoff et al 1994
Tavastby-Nya	Vantaa	Fe	Also = Hämeenkylä Nya Grufvan (Uusikaivos) and Bygrufvan (VillSilvere Mine)	1769	1769, 1786-1788, 1825-1860	*15*	*13,5*	Magnetite	*42.3 Fe*	Lundström 1814 s. 13, Holmberg 1858 s. 11, Wiik 1865, Moberg 1888, Laine 1952, Knorring 1955, Visapää 1967, Vantaan kGoldpunki 1981, Raetsu 1982, Saltikoff et al 1994
Tavastby-Stora	Vantaa	Fe	Also = Hämeenkylän Stora Kärrgrufvan (Large Swamp Mine)	1769	1769, 1786-1888, 1825-1860	*23 803*	19 043	Magnetite	*42.3 Fe*	Lundström 1814 s. 13, Holmberg 1858 s. 11, Wiik 1865, Moberg 1888, Laine 1952, Knorring 1955, Visapää 1967, Vantaan kGoldpunki 1981, Raetsu 1982, Saltikoff et al 1994
Jouhilahti	Varpaisjärvi	Fe	Also = Rahosenmäki; quarries Adolf, Gustaf	1848	1848-1850	*1 001*	800	Hematite, Chalcopyrite	20 Fe	ValtGolds 1848, LGoldraeus 1849, Thoreld 1856, Holmberg 1857 s. 53, Holmberg 1858 s. 214, Rein 1864, Laine 1950 s. 144, Laine 1952, Raetsu 1982

Table A1-18. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Ansomäki	Viljakkala	Fe	Mines in the Haver area	1737	1738	234	187	Magnetite, Chalcopyrite	*40 Fe*	Tilas 1738 s. 27, Gadd & Sandmark 1789, Holmberg 1858 s. 105, Furuhjelm 1884, Hultin 1897 s. 269
Haveri-rGoldta	Viljakkala	Fe	Also = Kyrö, an old iron mine; quarries Riihi, SGoldna, Workshop	1790	1794-1824, 1836-1866	*2 214*	1 691	Magnetite	*50 Fe, 1.18 S, 0.6 TiO2*	Westling 1825, Holmberg 1858 s. 104, Furuhjelm 1884, Hultin 1897 s. 269, Laine 1952, Stigzelius 1944, Raetsu 1982
Otanmäki	Vuolijoki	Fe	Mined iron, titanium and vanadium ores	1938	1949-1985	33 073 218	25 423 564	Magnetite, Ilmenite	33.92 Fe, 7.57 Ti, 0.26 V, 0.65 S	Pääkkönen 1952, Pääkkönen 1956, Harki et al 1955, Raetsu 1982, Illi et al 1985, Seppälä 1999
Vuorokas	Vuolijoki	Fe	Otanmäki satellite mine	1938	1965-1985	*1 871 000*	*1 348 000*	Magnetite, Ilmenite	34 Fe, 7.5 Ti, 0.2 V	Pääkkönen 1952, Pääkkönen 1956, Harki et al 1955, Raetsu 1982, Illi et al 1985
Boberget	Västanfjärd	Fe	An old iron mine with only Magnetiteetic and Pyrite pyrite	1558e	1744?	*15*	*13,5*	Magnetite, Pyrrhotite, Pyrite		LGoldraeus 1846, Holmberg 1858 s. 87, Hultin 1897 s. 15
Bofall	Västanfjärd	Fe	Chemistry iron ore topics	1840e	1840-1841	*15*	*13,5*	Magnetite, Pyrite		LGoldraeus 1842, Laine 1950 s. 53, Lindroos 1987
Galtarby	Västanfjärd	Fe	Chemistry iron ore topics	1736	1736	*15*	*13,5*	Magnetite, Pyrite	*30 Fe*	Hannu Seppänen 1997
Lammala-rGoldta	Västanfjärd	Fe	There is also a lime quarry on site	1825e	1825e	*15*	*13,5*	Magnetite, Pyrrhotite, Pyrite		Holmberg 1857 s. 31, Holmberg 1858 s. 85, Furuhjelm 1884, Eskola 1919
Vittinki	Ylistaro	Fe	Also = Silfverberg	1563	1500-l, 1659, 1829-1830, 1850, 1919-1920	*617*	494	Magnetite, Rhodonite, Pyrrhotite, Pyrite	*32 Fe*	Westling 1829, Holmberg 1858 s. 113, Furuhjelm 1886, Hultin 1897, Saksela 1925, Laine 1952, Raetsu 1982
Karhujupukka	Ylitornio	Fe	Also = Bear Danger; location inaccurate	1736	1846	*15*	*13,5*	Magnetite		Hermelin 1804, ValtGolds 1839, Thoreld 1852-1861, Wathén 1856, Wathén 1858, Holmberg 1857 s. 49, Holmberg 1858 s. 187, Wathén 1858, Rein 1867, Eskola 1923, Laine 1952 s. 388
LGoldkunkangas	Enonkoski	Ni	Also = Enonkoski	1979	1984-1994	8 391 565	6 658 841	Pyrrhotite, Chalcopyrite, Pentlandite	0.76 Ni, 0.22 Cu	Grundström 1982, Alopaeus et al 1986, Pöyry & Isomäki 1996
Hälvälä	Kerimäki	Ni	The first ore reference from 1969	1970	1988-1992	535 427	249 133	Pyrrhotite, Chalcopyrite, Pentlandite	1.41 Ni, 0.35 Cu	ValtGolds 1970, Eeronheimo 1983, Isomäki 1994, Pöyry & Isomäki 1996
Sirkka	Kittilä	Ni	Also = Sirkka Kuukeri	1939	1953-1956	15 000	9 500,0	Pyrrhotite, Chalcopyrite	*0.50 Cu, 0.90 Ni, 0.16 Co, 1.0 Gold*	Vesanto 1979, Inkinen 1985, Blomgren 1999, Räisänen 1999
Kylmäkoski	Kylmäkoski	Ni	Also = Taipale	1962	1971-1974	839 586	689 616	Pyrrhotite, Chalcopyrite, Pentlandite	0.36 Ni, 0.27 Cu	Papunen 1976, Warma et al 1973
Kotalahti	Leppävirta	Ni	The largest occurrence in the nickel zone of Kotalahti	1954	1957-1987	13 738 767	12 357 630	Pyrrhotite, Chalcopyrite, Pentlandite	0.66 Ni, 0.26 Cu, 3.76 S	Annala 1960, Turunen et al 1960
Tainiovaara	Lieksa	Ni	Small deposit of nickel	1975	1989	19 984	18 785	Pyrrhotite, Chalcopyrite, Pentlandite	1.40 Ni, 0.12 Cu, 3.48 S	Pekkarinen 1980, Vanne 1981
Petolahti	Maalahti	Ni	Near Korsnäs	1957	1972-1973	114 608	85 738	Pyrrhotite, Chalcopyrite, Pentlandite	0.47 Ni, 0.38 Cu	Ervamaa 1962, Himmi 1975
Hitura	Nivala	Ni	Also mined as a raw material for nickel compounds, still in operation in 2002	1963	1965-	22 599 793	11 149 379	Pyrrhotite, Chalcopyrite, Pentlandite	0.60 Ni, 0.22 Cu	Isohanni et al 1985, Mäki 1997, Papunen et al 1997
Makola	Nivala	Ni	Finland's first nickel mine	1937	1941-1954	427 979	410 273	Pyrrhotite, Chalcopyrite, Pentlandite	0.74 Ni, 0.44 Cu	Huhta 1954, Isohanni et al 1985, Kuisma 1985, Lukkarinen 1997, Mäki 1997
Petsamo	Petsamo	Ni	Also = KGoldlatunturi, Kamminkivitunturi	1921	1936-1944	*526 849*	456 193	Pyrrhotite, Chalcopyrite, Pentlandite	3.87 Ni, 1.96 Cu	Väyrynen 1938, Haapala et al 1945, Goldtere & Liede 1989, Nirkko et al 1990, Lukkarinen 1997 s. 64, Vahtola & Onnela 1999
Kitula	Puumala	Ni	Small deposit of nickel	1951	1970	59 185	18 785	Pyrrhotite, Chalcopyrite, Pentlandite	0.67 Ni, 0.24 Cu, 4.40 S	Marmo & Hyvärinen 1951, Marmo 1955, Viluksela & Goldlanko 1969
Talvivaara	Sotkamo	Ni	Large occurrence of black shale	1717	1734, 1981-1982	46 250	37 000	Pyrrhotite, Sphalerite, Chalcopyrite, Graphite	0.35 Ni, 0,60 Zn, 0.14 Cu, 0.03 Co	Kalm & Castrén 1754, Bremer 1824 s. 175, Holmberg 1858 s. 181, Järvinen 1983, Kerola 1995, Loukola-Ruskeeniemi 1995, Pekkarinen & Sandberg 1996, Wilmi 1997

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table A1-19. Historical metal mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Metal	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore Minerals Mined	Concentrations (%, g/t)	Literature references
Telkkälä	Taipalsaari	Ni	Two operating cycles	1961	1969-1970, 1988-1992	948 295	605 396	Pyrrhotite, Chalcopyrite, Pentlandite	1.29 Ni, 0.33 Cu	Häkli et al 1975, Eeronheimo & Pietilä 1988, Isomäki 1994
Porttivaara	Taivalkoski	Ni	Dog enrichment on site	1962	1967	1 800	*1 260*	Pyrrhotite, Chalcopyrite, Pentlandite	*0.1 Ni, 0.2 Cu*	ValtGolds ehkä 1962, Stigzelius et al 1970 s. 40, Goldlanko 1971, Viluksela 1988 s. 28, Lukkarinen 1997 s. 255
Stormi	Vammala	Ni	Also = Injury	1961	1974-1995	9 586 498	4 565 368	Pyrrhotite, Chalcopyrite, Pentlandite	0.68 Ni, 0.42 Cu	Vanha-Honko et al 1984, Liipo et al 1997
Elijärvi	Keminmaa	Cr	Also = Kemi; The only chrome mine in Finland, still in operation in 2002	1959	1966-	148 131 738	27 167 644	Chromite	25,48 Cr2O3	Kahma et al 1962, Räisänen et al 1971, Alapieti et al 1989, Huhtelin 1997
Mätäsvaara	Lieksa	Mo	The only molybdenum mine in Finland	1903	1910-l, 1920-1922, 1932-1933, 1940-1947	1 191 545	1 154 053	Molybdenite	0.14 MoS2	Zeidler 1949, Zeidler 1950, Kulonpalo & Marmo 1956, Littunen 1985, Lukkarinen 1997 s. 66, Blomgren 1999, Räisänen 2001b
Lakeakallio	Askola	U	Also = Askola; Excavated by Imatran Voima Oy	1956	1957-1959	707	557	Uraninite, Uraninite	0.12 U	ValtGolds 1956, Laitakari & Simonen 1963, IUREP 1981
Luhti	Askola	U	Excavated by Imatran Voima Oy	1957	1960	*6*	*5,4*	Uraninite	*0,1 U3O8*	ValtGolds 1957, Härme 1978
Hermanni	Eno	U	Atomienergia Oy excavated	1958	1959	15	13,5	Uraninite		Piirainen 1963
PGoldkkajanvaara	Eno	U	Also = Mårtensson ore; Atomienergia Oy excavated	1958	1958-1961	70 089	40 325	Uraninite, Uraninite	0.14 U	Tyni 1960, Räisänen 1961, Tyni 1962, Piirainen 1968, IUREP 1981, Makkonen et al 1988, Tyni 1991, Pölönen 1999, Kohonen & Piirainen 2000, Jakobsson 2002
Riutta	Eno	U	Also = Crucifixion	1958	1959	*15*	*13,5*	Uraninite, Chalcopyrite, Pyrite	*0,1 U3O8*	Piirainen 1963, IUREP 1981, Äikäs 1989
Nuottijärvi	Paltamo	U	Outokumpu Oy excavated	1959	1965	*1 084*	867	Uraninite, Apatite	*0.04 U, 4.0 P2O5*	Stigzelius et al 1970 s. 127, IUREP 1981, Papunen 1986
Käldö	Pernaja	U	Originally a quarry at Pernå Oy	1956	1959	*135*	90,0	Uraninite, Chalcopyrite	0,3 U3O8	ValtGolds 1956, Pernå Oy 1968
Otravaara	Eno	S	Kisumu ore mining companies, possibly also a little copper ore	Before the year 1828	Before the year 1828, 1918-1924	30 044	23 882	Pyrite, Chalcopyrite, Pyrrhotite, Sphalerite	*41 S*	Furman 1828, Holmberg 1858 s. 217, Frosterus & Wilkman 1920, Saksela 1923, Saksela 1936, Palmunen 1937, Suomen Mineraali 1947, Nieminen 1950, Männikkö et al 1987, Seppälä 1995, Seppälä 1999
Karhunsaari	Liperi	S	Mining companies	1921	1923-1924	4 725	3 150	Pyrite, Chalcopyrite	*37 S*	ValtGolds 1921, Eskola 1923, Saksela 1933, Laitakari 1937, Goldrola 1955
Tipasjärvi	Sotkamo	S	Mining companies	1913	1918-1920	*1 012*	810	Pyrite, Pyrrhotite, Chalcopyrite, Magnetite	*34 S*	Fougt 1780, ValtGolds 1916, Suomen Mineraali 1947, Vartiainen 1965, Stigzelius et al 1970, Taipale 1983, Weiste 1997
Total metal mines						**481 473 407**	**271 057 096**			

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

10 APPENDIX B – LIST OF HISTORICAL INDUSTRIAL MINERAL MINES

Table B1-1. Historical industrial mineral mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Concentrations (%, g/t)	Literature references
Sokli	Savukoski	Apatite	Carbonatite deposits in the Kola Peninsula	1967	1978-1980	70 960	56 720	Apatite, Francolite, Pyrochlore	*20 Apatite*	Vartiainen 1980, Vartiainen 2001
Saarinen	Siilinjärvi	Apatite	Exploration mining only	1958	1966	1 000	1 000	Apatite, Carbonate, Phlogopite	*11 Apatite*	Puustinen 1971, Puustinen & Kauppinen 1989, Lukkarinen 1997 s. 253
Siilinjärvi	Siilinjärvi	Apatite	Also = large quarries in Särkijärvi, still in operation in 2002	1958	1966-	191 793 567	144 259 709	Apatite, Carbonate, Phlogopite	*8 Apatite, Calcite, Mica*	Puustinen 1971, White 1984, Puustinen & Kauppinen 1989, Lukkarinen 1997 s. 253, 269, Seppälä 1999, Härmälä & Liferovich 2001
Leppälahti	Liperi	Talc	Talper deposits	1920e	1950-1956	1 440	1 140	Talc, Dolomite	*33 Talc*	Frosterus & Wilkman 1920, Valtaus 1946, Aurola 1951, Aurola & Nieminen 1954, Vesasalo 1961, Vesasalo 1965
Kinttumäki	Outokumpu	Talc	Production is marked in connection with Maljasalmi	1825e	1949-1953?	*48 401*	32 267	Talc, Magnetiteesite	*32 Talc, Asbestos*	Nieminen 1950, Aurola & Nieminen 1954, Vesasalo 1965
Jormua	Paltamo	Talc	Talc deposits in Paltamo	1952e	1952-1971	163 694	153 624	Talc, Magnetiteesite	*59 Talc*	Aurola & Nieminen 1954, Vesasalo 1965, Stigzelius et al 1970
Mieslahti	Paltamo	Talc	Talc deposits in Paltamo	1987e	1987-1994	97 887	64 084	Talc, Magnetiteesite	*45 Talc, Ni*	Vesasalo 1965
Pitkäperä	Paltamo	Talc	Talc deposits in Paltamo	1949e	1949	*20*	*16*	Talc, Magnetiteesite	*50 Talc*	Nieminen 1950, Vesasalo 1951, Vesasalo 1951b,Wiik 1953, Vesasalo 1956, Stigzelius et al 1970
Horsmanaho	Polvijärvi	Talc	The largest talc mine in Polvijärvi, still in operation in 2002	1976	1981-	11 860 336	5 939 664	Talc, Magnetiteesite	*45 Talc, Ni*	Wiik 1953, Vesasalo 1965, Valtaus 1976, Astala 1982, Kuronen & Tuokko 1997
Lipasvaara	Polvijärvi	Talc	Performances Pienisuo, Juurikorpi and Nenäsensuo	1965e	1983-2000	3 897 290	1 883 654	Talc, Magnetiteesite	*44 Talc.Ni*	Vesasalo 1965, Valtaus 1976, Huopaniemi 1983
Pehmytkivi	Polvijärvi	Talc	Horsmanaho satellite mine, still operational in 2002	1995	2000-	475 804	163 920	Talc, Magnetiteesite	*46 Talc, Ni*	Valtaus 1995, Kauppa- ja teollisuusministeriö 2001
Repovaara	Polvijärvi	Talc	Also = Sola, Mess	1825e	1979-1991	1 021 220	716 444	Talc, Magnetiteesite	*45 Talc, Ni*	Bremer 1825 s. 168, Frosterus & Wilkman 1920, Huopaniemi 1978, Huopaniemi 1986
Vasarakangas	Polvijärvi	Talc	Also = Kangas (in Polvijärvi)	1936e	1977-1982	1 788 666	1 054 054	Talc, Magnetiteesite	*44 Talc, Ni*	Haapala 1936, Vesasalo 1965, Saikkonen 1975
Säyneenjoki	Siilinjärvi	Talc	Also = Ukonlahti, Ukonlaks or Okonlaks	1830e	1830e	*20*	*16*	Talc, Magnetiteesite		Westling 1830, Holmberg 1857 s. 52, Holmberg 1858 s. 210
Lahnaslampi	Sotkamo	Talc	Finland 's largest talc mine, still in operation in 2002	1955	Since 1961	28 621 276	12 873 523	Talc, Magnetiteesite	*43 Talc, Ni*	Wilkman 1921, Vesasalo 1965, Stigzelius et al 1970, Juntunen 1971, Tuokko 1992
Uutela	Sotkamo	Talc	Also = Talvivaara talc mine	1814e	1853?, 1992	59 894	40 894	Talc, Magnetiteesite	*44 Talc*	Lundström 1814, Deutsch 1819, Valtaus 1853, Holmberg 1857 s. 45, Mäkinen 1920, Wilkman 1921, Vesasalo 1965, Konttinen 1967, Kopperoinen 1970, Stigzelius et al 1970 s. 135
Koutaniemi	Kajaani	Mica	Also = Tupurinkalloti or Paljakankallni	1931e	1943	*1 500*	*150*	Muscovite, Beryl		Wilkman 1931, Hall 1936, Aurola 1951, Alviola 1969
Glimmerbrottet	Kisko	Mica	A small mica deposit in the Orijärvi area	1825e	1825e	*30*	*15*	Mica		Sawenius 1825, Holmberg 1858 s. 51
Kankkusenkallio	Kitee	Mica	A small mining company	1940-l	1940-l	*30*	*15*	Muscovite		Laitakari 1946 s. 22, Nykänen 1975

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table B1-2. Historical industrial mineral mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Concentrations (%, g/t)	Literature references
Kutemajärvi-Micale	Orivesi	Mica	Also = Sericite	1946	1947	*30*	*15*	Sericite, Kaolinite		Valtaus 1946, Laitakari 1947, Hämäläinen 1973, Siivonen 1984
Yliskylä-Orivesi	Orivesi	Mica	Also = Lake Kutemajärvi; compare the current Kutemajärvi gold mine	1946	1947-1957	*4 000*	*1 000*	Sericite, TOPA	*25 Mica*	Hämäläinen 1973, Grönholm 1995
Höllärinvaara	Eno	Quartz	Partek Oy excavated	1855e	1970-l	*30*	*24*	Quartz, Quartz		Aurola 1959
Ilokallio	Eno	Quartz	Also = Hirvivaara; Quartzite deposits in the Koli period	1855e	1935	*30*	*24*	Quartz, Quartz	*80 Quartz*	Nordenskiöld 1855, Holmberg 1858 s. 219, Aurola 1959, Pölönen 1999
Porraskorpi	Eno	Quartz	Quartzite deposits in the Koli period	1855e	1949	600	40	Quartz, Quartz	*100 Quartz*	Nordenskiöld 1855, Holmberg 1858 s. 219, Aurola 1959
Severinkallio	Eno	Quartz	Quartzite deposits in the Koli period	1855e	1930-l	*30*	*24*	Quartz, Quartz		Nordenskiöld 1855, Holmberg 1858 s. 219, Aurola 1959, Marmo 1988
Ihotinsuo	Anjalankoski	Diatomite	Suomen Mineraali Oy raised	1947e	1957e	0	0	Diatomite		Suomen Mineraali 1947, Laitakari 1951, Nieminen 1957
Kilonsuo	Anjalankoski	Diatomite	Suomen Mineraali Oy raised	1928	1928-1957e	0	0	Diatomite		Suomen Mineraali 1947, Laitakari 1951, Nieminen 1957
Kuona	Haapajärvi	Diatomite	Suomen Mineraali Oy raised	1947e	1957e	0	0	Diatomite		Suomen Mineraali 1947, Laitakari 1951, Nieminen 1957
Riihijärvi	Isojoki	Diatomite	Location inaccurate	1957e	1957e	0	0	Diatomite		Nieminen 1957
Lintumaanlampi	Kalvola	Diatomite	Also = Ahlajärvi	1826e	1957a	0	0	Diatomite		Tengström 1826, Holmberg 1858 s. 137, Sederholm 1892 s. 82, Furuhjelm 1886, Nieminen 1957
Lummukka	Kauhava	Diatomite	Diatomaceous earth deposits in Ostrobothnia	1957e	1957e	0	0	Diatomite		Nieminen 1957
Pieni-Sulkava	Kiuruvesi	Diatomite	Location inaccurate	1957e	1957e	0	0	Diatomite		Nieminen 1957
Lehtijärvi	Kurikka	Diatomite	Location inaccurate	1957e	1957e	0	0	Diatomite	-	Nieminen 1957
Leksu	Outokumpu	Diatomite	Suomen Mineraali Oy raised	1949e	1949	0	0	Diatomite		Nieminen 1950
Komu	Pyhäsalmi	Diatomite	Also = Vähä-Komujärvi; in 1925 it has been in operation for at least 100 years	1825e	Vanhat, 1926-1970	0	0	Diatomite		Suomen Mineraali 1947, Laitakari 1951, Nieminen 1957
Bolaskäret	Dragsfjärd	Graphite	In the hospital	1888e	1888e	*30*	*9*	Graphite		Moberg 1888 s. 32
Pekola	Heinävesi	Graphite	Location inaccurate	1899	1920e	*30*	*9*	Graphite	*16 C*	Pönnelin 1899, Frosterus & Wilkman 1920 s. 171, Frauenfelder 1924 s. 35, Laitakari 1925 s. 41, Eskola 1936 s. 611
Haukkamäki	Impilahti	Graphite	Also = Konkanmäki	1830-l	1830-l	*80*	*24*	Graphite		Valtaus 1830-l, Lisitzin 1892 s. 149, Laitakari 1925
Matkalampi	Impilahti	Graphite	Also = LeppäSillimanitea graphite mine	1862	1862	*30*	*9*	Graphite		Valtaus 1862, Lisitzin 1892 s. 151
Pusunsaari-Graphiteiitti	Impilahti	Graphite	Location inaccurate	1830-l	1847-1853	*550*	*165*	Graphite	*15.8 C*	Sobolevski 1839, Valtaus 1847, Holmberg 1857 s. 63, Holmberg 1858 s. 248, Furuhjelm 1886, Lisitzin 1892 s. 153, Abrahamsson 1898, Frauenfelder 1925 s. 28, Laitakari 1925 s. 53, Palmunen 1939

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table B1-3. Historical industrial mineral mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Concentrations (%, g/t)	Literature references
Iritämäki	Kiikala	Graphite	Also = Hopiamäki or Källö; location inaccurate	1825e	1857e	*30*	*9*	Graphite, Pyrrhotite, Pyrite	*50 Graphite*	Sawenius 1825, Holmberg 1857 s. 33, Holmberg 1858 s. 91, Furuhjelm 1884, Laitakari 1925 s. 13
Jynkkä-Graphiteiitti	Kuopio	Graphite	Graphite deposits in the Kuopio area	1898e	1898e	*30*	*9*	Graphite, Quartz, Potassium feldspar	*38 C*	Abrahamsson 1898, Frosterus 1901b, Mäkinen 1920, Frauenfelder 1924, Laitakari 1925, Wilkman 1938, Sarapää 1982
Laivonsaari	Kuopio	Graphite	Graphite deposits in the Kuopio area	1792e	1863?-1917e	*50*	*20*	Graphite, Quartz, Muscovite, Potassium feldspar	*53 C*	Rinman 1792, Valtaus 1863, Thoreld 1863, Abrahamsson 1898, Frosterus 1901b, Mäkinen 1920, Frauenfelder 1924, Laitakari 1925, Wilkman 1938
Kultakallio	Leppävirta	Graphite	Also = Haakamäki Gold Rock	1865	1860-1870-l, In the early 20th century	*60*	*18*	Graphite	*50 Graphite*	Valtaus 1865, Abrahamsson 1898, Frosterus & Wilkman 1920, Frauenfelder 1924, Laitakari 1925, Virkkunen 1967, Hovi 1995
Käärmerinne	Leppävirta	Graphite	Also = Haapamäki Snake Slope	1865	1860-1870-l, In the early 20th century	*1 200*	*240*	Graphite	*50 Graphite*	Valtaus 1865, Abrahamsson 1898, Pönnelin 1899, Frosterus 1901, Frosterus & Wilkman 1920, Mäkinen 1920 s. 44, Laitakari 1925, Virkkunen 1967, Hovi 1995
Suurenkahanvuori	Leppävirta	Graphite	Also = Haapamäki Suurikaha	1865	1860-1870-l, In the early 20th century	*1 000*	*200*	Graphite	*50 Graphite*	Valtaus 1865, Abrahamsson 1898, Frosterus & Wilkman 1920, Laitakari 1925, Virkkunen 1967, Hovi 1995
Kärpälä	Mäntyharju	Graphite	Also = Karanganmäki	1830e	1850-l, 1917?, 1936-1947	*10 000*	600	Graphite	*39 C*	Westling 1830, Holmberg 1858 s. 202, Furuhjelm 1887, Abrahamsson 1898, Frosterus 1901b, Mäkinen 1920 s. 44, Frauenfelder 1924, Laitakari 1925, Mikkonen & Airas 1966, Simonen 1982
Viitaniemi-Nummi	Nummi-Pusula	Graphite	Once considered a promising graphite subject	1824e	1858e	*30*	*9*	Graphite	*5 C*	Westling 1824-39, Holmberg 1858 s. 31, Furuhjelm 1884, Frauenfelder 1924 s.33, Laitakari 1925 s. 14, Eskola 1936 s. 611
Likasenlahti	Pertunmaa	Graphite	Also = Rotating Pond or Slack	1850e	1850-l	*30*	*9*	Graphite		Abrahamsson 1898, Mäkinen 1920, Frauenfelder 1924, Laitakari 1925 s. 26, Mikkonen & Airas 1966, Simonen 1982
Heimari	Ristiina	Graphite	Also = Ala-Heimari	1814e	1815, 1917?	*30*	*9*	Graphite	*100 Graphite, 15 C*	Frauenfelder 1924, Laitakari 1925 s. 31
Pahkorinmäki	Salo	Graphite	Also = Pahkavuori; location inaccurate	1825e	1825e	*30*	*9*	Graphite, Quartz, Pyrite		Sawenius 1825
Pihlajalahti	Savonlinna	Graphite	Location inaccurate	1865e	1865 jälkeen - ?	*30*	*9*	Graphite, Sillimanite		Valtaus 1865, Mäkinen 1920, Laitakari 1925, s. 43, Hackman 1933 s. 167
Talvisalo	Savonlinna	Graphite	Location inaccurate	1760e	1760e, 1850-l	*260*	*130*	Graphite, Garnet, Calcite	*31 Graphite*	Lundström 1814 s. 50, Bremer 1824, Holmberg 1857 s. 50, Holmberg 1858 s. 205, Abrahamsson 1898, Salenius 1909, Mäkinen 1920 s. 48, Laitakari 1925 s. 44, Hackman 1933 s. 167
Rönkönvaara	Savonranta	Graphite	Location inaccurate	1850e	1850-l	*30*	*9*	Graphite, Talc		Holmberg 1857 s. 51, Holmberg 1857b s. 7, Holmberg 1858 s. 204, Laitakari 1925 s. 47
Veljakankoski	Soanlahti	Graphite	Location inaccurate	1898e	1898e	*30*	*9*	Graphite	*30 C*	Aartovaara 1898, Mäkinen 1920 s. 47, Frauenfelder 1924 s. 44, Laitakari 1925 s. 58, Hausen 1930 s. 27, Eskola 1936 s. 611

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table B1-4. Historical industrial mineral mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Concentrations (%, g/t)	Literature references
Haavus	Sortavala	Graphite	Also = Opaque; Graphite deposits in the Sortavala area, material exported to St. Petersburg	1898e	1898e	*30*	*9*	Graphite		Abrahamsson 1898, Laitakari 1925
Pieni Tuoksjärvi	Sortavala	Graphite	Also = Kiimamäki; Graphite deposits in the Sortavala area	1830-la	1834-1860	*750*	*150*	Graphite	*40 Graphite*	Furuhjelm 1884, Abrahamsson 1898, Frosterus 1901b, Mäkinen 1920 s. 46, Laitakari 1925 s. 50, Hall 1936
Tulola	Sortavala	Graphite	Quarries Himinotsinmäki, Oravaniemi, Vannisensaari; Graphite deposits in the Sortavala area, location inaccurate	1858e	1858	*30*	*9*	Graphite	*50 Graphite*	Holmberg 1858 s. 241, Abrahamsson 1898, Laitakari 1925
Vorsumäki	Sortavala	Graphite	Graphite deposits in the Sortavala area	1814e	1814e	*30*	*9*	Graphite		Lundström 1814 s. 28, Holmberg 1858 s. 241, Furuhjelm 1884, Abrahamsson 1898, Laitakari 1925 s. 50
Karkkumäki	Suistamo	Graphite	Graphite deposits in the estuary, location inaccurate	1840	1840	*30*	*9*	Graphite		Valtaus 1840
Suonurmi	Suistamo	Graphite	Probably also = Pösö and Maisula or Suur Sarka (Sarga); Graphite deposits in the estuary, location inaccurate	1862	1862	*30*	*9*	Graphite	*50 Graphite*	Valtaus 1862, Furuhjelm 1884
Rääpysjärvi	Tuusniemi	Graphite	Also = Lead Rock	1901e	1917?	*30*	*9*	Graphite, Quartz, Chlorite	*60 C*	Frosterus 1901b, Frosterus & Wilkman 1920 s. 170, Frauenfelder 1924 s. 23, Laitakari 1925 s. 45
Sotka	Vammala	Graphite	Also = Bag Sotka or Tanni	1750-l	1917	*30*	*15*	Graphite	*30 C*	Mäkinen 1920, Frauenfelder 1924 s. 34, Laitakari 1925 s. 17, Eskola 1936 s. 611
Soukko	Vammala	Graphite	Also = Soukonperä; quarries Elder, Old Mine, Beach Lens	1750-l	1917	*1 000*	*500*	Graphite	*50 C*	Gadd & Sanmark 1789, Lauraeus 1857, Holmberg 1858 s. 103, Mäkinen 1920, Frauenfelder 1924, Mäkinen 1920, Laitakari 1925 s. 19, Matisto 1967
Vira	Vammala	Graphite	Graphite deposits in the Vammala area	1858e	1917	*30*	*15*	Graphite	*11 C*	Holmberg 1858 s. 102, Frauenfelder 1924, Laitakari 1925 s. 21, Eskola 1936 s. 611
Petronlampi	Kaavi	Asbestos	Asbestosstos has been experimentally mined in Luikonlahti at the northern end of Petronlampi	1936e	1936e	*30*	*15*	Asbestos		Haapala 1936, Vesasalo 1951, Aurola & Vesasalo 1954 s. 23
Maljasalmi	Outokumpu	Asbestos	Can also be = Algae?	1825e	1920e, 1943-1953	45 970	28 861	Asbestos, Talc	*67 Asbestos*	Bremer 1825 s. 168, Frosterus & Wilkman 1920, Suila 1950, Vesasalo 1951, Aurola & Vesasalo 1954 s. 20
Tiilikainen	Outokumpu	Asbestos	Asbestosstos deposits in the Outokumpu area	1920e	1937e	*30*	*15*	Asbestos		Frosterus & Wilkman 1920, Haapala 1936, Vesasalo 1951, Aurola & Vesasalo 1954 s. 24
Erolanniemi	Tuusniemi	Asbestos	Also = Rämämäki	1920e	1937e	*30*	*15*	Asbestos		Frosterus & WIlkman 1920, Vesasalo 1951, Aurola & Vesasalo 1954 s. 18
Hirviranta	Tuusniemi	Asbestos	Asbestosstos deposits in the Tuusniemi area	1920e	1937e	*7 000*	*3 500*	Asbestos		Frosterus & Wilkman 1920, Vesasalo 1951, Aurola & Vesasalo 1954 s. 16
Kiukoonniemi	Tuusniemi	Asbestos	Asbestosstos deposits in the Tuusniemi area	1920e	1937e	*30*	*15*	Asbestos		Frosterus & Wilkman 1920, Vesasalo 1951, Aurola & Vesasalo 1954, Halonen 1954
Paakkila	Tuusniemi	Asbestos	Asbestosstos has been known since the combed ceramic season	1898	1904-1910, 1918-1975	4 922 978	586 076	Asbestos	*66 Asbestos*	Frosterus 1899, Frosterus & Wilkman 1920, Nieminen 1944, Suomen Mineraali 1947, Suila 1950, Vesasalo 1951, Aurola 1954, Aurola & Vesasalo 1954 s. 19, Grönros 1956, Aurola 1960, Palomäki & Halonen 1968

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table B1-5. Historical industrial mineral mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Concentrations (%, g/t)	Literature references
Tiirikka	Tuusniemi	Asbestos	Also = Levälahti; Asbestosstos deposits in the Tuusniemi area	1920e	1937e	*30*	*15*	Asbestos		Vesasalo 1951, Aurola & Vesasalo 1954, Halonen 1954
Lemnäs-vuorivilla	Dragsfjärd	Industrial stone	Industrial stone deposits in the Pargas area	1966	1967	*500*	*500*	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Valtaus 1966, Boström 1967
Usmi	Hyvinkää	Industrial stone	Very good industrial stone deposits	1970	1971-1990	311 123	310 803	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Valtaus 1970, Heikkilä-Harinen 1977
Näträmälä	Imatra	Industrial stone	Industrial rock deposits in the Imatra region	1983	1984-1998	574 099	568 779	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Valtaus 1983 Åberg 1984
Kuurmanpohja	Joutseno	Industrial stone	Industrial rock deposits in the Imatra region	1979	1980-1994	296 376	296 376	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Valtaus 1979
Bålaby	Karjaa	Industrial stone	Industrial stone deposits in southern Finland	1970-la	1971-1975	96 113	84 668	Al, Fe-Aggregate for concrete	*100 Industrial stone*	Kauppa- ja teollisuusministeriö 1976
Sompujärvi	Keminmaa	Industrial stone	Industrial rock deposits in the Tornio region	1966	1977-1989	537 073	537 073	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Valtaus 1966, Airas & Auranen 1984, Perttunen 1991
Metsäsianniemi	Kiiminki	Industrial stone	Industrial stone deposits in the Oulu region	1991	1992-2000	295 174	286 076	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Valtaus 1991, Lundén 1992
Piilola	Kolari	Industrial stone	Excavated as additional material for the Äkäsjoki cement plant	1982	1982-1989	169 800	169 800	Al-Aggregate for concrete	*100 Industrial stone*	Valtaus 1982, Väänänen 1998
Kapteeninautio	Kontiolahti	Industrial stone	Next to the squat mine, the rock is rich in cyanite	1979	2000	20 000	20 000	Quartz, Andalusite, Quartz, Sericite	*100 Industrial stone (Quartz)*	Valtaus 1979, Marmo & Pekkala 1984, Valtaus 1995
Hoikkasuo	Kuivaniemi	Industrial stone	Also = Kuivaniemi	1970	1971-1980	167 427	167 427	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Valtaus 1970, Harinen 1977
Joutsenlampi	Lapinlahti	Industrial stone	Excavated by Kemira Oy, still in operation in 2002	1980	1998-	589 903	189 928	Plagioclase, Hornblende	*100 Industrial stone*	Valtaus 1987, Härmälä 1992
Teerisuo	Lapinlahti	Industrial stone	Kemira Oy excavated	1938e	1984	54 019	27 166	Plagioclase, Hornblende	*50 Industrial stone*	Wilkman 1938, Valtaus 1979, Jokinen 1983, Sotka 1988, Härmälä 1992
Vuorenrinne	Lappeenranta	Industrial stone	Also = Rutola	1965e	1971-1976	26 611	26 611	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Vorma 1965, Åberg 1973
Akkasenmäki	Lemi	Industrial stone	Lemi industrial stone deposits	1966	1967-1969	117 000	117 000	Al, Fe-Aggregate for concrete	*100 Industrial stone*	Lehtinen 2001
Mustamäki	Lemi	Industrial stone	Lemi industrial stone deposits	1971	1971-1999	343 987	324 992	Al, Fe-Aggregate for concrete	*100 Industrial stone*	Åberg 1972b, Lehtinen 2001
Lehlampi	Mäntyharju	Industrial stone	Mined for Olivineine	1976	1999-	272 513	182 307	Olivine	*100 Industrial stone*	Alviola 1981, Valtaus 1998
Pennala	Orimattila	Industrial stone	Orimattila industrial stone deposits	1964e	1976-1977	1 279	1 279	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Lehijärvi 1964, Valtaus 1967
Porakallio	Orimattila	Industrial stone	Orimattila industrial stone deposits	1964e	1979-1980	21 871	21 871	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Valtaus 1967, Boström 1987
Parsby	Parainen	Industrial stone	Industrial stone deposits in the Pargas area	1967	1971-1979	155 886	153 663	Al, Fe, Mg-Aggregate for concrete	*100 Industrial stone*	Valtaus 1967, Suomen talousseura 1978
Ybbernäs	Parainen	Industrial stone	Industrial stone deposits in the Pargas area	1973	1973-	946 525	866 536	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Lundén 1982
Kangas-Parikkala	Parikkala	Industrial stone	Also = Ruimunmäki; Parikkala industrial stone deposits	1962e	1973-1976	36 898	36 898	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Valtaus 1966, Boström 1987

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table B1-6. Historical industrial mineral mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Concentrations (%, g/t)	Literature references
Kaunola	Parikkala	Industrial stone	Parikkala industrial stone deposits	1962e	1979	10 000	10 000	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Valtaus 1966
Mikonvaara	Parikkala	Industrial stone	Parikkala industrial stone deposits	1962e	1976-1983	191 271	191 271	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Lundén 1980
Peijunmäki	Parikkala	Industrial stone	Parikkala industrial stone deposits	1962e	1971-1976	161 796	161 796	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Åberg 1962, Valtaus 1966
Kärnä-Vanhasuo	Savitaipale	Industrial stone	Savitaipale industrial stone deposits, Vanhasuo still in operation in 2002	1982	1991-	279 693	255 244	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Lundén 1994
Mantovaara	Sodankylä	Industrial stone	Excavated as additional material for the Äkäsjoki cement plant	1941e	1971-1981	101 215	101 215	Al-Aggregate for concrete	*100 Industrial stone*	Mikkola 1941, Boström 1977
Sallittu	Suomusjärvi	Industrial stone	Industrial stone deposits in southern Finland, still in operation in 2002	1968e	1971-1999	796 330	604 309	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Valtaus 1968
Laitasaari	Taipalsaari	Industrial stone	Industrial rock deposits in the Lappeenranta area	1965e	1979	1 627	1 627	Al, Fe, Mg-Stone aggregate	*100 Industrial stone*	Vorma 1965
Yli-Paakkola	Tervola	Industrial stone	Phyllite quarries in the Tornio area	1858e	1970-1982	*143 000*	*130 000*	Mica	*100 Industrial stone*	Wathén 1858, Airas & Auranen 1984, Perttunen 1991
Karunki	Tornio	Industrial stone	Phyllite quarries in the Tornio area	1997e	1997	5 423	5 423	Industrial stone, Mica	*100 Industrial stone*	Perttunen 1991
Laiturikylä	Alahärmä	Quartz	Location inaccurate	1947	1947	190	*152*	Quartz	*100 Quartz*	Laitakari 1949b, Turkka 1994
Kopinkallio	Askola	Quartz	Stone Age tools	-	7500eKr	*30*	*24*	Quartz		Laitakari & Simonen 1963, Kinnunen 1993
Norstö	Dragsfjärd	Quartz	Also = Högsåra ?; In the Hittite, mined for the Dahl blast furnace; location inaccurate	1863	1863	*30*	*24*	Quartz		Valtaus 1863, Furuhjelm 1884
Vanha-Kaltimo	Eno	Quartz	Excavated by Oy Vuoksenniska Ab	1936e	1930-l	*30*	*24*	Quartz, Hematite	-	Wilkman 1936 (päiväkirja), Laitakari 1951 s. 473, Virkkunen 1964
Sapalahti	Halikko	Quartz	Also = Kalvsnäs	1843e	1843	*30*	*24*	Quartz		Valtaus 1843, Lehijärvi 1957, Härme 1960
Turila	Halikko	Quartz	Location inaccurate	1890e	1890e	*30*	*24*	Quartz		Moberg 1890 s. 48
Tiirismaa	Hollola	Quartz	Also = Iron Can	1947e	1947-1951	*22 500*	*18 000*	Quartz	*80 Quartz*	Laitakari 1947, Laitakari 1951 s. 473, Lehijärvi 1962, Lehijärvi 1964
Harakka	Hyvinkää	Quartz	Excavated at the Sellingen glass factory in Mäntsälä; location inaccurate	1842e	1857e	*30*	*24*	Quartz, Garnet		Thoreld 1842-1856, Holmberg 1857 s. 39, Holmberg 1858 s. 130, Furuhjelm 1886, Moberg 1889d s. 35
Tallbacka	Hyvinkää	Quartz	Excavated at the Sellingen glass factory in Mäntsälä; location inaccurate	Before the year 1828	1857e	*30*	*24*	Quartz		Westling 1828, Holmberg 1857 s. 20, Holmberg 1858 s. 13, Furuhjelm 1884, Moberg 1889 s. 35
Kuikkalampi	Ilomantsi	Quartz	Excavated for Möhkö Ironworks	1849	1849	*30*	*24*	Quartz		Valtaus 1849
Torsanrantamaa	Joroinen	Quartz	Excavated for Joroinen Ruukki, location inaccurate	1858	1858	*30*	*24*	Quartz		Valtaus 1858
Tikka	Keminmaa	Quartz	Quartz deposits in the Kemi area	1966	1966	1 000	1 000	Quartz	*80 Quartz*	Valtaus 1966, Perttunen 1991
Omenajärvi-Kiikala	Kiikala	Quartz	Mined for the Johanneslund glass factory and Teijon Ruukki; location inaccurate	1825e	1800-lo	*30*	*24*	Quartz, Beryl		Sawenius 1825, Holmberg 1858 s. 92, Moberg 1889c s. 43
Karvasaari	Kisko	Quartz	Quartz deposits in the Kisko area	1800-l	1800-l	*30*	*24*	Quartz		Mikkonen 1952

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table B1-7. Historical industrial mineral mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Concentrations (%, g/t)	Literature references
Kurkela	Kisko	Quartz	In connection with the Honkaladonmäki iron mine	1825e	1825e	*30*	*24*	Quartz, Biotite		Sawenius 1825
Paavo	Kisko	Quartz	Excavated at the Fiskars plant	1884e	1884e	*30*	*24*	Quartz, Feldspar, Beryl		Furuhjelm 1884, Tigerstedt 1891, Wiik 1888, Eskola 1914, Mäkinen 1909
Kivimäki	Kotka	Quartz	Possibly a Stone Age quartz quarry, the place is calmed down	-	Kivikaudella	*30*	*24*	Quartz		Kananoja 1997
Lasivuori	Kuortane	Quartz	Location inaccurate	1970-l?	1970-l ?	*30*	*24*	Quartz		Turkka 1994
Hernemäki	Liperi	Quartz	Excavated for Oravin Ruukki	1875e	1875	*30*	*24*	Quartz		Valtaus 1875
Riihiranta	Liperi	Quartz	Excavated for Oravin Ruukki	1875e	1875	*30*	*24*	Quartz		Valtaus 1875
Kaukmäki-Quartztsi	Muurla	Quartz	Location inaccurate	1825e	1858e	*30*	*24*	Quartz, Calcite		Sawenius 1825, Holmberg 1858 s. 92, Furuhjelm 1884, Eskola et al 1919 s. 81
Kellokoski	Mäntsälä	Quartz	Can also be = Tallbacka or Wiitanen; excavated for Kellokoski Ruukki	1800-l	In the early 20th century	*30*	*24*	Quartz		Moberg 1889d s. 35
Soukkio	Mäntsälä	Quartz	Location inaccurate	1889e	1889e	*30*	*24*	Quartz		Moberg 1889 s. 35
Hiekkamäki	Nilsiä	Quartz	Also = Sand Mountain or Salt Rock, Glass Rock	1824e	1914-1917, 1934-1939, 1949-	1 661 185	1 345 329	Quartz	*79 Quartz*	Wilkman 1938, Hoving 1951, Smeds 1952, Tavela 1954, Parviainen 1968, Isokangas 1978, Heikkinen 1980, Saikkonen 1986
Kinahmi	Nilsiä	Quartz	Quartzite deposits in the Kinahm period, still in operation in 2002	1824e	1976-	5 289 785	4 748 830	Quartz	*79 Quartz*	Parviainen 1968, Heikkinen 1980, Saikkonen 1986
Reittiö	Nilsiä	Quartz	Also = Rahasmäki	1792e	1940-1948	40 000	40 000	Quartz	*75 Quartz*	Rinman 1792, Wathén 1856, Parviainen 1968, Heikkinen 1980
Vartsila	Nilsiä	Quartz	Also = Glass Mountain	1967e	1986-1993	104 113	103 964	Quartz	*80 Quartz*	Valtaus 1967
Viitanen	Nurmijärvi	Quartz	Location inaccurate	Before the year 1828	1858e	*30*	*24*	Quartz		Westling 1828, Holmberg 1858 s. 14, Furuhjelm 1884, Moberg 1889 s.35
Pirttikylä	Närpiö	Quartz	Excavated for the Berga glass factory; location inaccurate	1814	1814	*30*	*24*	Feldspar, Quartz		Valtaus 1814, Launonen 1975
Korva	Pertteli	Quartz	Excavated for the Inker glassworks; location inaccurate	1824e	1824e	*30*	*24*	Quartz		Bremer 1824 s. 34
Surnumäki	Pieksämäen mlk	Quartz	Excavated for the Haapakoski blast furnace; location inaccurate	1843	1843e - ?	*30*	*24*	Quartz		Valtaus 1843
Vehkajärvi	Punkalaidun	Quartz	Excavated for the Nuutajärvi glass factory; location inaccurate	In the 18th century	1793 jälkeen - ?	*30*	*24*	Quartz, Feldspar		Wilkman 1889 s. 54
Saviojanmäki	Ruskeala	Quartz	Also = Ilola; location inaccurate	1892e	1892e	*30*	*24*	Quartz, Pyrrhotite		Lisitzin 1892 s. 156
Kasurilanmäki	Siilinjärvi	Quartz	Also = Lime Mountain; Excavated by Suomen Mineral Oy	1824e	1936e	*100*	*80*	Quartz		Eskola 1936, Wilkman 1938, Anonymous 19xx
Juttulampi	Soanlahti	Quartz	Also = Great Hormone Rock; excavated at the Pitkäranta smelter; location inaccurate	1854	1854	*30*	*24*	Quartz, Talc		Valtaus 1854
Ahola-Somero	Somero	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar, Beryl, Calcite		Tilas 1738, Lundström 1814, Westling 1824-1839, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Havulinnanmäki	Somero	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar		Tilas 1738, Lundström 1814, Westling 1824-1839, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table B1-8. Historical industrial mineral mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Concentrations (%, g/t)	Literature references
Kivisoja	Somero	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar		Tilas 1738, Lundström 1814, Westling 1824-1839, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Laitiainen	Somero	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar, Beryl		Tilas 1738, Lundström 1814, Westling 1824-1839, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Laurila	Somero	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar		Tilas 1738, Lundström 1814, Westling 1824-1839, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Luolamäki	Somero	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar, Beryl, Petalite, Pollucite		Tilas 1738, Lundström 1814, Westling 1824-1839, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Luolamäki-pohjoinen	Somero	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar, Beryl		Tilas 1738, Lundström 1814, Westling 1824-1839, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Lähteenmäki	Somero	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar, Beryl		Tilas 1738, Lundström 1814, Westling 1824-1839, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Mäyräjärvi	Somero	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar, Beryl		Tilas 1738, Lundström 1814, Westling 1824-1839, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Nokonmetsä	Somero	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar, Beryl		Tilas 1738, Lundström 1814, Westling 1824-1839, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Penikoja	Somero	Quartz	Also = Kaidassuo; mined for the Åvik glassworks	1737e	1748-1830	*30*	*24*	Quartz, Feldspar, Beryl, Spodumene, Petalite		Tilas 1738, Lundström 1814, Westling 1838, Holmberg 1858 s. 141, Moberg 1889 s. 34, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Pirunkimu	Somero	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar, Beryl		Tilas 1738, Lundström 1814, Westling 1824-1839, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Naapurivaara	Sotkamo	Quartz	Also = Kalliojärvi or Vihtamo	1918e	1918-1919	*1 900*	1 900	Quartz, Chalcopyrite, Pyrrhotite	*100 Quartz*	Mäkinen 1920 s. 53, Eskola 1923, Hall 1936, Matisto 1939, Stigzelius et al 1970, Wilmi 1997
Valkiamäki	Suojärvi	Quartz	Excavated for Möhkö Ironworks; location inaccurate	1849	1849	*30*	*24*	Quartz		Valtaus 1849
Kärkkäinen	Suonenjoki	Quartz	Excavated for the Lappomäki glass factory; location inaccurate	1850	1850	*30*	*24*	Quartz		Valtaus 1850
Earsholmen	Särkisalo	Quartz	Excavated for the Dahl blast furnace	1881e	1881e	270	*216*	Quartz		Furuhjelm 1881, Furuhjelm 1882 s. 95, Seitsaari 1955
Falkberg	Särkisalo	Quartz	Also = Falkki; mined for the blast furnaces of Teijo and Mathildedal; location inaccurate	1855	1855	*30*	*24*	Quartz		Valtaus 1855, Moberg 1888 s. 29
Hummelvik	Särkisalo	Quartz	Mined to the Dahl Blast Furnace; location inaccurate	1867	1867	*100*	80	Quartz	*75 Quartz*	Valtaus 1867, Furuhjelm 1881, Furuhjelm 1884 s. 95

Table B1-9. Historical industrial mineral mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Concentrations (%, g/t)	Literature references
Hästö	Särkisalo	Quartz	Excavated for the Mathildedal Blast Furnace; location inaccurate	1843	1843 - ainakin 1888	*30*	*24*	Quartz, Feldspar		Valtaus 1843, Moberg 1888 s. 29
Lillandeshalsen-Quartztsi	Särkisalo	Quartz	Also = Lowland Neck	1825e	1825e	*30*	*24*	Quartz, Pyrrhotite, Magnetite, Pyrite		Sawenius 1825, Furuhjelm 1886 s. 26, Eskola et al 1919 s. 69
Haiponmäki	Tammela	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar		Tilas 1738, Lundström 1814, Westling 1829, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Heponiitynmäki	Tammela	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar, Beryl		Tilas 1738, Lundström 1814, Westling 1829, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Hirvikallio	Tammela	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar, Petalite, Beryl, Spodumene		Tilas 1738, Lundström 1814, Westling 1829, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963, Saikkonen 1981
Härkäsaari	Tammela	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar, Beryl, Tantalite		Tilas 1738, Lundström 1814, Westling 1829, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Kietyönmäki	Tammela	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar, Petalite, Spodumene		Tilas 1738, Lundström 1814, Westling 1829, Holmberg 1857 s. 42, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Laurinmäki	Tammela	Quartz	Also = Rocky Mountain; mined for the Åvik glassworks	1737e	1748-1830	*30*	*24*	Quartz, Feldspar		Tilas 1738, Lundström 1814, Westling 1829, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Mäenpää	Tammela	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar, Beryl		Tilas 1738, Lundström 1814, Westling 1829, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Sukula	Tammela	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar, Tantalite		Tilas 1738, Bremer 1825 s. 22, Valtaus 1852, Holmberg 1857 s. 43, Holmberg 1858 s. 145, Mäkinen 1913, Aurola 1963, Vorma & Siivola 1967
Vahteristonkallio	Tammela	Quartz	Excavated for the Åvik glass factory	1737e	1748-1830	*30*	*24*	Quartz, Feldspar, Beryl		Tilas 1738, Lundström 1814, Westling 1829, Holmberg 1858 s. 141, Mäkinen 1913, Vesasalo 1960a, b, Virkkunen 1962, Aurola 1963
Björksär	Tammisaari	Quartz	Also = Börskär	1835e	1835e	*30*	*24*	Quartz, Feldspar		Lauraeus 1835, Westling 1834, Nordenskiöld 1855, Holmberg 1857 s. 12, Holmberg 1858 s. 41
Tuulijärvi	Tammisaari	Quartz	Several quarries, in Tenhola	1888e	1888e	*30*	*24*	Quartz, Arsenopyrite, Chalcopyrite		Moberg 1888 s. 29
Tammerkoski	Tampere	Quartz	Excavated for the Blast Furnace in Messukylä (Tampere); location inaccurate	1876e	1876e	*30*	*24*	Quartz, Feldspar		Åkerblom 1876
Tikanmaa	Tervola	Quartz	Quartz deposits in the Kemi area	1945	1971e, 1980-1984	71 050	71 050	Quartz	*80 Quartz*	Valtaus 1945, Saikkonen 1978, Airas & Auranen 1984, Perttunen 1991
Värtsilä	Tohmajärvi	Quartz	Probably also = Sääperi; mined for the Värtsilä blast furnace; location inaccurate	1834e	1834 jälkeen - ?	*30*	*24*	Quartz		Holmberg 1858 s. 221, Lisitzin 1892 s. 158, Anonymous XXXX
Quartztsimaa	Tornio	Quartz	Also = Quartz bump; Quartz deposits in the Kemi area	1985	1993-1995	74 025	69 025	Quartz	*80 Quartz*	Valtaus 1985, Perttunen 1991

Table B1-10. Historical industrial mineral mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Concentrations (%, g/t)	Literature references
RisDiamonda	Tornio	Quartz	Quartz deposits in the Kemi area, still in operation in 2002	1988	1989-	683 105	321 288	Quartz	*80 Quartz*	Valtaus 1988, Perttula 1992
Rusila	Urjala	Quartz	Mined for the manufacture of glass; location inaccurate	1849	1849	*30*	*24*	Quartz		Valtaus 1849
Heinoo	Vammala	Quartz	Location inaccurate	1900-l	1967e	*30*	*24*	Quartz		Anonymous 19xx eli Laitakarin 1967 viittaus GTK:n käsikirjoitukseen
Anttila-Ypäjä	Ypäjä	Quartz	Mined for the manufacture of glass; location inaccurate	1889e	In the early 19th century	*30*	*24*	Quartz		Wilkman 1889 s. 43 ja 54, Salli 1953
Mäenvuori	Alavus	Feldspar	Deposits of lowland feldspar	1960-l	1960-l ?	*50*	*40*	Feldspar, Quartz		Haapala 1966, Virkkunen 1975, Turkka 1994
Polluciteari	Alavus	Feldspar	Also = Gear Rock ?; Deposits of alder in the early summer	1960-l	1975?	*50*	*40*	Feldspar, Quartz		Turkka 1994
Tepunkallio	Alavus	Feldspar	Deposits of lowland feldspar	1960-l	1987	3 500	3 500	Feldspar, Quartz, Muscovite, Biotite	*100 Feldspar*	Valtaus 1980, Astala 1987, Turkka 1994
Apelholm	Dragsfjärd	Feldspar	Abandoned quarry as early as 1886	1886e	1886e	*50*	*40*	Feldspar, Beryl, Chalcopyrite		Furuhjelm 1886, Mäkinen 1909, Edelman 1956
Långholm	Dragsfjärd	Feldspar	Old pegmatite quarries in the Kemiö area	1886e	1886e	*50*	*40*	Feldspar, Beryl, Chalcopyrite		Edelman 1956
Peura	Dragsfjärd	Feldspar	New pegmatite quarries in the chemistry area	1735e	1990-l	*50*	*40*	Feldspar, Quartz		Reijo Alviola (2001) suullisesti
Rosendal	Dragsfjärd	Feldspar	Old pegmatite quarries in the Kemiö area	1741e	Vanhat, 1915-1940-lo	*27 600*	*23 000*	Potassium feldspar, Quartz, Beryl, Tantalite	*38 Quartz, 2 Feldspar, Beryl, Tantalite*	Sawenius 1825, Arppe 1859, Wiik 1888, Eskola 1914, Pehrman 1929, Pehrman 1945, Lof & Hazebroek 1976, Alviola 1997
Ängsbacka	Dragsfjärd	Feldspar	New pegmatite quarries in chemistry	1735e	1987-1992	*291 200*	*224 000*	Feldspar, Quartz	*36 Feldspar, 18 Quartz*	Reijo Alviola (1996) suullisesti
Uhvonsaari	Harlu	Feldspar	Also = Olvensaari	1825	1825-1834	*50*	*40*	Feldspar, Quartz	*75 Feldspar, 25 Quartz*	Valtaus 1825
Operonsaari	Hiitola	Feldspar	On the island of Ladoga	1814e	1836	*50*	*40*	Feldspar, Quartz		Lundström 1814, Bremer 1825 s. 184, Valtaus 1836, Holmberg 1858 s. 233, Furuhjelm 1884
Bottusaari	Impilahti	Feldspar	On the island of Ladoga near Pitkäranta	1847	1847	*50*	*40*	Feldspar, Quartz		Valtaus 1847
Hanhikkomäki	Impilahti	Feldspar	Impilahti feldspar quarries	1836	1836	*50*	*40*	Feldspar, Quartz		Valtaus 1836
Haratsaari	Impilahti	Feldspar	On the island of Ladoga near Pitkäranta	1833	1833	*50*	*40*	Feldspar, Quartz		Valtaus 1833
Harimäki	Impilahti	Feldspar	Land trader Vaittinen excavated	1836	1836	*50*	*40*	Feldspar, Quartz		Valtaus 1836, Lisitzin 1892 s. 149
Hietalahti	Impilahti	Feldspar	Impilahti feldspar quarries	1848	1848	*50*	*40*	Feldspar, Quartz		Valtaus 1848, Lisitzin 1892 s. 150
Impiniemi	Impilahti	Feldspar	Impilahti feldspar quarries	1832	1832	*50*	*40*	Feldspar, Quartz		Valtaus 1832, Koponen 1982 s. 214
Kammosenmäki	Impilahti	Feldspar	Impilahti feldspar quarries	1853	1853	*50*	*40*	Feldspar, Quartz		Valtaus 1853
Kuivalammenmäki	Impilahti	Feldspar	Impilahti feldspar quarries	1847	1847	*50*	*40*	Feldspar, Quartz		Valtaus 1847
Kuivaniemi	Impilahti	Feldspar	Impilahti feldspar quarries, several quarries	1892	1833	*50*	*40*	Feldspar, Quartz		Valtaus 1833, Lisitzin 1892 s. 149
Laponniemi	Impilahti	Feldspar	Impilahti feldspar quarries	1830	1830	*50*	*40*	Feldspar, Quartz		Valtaus 1830
Lillinpelto	Impilahti	Feldspar	Impilahti feldspar quarries	1854	1854	*50*	*40*	Feldspar, Quartz		Valtaus 1854
Linnanvaara	Impilahti	Feldspar	Impilahti feldspar quarries	1820	1820	*50*	*40*	Feldspar, Quartz		Valtaus 1820
Losomäki	Impilahti	Feldspar	Also = Hirsvuori or Oravamäenkallio	1836	1836	*50*	*40*	Feldspar, Quartz		Valtaus 1836
Lödjölä	Impilahti	Feldspar	Quarries at least Korppipellonmäki, Lädämäki, Selkävuori	1830	1830	*50*	*40*	Feldspar, Quartz		Valtaus 1830
Nuolainniemi	Impilahti	Feldspar	Several quarries of feldspar were exported to Germany as early as the 1930s	1836	1836	*50*	*40*	Feldspar, Quartz		Valtaus 1836, Lisitzin 1892 s. 152, Koponen 1982
Pahalamminmäki	Impilahti	Feldspar	Impilahti feldspar quarries	1847	1846	*50*	*40*	Feldspar, Quartz		Valtaus 1846
Pusunsaari-Feldsparälpä	Impilahti	Feldspar	On the island of Ladoga near Pitkäranta	1846	1846	*50*	*40*	Feldspar, Quartz		Valtaus 1846

Table B1-11. Historical industrial mineral mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Concentrations (%, g/t)	Literature references
Pykälistönmäki	Impilahti	Feldspar	Also = Koivunurmenmäki and Tainuksenpelto	1826	1826	*50*	*40*	Feldspar, Quartz		Valtaus 1826
Sikosaari	Impilahti	Feldspar	Quarries Kappavaara, Vallakinkallio	1833	1833	*50*	*40*	Feldspar, Quartz		Valtaus 1833
Sylttykallio	Impilahti	Feldspar	The largest quarries in the area	1848	1848-1896	*1 200*	*1 000*	Feldspar, Quartz	*35 Feldspar, 10 Quartz*	Valtaus 1848, Lisitzin 1892 s. 152, Koponen 1982
Toikkasenmäki	Impilahti	Feldspar	Impilahti feldspar quarries	1837	1837	*50*	*40*	Feldspar, Quartz		Valtaus 1837
Ukkolanmäki	Impilahti	Feldspar	Impilahti feldspar quarries	1846	1846	*50*	*40*	Feldspar, Quartz		Valtaus 1846
Vihkimosaari	Impilahti	Feldspar	On the island of Ladoga near Pitkäranta	1826	1826	*50*	*40*	Feldspar, Quartz		Valtaus 1826
Voratsunsaari	Impilahti	Feldspar	On the island of Ladoga near Pitkäranta; Several quarries	1830	1830	*50*	*40*	Feldspar, Quartz		Valtaus 1830
Välimaanmäki	Impilahti	Feldspar	Impilahti feldspar quarries	1826	1826	*50*	*40*	Feldspar, Quartz		Valtaus 1826
Keihäsniemi	Jaakkima	Feldspar	On the island of Ladoga	1842	1842	*50*	*40*	Feldspar, Quartz		Valtaus 1842, Furuhjelm 1884
Kilpisaari	Jaakkima	Feldspar	On the island of Ladoga	1827	1827	*50*	*40*	Feldspar, Quartz		Valtaus 1827
Lannakkomäki	Jaakkima	Feldspar	Location inaccurate	1846	1846	*50*	*40*	Feldspar, Quartz		Valtaus 1846, Furuhjelm 1884
Ristasaari	Jaakkima	Feldspar	Location inaccurate	1828	1828	*50*	*40*	Feldspar, Quartz		Valtaus 1828, Furuhjelm 1884
Hautaniitynmäki	Kangasala	Feldspar	Uiherlan Sälpä Oy excavated	1930-l	1946	*1 800*	*1 440*	Feldspar, Quartz	*75 Feldspar, 25 Quartz*	Vesasalo 1956, Matisto 1976
Perälä	Kangasala	Feldspar	Feldspar quarries in Kangasala	1930-l	1930-l	*50*	*40*	Feldspar, Quartz		Vesasalo 1956, Matisto 1976
Pyörrönmaa	Kangasala	Feldspar	Feldspar quarries in Kangasala	1930-l	1930-l	*50*	*40*	Feldspar, Quartz		Lauerma 1957, Matisto 1961, Vorma et al 1966, Siivola 1975
Varala	Kangasala	Feldspar	Feldspar quarries in Kangasala	1925e	1930-l	*50*	*40*	Feldspar, Quartz		Aartovaara 1925, Lauerma 1957, Matisto 1976
Venesjärvi	Kankaanpää	Feldspar	Trial excavation	1968	1984	169	169	Feldspar, Quartz	*38 Feldspar, 27 Quartz*	Säynäjärvi 1975, Valtaus 1976
Vintturi	Kaustinen	Feldspar	Partek Oy's Spodumeneumene quarry	1960	1979	*20*	*16*	Feldspar, Quartz, Spodumene		Valtaus 1966, Valtaus 1979, Boström 1988b, Turkka 1994
Ala-Aulis	Kemiö	Feldspar	New pegmatite quarries in chemistry	1741e	1990-l	100	80	Feldspar, Quartz	*36 Feldspar, 18 Quartz*	Reijo Alviola (2001) suullisesti
Aulis	Kemiö	Feldspar	New pegmatite quarries in chemistry	1741e	1991-1994	273 000	210 000	Feldspar, Quartz	*36 Feldspar, 18 Quartz*	Reijo Alviola (1996) suullisesti
Britashagen	Kemiö	Feldspar	Also = Fröjdböle; New pegmatite quarries in chemistry	1735e	1968-1978	617 500	475 000	Feldspar, Quartz	*36 Feldspar, 18 Quartz*	Lof & Hazebroek 1976, Isokangas 1978
Brokärr	Kemiö	Feldspar	Kemiö's old and also new pegmatite quarries	1735e	In the early 20th century, 1965-1978	715 000	550 000	Feldspar, Tantalite, Beryl	*36 Feldspar, 18 Quartz*	Ekeberg 1802, Pehrman 1945, Volborth 1952, Vesasalo 1960c, Konttinen 1972, Lof & Hazebroek 1976, Isokangas 1978
Erikskulla	Kemiö	Feldspar	New pegmatite quarries in chemistry	1735e	1983-1989	689 000	530 000	Feldspar, Quartz	*36 Feldspar, 18 Quartz*	Reijo Alviola (1996) suullisesti
Fårbacka	Kemiö	Feldspar	New pegmatite quarries in chemistry	1735e	1987-1994	74 100	57 000	Feldspar, Quartz	*36 Feldspar, 18 Quartz*	Reijo Alviola (1996) suullisesti
Gammelmorskärr	Kemiö	Feldspar	Chemistry's old pegmatite quarries	1735e	1935e	300	240	Feldspar, Quartz, Tantalite		Pehrman 1945, Volborth 1952, Lof & Hazebroek 1976
Kovanen	Kemiö	Feldspar	Kemiö's old and also new pegmatite quarries	1735e	1939e, 1972-1979	565 500	435 000	Feldspar, Quartz	*36 Feldspar, 18 Quartz*	Reijo Alviola (1996) suullisesti

Table B1-12. Historical industrial mineral mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Concentrations (%, g/t)	Literature references
Kyrkoberget	Kemiö	Feldspar	New pegmatite quarries in chemistry	1980-lo	1990-l	50	40	Feldspar, Quartz		Reijo Alviola (2001) suullisesti
Kåddböle	Kemiö	Feldspar	Chemistry's old pegmatite quarries	1735e	1935e	50	40	Feldspar, Quartz		Pehrman 1945
Larsbacka	Kemiö	Feldspar	New pegmatite quarries in chemistry	1735e	1977-1986	170 300	131 000	Feldspar, Quartz	*36 Feldspar, 18 Quartz*	Konttinen 1972
Lemnäs-Feldsparälpä	Kemiö	Feldspar	Chemistry's old pegmatite quarries	1741e	1935e	37 800	31 500	Potassium feldspar, Quartz, Beryl	*47 Feldspar, 2 Quartz*	Pehrman 1939, Pehrman 1945, Volborth 1952, Lof & Hazebroek 1976
Lövböle-eteläinen	Kemiö	Feldspar	Chemistry's old pegmatite quarries	1741e	1935e	400	320	Feldspar, Quartz	*28 Feldspar, 7 Quartz*	Volborth 1952, Lof & Hazebroek 1976
Lövböle-pohjoinen	Kemiö	Feldspar	Chemistry's old pegmatite quarries	1741e	1935e	1 500	1 200	Feldspar, Quartz	*28 Feldspar, 7 Quartz*	Volborth 1952, Lof & Hazebroek 1976
Mattkärr	Kemiö	Feldspar	Chemistry's old pegmatite quarries	1735e	1919e, 1935e	500	400	Feldspar, Quartz		Eskola 1914, Pehrman 1945, Volborth 1952, Lof & Hazebroek 1976
Norrsundvik	Kemiö	Feldspar	Chemistry's old pegmatite quarries; location inaccurate	1741e	1935e	50	40	Feldspar, Quartz		Pehrman 1945, Volborth 1952
Nyäng	Kemiö	Feldspar	Chemistry's old pegmatite quarries	1735e	1919e, 1935e	200	160	Feldspar, Quartz		Eskola 1914, Pehrman 1945, Volborth 1952, Lof & Hazebroek 1976
Rävberget	Kemiö	Feldspar	New pegmatite quarries in chemistry	1735e	1978-1983	552 500	425 000	Feldspar, Quartz	*36 Feldspar, 18 Quartz*	Pehrman 1945, Volborth 1952, Konttinen 1972
Seren	Kemiö	Feldspar	Chemistry's old pegmatite quarries	1741e	1984-1995	442 000	340 000	Feldspar, Quartz	*36 Feldspar, 18 Quartz*	Reijo Alviola (1996) suullisesti
Skogsböle	Kemiö	Feldspar	Also = Kimito tenngruvan; Chemistry's old pegmatite quarries	1737	1935e	500	400	Feldspar, Quartz, Tantalite	*13 Quartz, Tantalite*	Linder 1737, Benzelstjerna 1741, Gadd & Gummerus 1795, Gadd 1780, Bremer 1824 s. 56, Holmberg 1858 s. 83, Pehrman 1945, Volborth 1952, Konttinen 1972, Lof & Hazebroek 1976
Smörklinten	Kemiö	Feldspar	New pegmatite quarries in chemistry	1735e	1971-1996	559 000	430 000	Feldspar, Quartz	*36 Feldspar, 18 Quartz*	Konttinen 1972
Storgruvan	Kemiö	Feldspar	Kemiö's old and also new pegmatite quarries	1735e	1935e, 1975-1981	191 100	147 000	Feldspar, Quartz	*36 Feldspar, 18 Quartz*	Reijo Alviola (1996) suullisesti
Strandgruvan	Kemiö	Feldspar	Chemistry's old pegmatite quarries	1735e	1935e	97 500	75 000	Feldspar, Quartz	*Feldspar, Quartz*	Reijo Alviola (1996) suullisesti
Vargberget-eteläinen	Kemiö	Feldspar	Also = Varberget-2; New pegmatite quarries in chemistry	1735e	1979-1983	143 000	110 000	Feldspar, Quartz	*36 Feldspar, 18 Quartz*	Kontinen 1972, Isokangas 1978
Vargberget-pohjoinen	Kemiö	Feldspar	Also = Varberget-1; New pegmatite quarries in chemistry	1735e	1974-1981	448 500	345 000	Feldspar, Quartz	*36 Feldspar, 18 Quartz*	Kontinen 1972, Isokangas 1978
Tarhapäänjärvi	Keuruu	Feldspar	Location inaccurate	1951e	1951e	*50*	*40*	Feldspar, Quartz		Aurola 1951
Kuusmiilu	Kisko	Feldspar	Conquered as copper in 1823	1823	1823	*50*	*40*	Feldspar, Quartz, Columbite, Beryl		Valtaus 1823, Mäkinen 1916, Mäkinen 1920, Pehrman 1929, Mikkonen 1952
Emmes	Kruunupyy	Feldspar	Partek Oy's Spodumeneumene quarry	1960	1978	*20*	*16*	Feldspar, Quartz, Spodumene		Kaivospiiri 1966, Boström 1982, Boström 1987, Boström 1988b, Turkka 1994
Kaatiala	Kuortane	Feldspar	Also = Kuutelokallio	1829e	1942-1968	652 453	516 188	Feldspar, Quartz, Mica, Beryl, Columbite, Tourmaline, Loellingite, Spodumene	*29 Feldspar, 9 Quartz*	Westling 1829, Holmberg 1857 s. 37, Holmberg 1858 s. 119, Suomen Mineraali 1947, Nieminen 1954, Neuvonen 1960b, Haapala 1966, Säynäjärvi 1973, Nieminen 1978

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table B1-13. Historical industrial mineral mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Concentrations (%, g/t)	Literature references
Suotniemi	Käkisalmi	Feldspar	Excavated for a faience factory; location inaccurate	1841	1841-1893	*50*	*40*	Feldspar, Quartz		Valtaus 1841
Tiensuu	Loimaa	Feldspar	Location inaccurate	1889e	1889e	*50*	*40*	Feldspar		Wilkman 1889 s. 54
Niemelä	Längelmäki	Feldspar	Feldspar quarries in Längelmäki	1930-l	1930-l	*50*	*40*	Feldspar, Quartz, Beryl, Columbite		Lahti 1981, Jaakkola 1996
Rauhala	Längelmäki	Feldspar	Feldspar quarries in Längelmäki	1930-l	1930-l	*50*	*40*	Feldspar, Quartz, Beryl, Columbite		Virkkunen 1964, Lahti 1981, Jaakkola 1996
Pentinvuori	Nurmo	Feldspar	Feldspar quarries in the Seinäjoki area	1918	1938-1939	*400*	*200*	Feldspar, Quartz	*50 Feldspar, 25 Quartz*	Virkkunen 1963, Turkka 1994
Viitalankylä	Nurmo	Feldspar	Manufactured by Lagerstedt	1963e	1963e	*300*	*50*	Feldspar, Quartz	*75 Feldspar, 25 Quartz*	Virkkunen 1963
Ahonen	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1930-l	1930-l	*80*	*30*	Feldspar, Quartz	*75 Feldspar, 25 Quartz*	Virkkunen 1964, Lahti 1981
Anttila-Orivesi	Orivesi	Feldspar	Also = Kauppila quarry; Feldspar quarries in Eräjärvi	1940e	1940-1944	*500*	*50*	Feldspar, Quartz	*100 Feldspar*	Virkkunen 1964, Lahti 1981
Eräpyhä	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1934	1934-1935	*8 100*	*8 100*	Feldspar, Quartz, Beryl, Columbite	*15 Feldspar, 4 Quartz, 0 Beryl*	Holmberg 1858 s. 133, Virkkunen 1964, Lahti 1981
Hirtolahti	Orivesi	Feldspar	Also = Hirtolahti I; Feldspar quarries in Eräjärvi	1925e	1925-1926	*40*	*40*	Feldspar, Quartz, Beryl, Columbite	*75 Feldspar, Beryl*	Virkkunen 1964, Lahti 1981
Juurakko	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1916	1930-1935	*18 000*	*18 000*	Feldspar, Quartz, Beryl, Columbite	*67 Feldspar, Beryl*	Matisto 1964, Virkkunen 1964, Lahti 1981
Karvaanmaa	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1939e	1939-1944	*250*	*60*	Feldspar, Quartz	*75 Feldspar, 25 Quartz*	Virkkunen 1964, Lahti 1981
Katila	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1930e	1930-1954	*750*	*60*	Feldspar, Quartz, Beryl, Columbite	*75 Feldspar, 25 Quartz*	Matisto 1964, Lahti 1981
Keskimetsä	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1930-l	1937-1954	*200*	*15*	Feldspar, Quartz	*75 Feldspar, 25 Quartz*	Virkkunen 1964, Lahti 1981
Koivisto	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1945e	1945	*100*	*10*	Feldspar, Quartz	*75 Feldspar, 25 Quartz*	Virkkunen 1964, Lahti 1981
Kultavuori	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1940e	1940-1941	*1 000*	*1 000*	Feldspar, Quartz, Beryl	*10 Feldspar, Beryl*	Virkkunen 1964, Lahti 1981
Leikattu	Orivesi	Feldspar	Also = Hirtolahti II; Feldspar quarries in Eräjärvi	1924e	1924-1926	*1 900*	*1 900*	Feldspar, Quartz, Beryl	*21 Feldspar, 2 Quartz, Beryl*	Virkkunen 1964, Lahti 1981
Lintuvaara	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1945e	1945-1965	*220*	*220*	Feldspar, Quartz, Beryl, Columbite	*36 Feldspar, 21 Quartz*	Virkkunen 1964, Lahti 1981
Maantienvarsi	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1937e	1937-1955	*300*	*300*	Feldspar, Quartz	*55 Feldspar*	Virkkunen 1964, Lahti 1981
Makkarakorpi	Orivesi	Feldspar	Also = Rhizome II; Feldspar quarries in Eräjärvi	1930e	1930	*50*	*50*	Feldspar, Quartz	*60 Feldspar*	Virkkunen 1964, Lahti 1981
Mattila-Orivesi	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1937e	1937-1958	*2 200*	*2 200*	Feldspar, Quartz, Beryl	*78 Feldspar, 11 Quartz, 1 Beryl*	Virkkunen 1964, Lahti 1981
Mikkola	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1936e	1936	*100*	*100*	Feldspar, Quartz, Beryl, Columbite	*50 Feldspar*	Virkkunen 1964, Lahti 1981
Männistö	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1925e	1925-1926	*100*	*100*	Feldspar, Quartz	*20 Feldspar*	Virkkunen 1964, Lahti 1981
Omenajärvi-Orivesi	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1930-l	1930-l	*600*	*62*	Feldspar, Quartz, Beryl, Columbite	*75 Feldspar, 25 Quartz*	Virkkunen 1964, Lahti 1981
Pajala	Orivesi	Feldspar	Also = Hirtopohja; Feldspar quarries in Eräjärvi	1930-l	1930-l	*250*	20	Feldspar, Quartz	*75 Feldspar, 25 Quartz*	Virkkunen 1964, Lahti 1981
Rajahuhti	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1933e	1933	*350*	*50*	Feldspar, Quartz	*40 Feldspar*	Virkkunen 1964, Lahti 1981
Seppälä-Orivesi	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1935e	1935	*100*	*50*	Feldspar, Quartz	*60 Feldspar*	Virkkunen 1964, Lahti 1981

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table B1-14. Historical industrial mineral mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Concentrations (%, g/t)	Literature references
Syrjänmäki	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1930-l	1930-l	*350*	30	Feldspar, Quartz	*75 Feldspar, 25 Quartz*	Virkkunen 1964, Lahti 1981
Viitaniemi	Orivesi	Feldspar	Feldspar quarries in Eräjärvi	1934	1935-1965	*132 660*	*120 600*	Feldspar, Quartz, Amblygonite	*71 Feldspar, 14 Quartz, 1 Amblygonite*	Volborth 1954a, Volborth 1954b, Neuvonen 1960a, Virkkunen 1964, Lahti 1981
Rasvaniemi	Parikkala	Feldspar	Also = Tyrjänjärvi; Mined by the Finnish Mineral	1858e	1948-1949	600	600	Feldspar, Quartz	*83 Feldspar, 17 Quartz*	Holmberg 1858 s. 234, Laitakari 1949, Aurola 1951, Nykänen 1983
Haapaluoma	Peräseinäjoki	Feldspar	Mining possibly also in 1958-1960	1954	1962-	1 149 493	643 648	Feldspar, Quartz	*33 Feldspar, 18 Quartz*	Haapala 1966, Säynäjärvi 1967, Isokangas 1978, Turkka 1994
Heponiemi	Salmi	Feldspar	Feldspar quarries in the Pitkäranta area	1833e	1833	*50*	*40*	Feldspar, Quartz		Valtaus 1833
Melnitshankallio	Salmi	Feldspar	Feldspar quarries in the Pitkäranta area	1853	1853	*50*	*40*	Feldspar, Quartz		Valtauksia 1853-1854
Hakala	Sortavala	Feldspar	Quarries Heposaari, Keskysmäki, Korkiamäki, Laukosaari, Myrkkysaari; location inaccurate	1825	1825?-1854?	*50*	*40*	Feldspar, Quartz		Valtauksia 1825-1854
Parola	Sortavala	Feldspar	Several quarries; location inaccurate	1814	1814	*50*	*40*	Feldspar, Quartz		Valtaus 1814, Bremer 1825 s. 201, Steinheil 1820-l, Holmberg 1858 s. 243
Pellotsalo	Sortavala	Feldspar	Quarries Harvisenmäki, Kontiomäki, Murkinamäki, Nolanniemi, Sikosuonmäki, Tikkonmäki; location inaccurate	1814e	1814?-1854?	*50*	*40*	Feldspar, Quartz		Lundström 1814 s. 29, Valtauksia 1818-1854
Peräniemi	Sortavala	Feldspar	Quarries Kultakallio, Markkinamäki, Pehasmäki, Peräniemi, Russoniemi	1827	1827?-1854?	*50*	*40*	Feldspar, Quartz		Valtauksia 1827-1854
Vannisensaari	Sortavala	Feldspar	Quarries Himinotsinmäki, Oravaniemi, Vannisensaari	1818	1814?-1854?	*50*	*40*	Feldspar, Quartz		Valtauksia 1818-1853
Törisevänmäki	Suistamo	Feldspar	Also = Kiimamäki feldspar	1832	1832	*50*	*40*	Feldspar, Quartz		Valtaus 1832
Matoneva	Töysä	Feldspar	Excavated by Lohja Oy; location inaccurate	1960-l	1960-l ?	*50*	*40*	Feldspar, Quartz		Turkka 1994
Länttä	Ullava	Feldspar	Partek Oy's Spodumeneumene quarry	1960	1978, 1980, 2000	*66*	*44*	Feldspar, Quartz, Spodumene		Boström 1982, Boström 1987, Boström 1988b, Turkka 1994
Haapavuori	Vilppula	Feldspar	The feldspar was mined, sorted by hand and taken to St. Petersburg	In the early 20th century	In the early 20th century	*50*	*40*	Feldspar, Quartz		M. Torssonen suullisesti 2001

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table B1-15. Historical industrial mineral mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Concentrations (%, g/t)	Literature references
Pihlajavaara	Puolanka	Kaolinite	The first Kaolinitein reference in Finland	1921	1947	719	383	Kaolinite, Quartz	*100 Kaolinite*	Väyrynen 1922, Frosterus 1928, Väyrynen 1929, Enkovaara et al 1953, Stigzelius et al 1970 s. 140
Prolanvaara	Soanlahti	Kaolinite	Soanlahti mining company	1920	1923	*200*	*100*	Kaolinite	*100 Kaolinite*	Rosberg et al 1923 s. 389, Frosterus 1928, Hausen 1930 s. 63, Kaivospiiri 1933, Hackman 1933 s. 172, Eskola 1936 s. 612, Jaatinen 1997 s. 166
Ruma	Sotkamo	Kaolinite	Sotkamo mining company	1937e	1937, 1945-1948	4 633	3 551	Kaolinite, Quartz	*50 Kaolinite*	Valtaus 1937, Herlitz 1938, Laitakari 1951 s. 473, Stigzelius et al 1970
Vuorilahti	Helsinki	Garnet	Rudus Oy excavated for the use of Ruoholahti Cable Factory	1850e	1946-1947	*3 000*	3 000	Garnet	*50 Garnet*	Holmberg 1858 s. 5, Laitakari 1949a, Virtanen 1959, Saltikoff et al 1994
Kitelä	Impilahti	Garnet	Also = Kitelä garnet quarry	1500-l	1500-l - 1800-l	*1 000*	*500*	Garnet, Staurolite		Alopaeus 1787, Lundström 1814 s. 37, von Jossa 1839, Holmberg 1856 s. 244, Holmberg 1858 s. 244, Lisitzin 1892 s. 151, Laitakari 1963, Koponen 1982, Huuskonen 1991
Isopää	Kalvola	Garnet	Also = Button Rock	1825e	1825e	*30*	*15*	Garnet		Sawenius 1825, Tengström 1826, Westling 1829, Holmberg 1857 s. 40, Holmberg 1858 s. 136, Eskola 1936, Neuvonen 1956, Härme 1960
Lahtojoki	Kaavi	Diamond	Test excavation of Malmikaivos Oy	1989	1992	1 600	1 000	Olivine	*5,7 ct/100 t*	Haglund 2001
Patana	Veteli	Tourmaline	The inhabiTantalites of the village have excavated the "noise"	1901e	1912	*5*	*5*	Tourmaline		Valtaus 1901, Laitakari 1942 s. 62
Total industrial mineral mines						**267 465 416**	**186 307 831**			

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

11 APPENDIX C – LIST OF HISTORICAL CARBONATE ROCK MINES

Table C1-1. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Kuparsaari	Antrea	Calcite	The only limestone mine in the Karelian Isthmus	1660e	1897-1915e, 1920-1939?	*94 500*	*85 050*	Calcite	Atlas 1899, Frosterus 1901a, Sergelius 1904 valokuva, Eskola et al 1919 s. 156, Rosberg et al 1923 s. 177, Simonen 1951, Jaatinen 1997 s. 46
Härsholmen	Brändö	Calcite	Also = Jurmon Björkholm, Träskholm or Harasaari; the only one in Åland	1795e	In the early 19th century	*30*	*27*	Calcite	Radloff 1795, Lauraeus LG 1833-52, Holmberg 1858 s. 64, Moberg 1891b s. 25, Eskola et al 1919 s. 110, Metzger 1960, Lindberg & Bergman 1993
Biskopsön-kalkki	Dragsfjärd	Calcite	In the Hittites	1839	1842?	*30*	*27*	Calcite, Magnetite	Eskola et al 1919 s. 78
Genböle	Dragsfjärd	Calcite	Also = Silver Mine	1825e	1825e	*350*	*315*	Calcite, Pyrrhotite, Pyrite	Sawenius 1825, Holmberg 1857 s. 31, Holmberg 1858 s. 85, 87, Furuhjelm 1884, Eskola et al 1919 s. 78, Ahtola 1998
Klåfsviksklubben	Dragsfjärd	Calcite	In the Hittites	1846e	1846?	*30*	*27*	Calcite	Valtaus 1846, Eskola et al 1919 s. 79
Kolskär	Dragsfjärd	Calcite	On the island	In the 18th century	In the 18th century	*30*	*27*	Calcite, Magnetite, Ilmenite	Sawenius 1825, Holmberg 1857 s. 30, Holmberg 1858 s. 85, Furuhjelm 1884, Lindroos 1987
Ytterkulla	Dragsfjärd	Calcite	Also = Gold	1825e	1820-l	*12 500*	*11 250*	Calcite	Sawenius 1825, Westling 1828, Holmberg 1857 s. 30, Holmberg 1858 s. 84, Furuhjelm 1884, Moberg 1888 s. 25, Eskola et al 1919 s. 77, Lindroos 1987
Ängesö-kalkki	Dragsfjärd	Calcite	There is also an iron mine in the limestone	1840-l	1840-la	*30*	*27*	Calcite, Magnetite	Eskola et al 1919 s. 79
Dalsvik	Espoo	Calcite	Also = Strandbacka or Laaksolahti	1400-l	1400-l - 1900-l	*18 000*	*16 200*	Calcite	Moberg 1881 s. 33, Furuhjelm 1884, Eskola et al 1919 s. 21, Aurola 1954, Sjöblom 1980, Kinnunen 1988, Saltikoff et al 1994 s. 54
Isomäki	Halikko	Calcite	Also = Kokkila	1917e	1917e	*30*	*27*	Calcite	Eskola et al 1919 s. 83
Karhumäki	Halikko	Calcite	Limestone quarries in the Salo area	1825e	1825e	*30*	*27*	Calcite	Lehijärvi 1955
Salainen	Halikko	Calcite	Also = Secret or Secret	1884e	1890e	*30*	*27*	Calcite, Wollastonite	Furuhjelm 1884, Moberg 1890 s. 40, Eskola et al 1919 s. 82, Lehijärvi 1955
Syrjäkulma	Halikko	Calcite	Limestone quarries in the Salo area	1825e	1825e	*30*	*27*	Calcite	Lehijärvi 1955
Toppjoki	Halikko	Calcite	Limestone quarries in the Salo area	1824e	1800-l	*30*	*27*	Calcite	Bremer 1824 s. 27, Holmberg 1858 s. 72, Atlas 1899, Furuhjelm 1884, Eskola et al 1919 s. 83, Ahtola 1998
Yttelä	Halikko	Calcite	Limestone quarries in the Salo area	1825e	1825e	*30*	*27*	Calcite	Sawenius 1825, Moberg 1890 s. 43, Eskola et al 1919 s. 82
Isosaari-Heinola	Heinola	Calcite	Also = Hujansalo	1903e	1903e	*30*	*27*	Calcite	Frosterus 1903 s. 17, Lehijärvi 1979
Viilajärvi	Heinola	Calcite	Also = Tervalahti	1903e	1903e	*30*	*27*	Calcite	Frosterus 1903 s. 17, Lehijärvi 1979
Borgarstrandsviken	Helsinki	Calcite	On both sides of the bay	In the 18th century	In the 18th century, In the early 19th century (1830)	*30*	*27*	Calcite	Holmberg 1858 s. 6, Furuhjelm 1884, Eskola et al 1919 s. 18, Saltikoff et al 1994
Domarby	Helsinki	Calcite	Today = Tuomarila; location inaccurate	1839e	1839e	*30*	*27*	Calcite	Albrecht 1839-44, Holmberg 1858 s. 7, Furuhjelm 1884
Heikbacka	Helsinki	Calcite	Several quarries, however, were no longer discovered in 1904; location inaccurate	1824e	1858e	*30*	*27*	Calcite	Sawenius 1824-25, Holmberg 1858 s. 6, Furuhjelm 1884, Eskola et al 1919 s. 18

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table C1-2. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Domarby	Helsinki	Calcite	Today = Tuomarila; location inaccurate	1839e	1839e	*30*	*27*	Calcite	Albrecht 1839-44, Holmberg 1858 s. 7, Furuhjelm 1884
Heikbacka	Helsinki	Calcite	Several quarries, however, were no longer discovered in 1904; location inaccurate	1824e	1858e	*30*	*27*	Calcite	Sawenius 1824-25, Holmberg 1858 s. 6, Furuhjelm 1884, Eskola et al 1919 s. 18
Herttoniemensalmi	Helsinki	Calcite	A small quarry on the southern shore of the Herttonimensalmi	In the 18th century	In the 18th century, In the early 19th century	*30*	*27*	Calcite	Saltikoff et al 1994
Håkansböle	Helsinki	Calcite	Also = Sottungsby	1840-l	1840-l	*30*	*27*	Calcite	Moberg 1888 s. 33, Eskola et al 1919 s. 19, Saltikoff et al 1994
Kalkholmen-Helsinki	Helsinki	Calcite	Also = Westerkulla and Kalkkisaari; three quarries	In the 18th century	In the 18th century, In the early 19th century (1830)	*80 000*	*72 000*	Calcite	Bremer 1825 s. 39, Holmberg 1858 s. 6, Moberg 1881 s. 33, Furuhjelm 1884, Eskola et al 1919 s.18, Laitala 1991, Saltikoff et al 1994
Kullbacka	Helsinki	Calcite	Also = Sottungsby	1840-l	1840-l	*30*	*27*	Calcite	Moberg 1888 s. 33, Eskola et al 1919 s. 19, Saltikoff et al 1994
Långbacka	Helsinki	Calcite	Near Hämeenkylä	1858e	1800-l?	*30*	*27*	Calcite	Vuorihallitus, Holmberg 1858 s. 12, Eskola et al 1919 s. 21, Aurola 1946, Halonen 1954, Saltikoff et al 1994
Mårtensby-Helsinki-itäinen	Helsinki	Calcite	Also = Qvarnbacka east or now Martinkylä or Vantaankoski	1825e	1830-l - 1840-l	*30*	*27*	Calcite, Pyrite	Bremer 1825 s. 49, Valtaus 1839, Holmberg 1858 s. 11, Furuhjelm 1884, Eskola et al 1919 s. 20, Saltikoff et al 1994
Mårtensby-Helsinki-länsi	Helsinki	Calcite	Also = Qvarnbacka west or now Martinkylä and Vantaankoski	1825e	1830-l - 1840-l	*7 100*	*6 390*	Calcite, Magnetite	Bremer 1825 s. 49, Valtaus 1839, Holmberg 1858 s. 11, Furuhjelm 1884, Eskola et al 1919 s. 20, Saltikoff et al 1994
Petikonmäki	Helsinki	Calcite	In Hämeenkylä, at the western end of the Petiko industrial area	1858e	1800-l?	*30*	*27*	Calcite	Holmberg 1858 s. 12, Eskola et al 1919 s. 21, Aurola 1946, Halonen 1954, Saltikoff et al 1994
Rasböle	Helsinki	Calcite	In the wig of Porvarinlahti in the Mustavuori nature reserve	In the 18th century	In the 18th century, In the early 19th century	*15 000*	*13 500*	Calcite	Eskola et al. 1919 s. 18, Laaksonen 1980, Saltikoff et al 1994
Stansvik-kalkki	Helsinki	Calcite	Also = Tahvonlahti limestone mine	1766	1797	*33*	*30*	Calcite	Bremer 1825 s. 46, Eskola et al 1919 s. 21, Visapää 1967, Saltikoff et al 1994
Turholm	Helsinki	Calcite	Also = Tullisaari	1550e	1550e	*30*	*27*	Calcite	Bremer 1825 s. 39, Albrecht 1839-44, Holmberg 1858 s. 4, Furuhjelm 1884, Eskola et al s. 21, Saltikoff et al 1994
Welene	Helsinki	Calcite	Location inaccurate	1858e	1858e	*30*	*27*	Calcite	Nordenskiöld tiedonanto 185x, Holmberg 1858 s. 8
Ridasjärvi-kalkki	Hyvinkää	Calcite	Also = Riisjärvi or Raisjärvi	1738e	1840-l	*30*	*27*	Calcite	Tilas 1738 s. 42, Tilas 1765, Gadd & Lilius 1789, Thoreld 1842-56, Bremer 1825 s. 9, Valtaus 1843, Holmberg 1858 s. 130, Furuhjelm 1886, Moberg 1889d s. 31, Eskola et al 1919 s. 116
Kalkbergsholmen	Inkoo	Calcite	Also maybe = Bjurs	1867	1867	*30*	*27*	Calcite	Valtaus 1867, Furuhjelm 1884
Lillramsjö	Inkoo	Calcite	Excavated for the Fagervik blast furnace	1858e	1858e	*30*	*27*	Calcite	Holmberg 1858 s. 38, Furuhjelm 1882
Kärjenkoski	Isojoki	Calcite	Also = Somerokallio	1940-l	1940-l	*30*	*27*	Calcite	Turkka 1994, P. Virransalo (suullisesti 2001)
Hevonkoski	Isokyrö	Calcite	Also = Siikakoski	1600-l	1600-la	*250*	*225*	Calcite	Bremer 1824 s. 145, Valtaus 1855, Holmberg 1858 s. 114, Laitakari 1942 s. 57, Turkka 1994, P. Virransalo (suullisesti 2001)
Knasabacka-kalkki	Karjaa	Calcite	Also = Kansbacka or Kasabacka limestone mine; location inaccurate	1642	1670, 1818	*30*	*27*	Calcite, Magnetite	Bremer 1824 s. 93, Westling 1824-39, Holmberg. 1858 s. 39, Furuhjelm 1882, Moberg 1889 s. 33, Eskola et al 1919 s. 25

Table C1-3. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Mustio	Karjaa	Calcite	Also = Hästhage or Tallbacka or even Holmberg = Kila ?, still in operation in 2002	In the 18th century	1700-1800-l, 1954-	14 359 859	11 365 020	Calcite	Westling 1824, Westling 1839, Holmberg 1858 s. 39, Eskola et al 1919 s. 25, Saikkonen 1992
Alitalo	Karjalohja	Calcite	Location inaccurate	1882e	1882e	*2 500*	*2 250*	Calcite	Wiik 1882, Eskola et al 1919 s. 50
Leppäniemi	Karjalohja	Calcite	Also = Maila or Saarenpää or Leppäniemi; location inaccurate	Before the year 1828	Before the year 1828	*350*	*315*	Calcite	Westling 1828, Eskola et al 1919 s. 47
Millomäki	Karjalohja	Calcite	Location inaccurate	1919e	In the early 20th century	*30*	*27*	Calcite	Eskola et al 1919 s. 51
Ruosniemi	Karjalohja	Calcite	Location inaccurate	1919e	In the early 20th century	*30*	*27*	Calcite	Eskola et al 1919 s. 47
Tavio	Karjalohja	Calcite	Also = Långvik	1919e	1919e, 1920-l	*5 000*	*4 500*	Calcite	Eskola et al 1919 s. 48, Saikkonen 1992
Björnbergen	Kemiö	Calcite	Limestone quarries in the Kemiö area	1919e	1919e	*30*	*27*	Calcite	Eskola et al 1919 s. 70
Gräggnäs	Kemiö	Calcite	Limestone quarries in the Kemiö area	1825e	1825e	*30*	*27*	Calcite	Sawenius 1825, Holmberg 1858 s. 84, Furuhjelm 1884
Lilläng	Kemiö	Calcite	Limestone quarries in the Kemiö area	1919e	1919e	*30*	*27*	Calcite	Eskola et al 1919 s. 70
Mellangård	Kemiö	Calcite	The mine was emptied again in the 1920s	1919e	1919e	*30*	*27*	Calcite	Eskola et al 1919 s. 70, Lindroos 1987
Norrsundvik	Kemiö	Calcite	Limestone quarries in the Kemiö area	1825e	1825e	*30*	*27*	Calcite	Sawenius 1825, Westling 1828, Arppe 1855, Holmberg 1858 s. 84, Furuhjelm 1884, Moberg 1888 s. 25, Eskola et al 1919 s.71, Hellström 1932, Lindroos 1987
Stenholmen	Kemiö	Calcite	Also = Vestlax limestone mine; also mined marble	1500-l	from at least 1500, 1912-1950	*56 000*	*50 400*	Calcite	Bremer 1824 s. 49, Sawenius 1825, Holmberg 1858 s. 85, Moberg 1888 s. 24, Eskola et al 1919 s. 70, Garberg 1981
Kalkkila	Kiikala	Calcite	Also = Rekijoki	1884e	1884e	*1 300*	*1 170*	Calcite	Furuhjelm 1884, Eskola et al 1919 s. 55
Maila-Kiikala	Kiikala	Calcite	Also = Saarenkylä	1889e	1889e	*55 000*	*49 500*	Calcite	Moberg 1889c s. 39, Eskola et al 1919 s. 54
Prestgården	Kiikala	Calcite	Location inaccurate	1824e	1824e	*30*	*27*	Calcite	Bremer 1824 s. 48, Holmberg 1858 s. 92, Furuhjelm 1884
Yltäkylä	Kiikala	Calcite	Location inaccurate	1795e	1824e	*30*	*27*	Calcite	Gadd & Gummerus 1795, Bremer 1824 s. 48, Holmberg 1858 s. 92, Furuhjelm 1884
Meiko	Kirkkonummi	Calcite	Also = Buras, Mill Village	1919e	1919e	*30*	*27*	Calcite	Eskola et al 1919 s. 22
Mekoträsk	Kirkkonummi	Calcite	Also = Buras, Mill Village; location inaccurate	1839e	1839e	*30*	*27*	Calcite	Westling 1839, Lauraeus 1848, Holmberg 1858 s. 21, Eskola et al 1919 s. 22
Haapaniemi-kalkki	Kisko	Calcite	Also = Hyypiänmäki limestone mine; three quarries	1795e	1795e	*500*	*450*	Calcite	Gadd & Gummerus 1795, Lundström 1814, Sawenius 1825, Holmberg 1857 s. 16, Holmberg 1858 s. 54, Moberg 1889 s. 32, Eskola et al 1919 s. 63
Jylyjärvi	Kisko	Calcite	Small quarries; location inaccurate	1919e	1919e	*30*	*27*	Calcite	Eskola et al 1919 s. 55
Kalkkimäenviitta	Kisko	Calcite	Also = Aijala limestone mine; location inaccurate	1825e	1830-l	*30*	*27*	Calcite	Sawenius 1825, Holmberg 1857 s. 16, Holmberg 1858 s. 57, Eskola et al 1919 s. 65
Karjasuonmäki	Kisko	Calcite	Probably also = the middle bridge	1825e	1857e	*30*	*27*	Calcite	Sawenius 1824-25, Holmberg 1857 s. 16, Holmberg 1858 s. 55, Eskola et al 1919 s. 64

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table C1-4. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Kärkelä	Kisko	Calcite	Old mining company	1825e	1912e	*5 000*	*4 500*	Calcite, Wollastonite	Sawenius 1825, Moberg 1889 s. 32, Eskola et al 1919 s. 55
Äkäsjoensuu	Kolari	Calcite	Also = Pike or Pike	1861e	1968-1989, 1995-1999	4 644 135	4 397 625	Calcite, Pyrite	Albrecht 1841-61, Eskola et al 1919 s. 232, Paulaharju 1923 s. 141, Aurola 1951, Öhman 1967a, Kitunen 1970, Smeds 1998
Limskär	Korppoo	Calcite	Also = Hummelskär or also = Korpogård; excavated at Krampo Manor	1839e	1840-lo	*30*	*27*	Calcite	Lauraeus 1839, Lauraeus 1844, Lauraeus 1846, Valtaus 1846, Holmberg 1858 s. 80, Moberg 1890 s. 26, Eskola et al 1919 s. 105
Åvensor	Korppoo	Calcite	Also = Runudden, Ovensår, Åland or Kirmonniemi	1795e	In the early 20th century, 1912-1916	100 726	91 569	Calcite	Gadd & Gummerus 1795, Bremer 1824 s. 75, Holmberg 1858 s. 80, Moberg 1890 s. 40, Laitakari 1916, Eskola et al 1919 s. 105, Nyström 1951, Metzger 1954d, Boström 1972b, Smeds 1998
Kivisalmi	Kuhmalahti	Calcite	Old mining company	1737e	In the 18th centurya	*30*	*27*	Calcite	Tilas 1737 s. 36, Gadd & Lilius 1789, Holmberg 1858 s. 148, Matisto 1976
Katajakorpi	Kuortane	Calcite	Location inaccurate	1942e	1942e	*30*	*27*	Calcite, Quartz, Pyrrhotite	Laitakari 1942, Turkka 1994
Kivimäen Pikkuprunni	Kurikka	Calcite	Old limestone deposits in the Kurikka area	1845e	1800-l	*550*	*495*	Calcite, Graphite	Holmberg 1857 s. 37, Eskola et al 1919 s. 118
Kivimäen Vanhaprunni	Kurikka	Calcite	Also = Kivimäki Isoprunni; Old limestone deposits in the Kurikka area	1845e	1800-l	*10 500*	*9 450*	Calcite, Graphite	Holmberg 1857 s. 37, Eskola et al 1919 s. 118
Kivimäki	Kurikka	Calcite	Also = Kivimäki Isoprunni; Old limestone deposits in the Kurikka area	1792e	Vanhat, 1800-l	*6 300*	*5 670*	Calcite, Pyrite, Graphite	Rinman 1792, Valtaus 1845,Thoreld 1852-1861, Eskola et al 1919 s. 116
Sikamäki	Kurikka	Calcite	Old limestone deposits in the Kurikka area, several quarries	1792e	Vanhat, 1800-l	*1 000*	*900*	Calcite, Pyrite	Rinman 1792, Thoreld 1852-1861, Eskola et al 1919 s. 118
Vesiperä	Kurikka	Calcite	Old limestone deposits in the Kurikka area, several quarries, also in the 1960s	1792e	Vanhat,1800-l, 1966-1970	38 500	34 128	Calcite, Pyrite, Graphite, Pyrrhotite	Westling 1829, Lauraeus LG 1833-52, Holmberg 1858 s. 112, Furuhjelm 1886, Eskola et al 1919 s. 117, Heiskanen 1954, Lundén 1988, Turkka 1994
Ruotsalo-kalkki	Kälviä	Calcite	Old limestone deposit, several excavations	In the 18th centurya	In the 18th centurya, In the early 20th century, 1930-l - 1960-l	*30*	*27*	Calcite	Metzger 1936b, Neuvonen 1971, Lundén 1988
Ihalainen	Lappeenranta	Calcite	Wollastoniteastonite is also produced, still in operation in 2002	1500-l	1500-l, ainakin alkaen 1794-, 1910-	53 797 281	45 641 819	Calcite, Wollastonite, Dolomite (5%)	Severgin 1805, Sobolevski 1839, Holmberg 1858 s. 231, Eskola et al 1919 s. 153, Nyström 1951, Metzger 1954, Ylönen 1976, Ranta 1978, Lundén 1979, Smeds 1998, Lehtinen 1995
Hermala-kalkki	Lohja	Calcite	On the Big Island of Lohjanjärvi	1847	1847	*10 000*	*9 000*	Calcite	Valtaus 1847, Eskola et al 1919 s. 39, Saikkonen 1992
Hermala-Kiekla	Lohja	Calcite	Probably also = Puck	1830	1897-1904e	*10 000*	*9 000*	Calcite, Pyrrhotite	Valtaus 1831, Helsingin yliopisto 1832, Westling 1834, Lauraeus 1842, Holmberg 1857 s. 19, Holmberg 1858 s. 29, Eskola et al 1919 s. 45 (valokuva 1904), Hoving 1951, Saikkonen 1992
Kalkkisaari	Lohja	Calcite	Ojamo, south of Leessaare in Lohjanjärvi	1500-l	1904e	*3 400*	*3 060*	Calcite	Sergelius 1904, Neovius 1911, Eskola et al 1919 s. 39, Saikkonen 1992
Marttila	Lohja	Calcite	Location inaccurate	1824e	1824e	*30*	*27*	Calcite	Westling 1824-39, Holmberg 1857 s. 19, Holmberg 1858 s. 29
Ojamo-kalkki	Lohja	Calcite	Activities in the years 1925 - 1965	1925	1925-1965	*9 839 479*	8 700 000	Calcite	Holmberg 1858 s. 30, Eskola et al 1919, Strandström 1950, Hoving 1951, Parras & Tavela 1954, Saikkonen 1992
Paavola-kalkki	Lohja	Calcite	On the Big Island of Lohjanjärvi	1919e	1919e	*30*	*27*	Calcite	Eskola et al 1919 s. 45

Table C1-5. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Pietilä-kalkki	Lohja	Calcite	On the island of Lake Lohjanjärvi, several quarries	Before the year 1828	Before the year 1828	*30*	*27*	Calcite	Westling 1828, Holmberg 1857 s. 19, Nordenskiöld 1863, Eskola et al 1919 s. 44, Saikkonen 1992
Pitkäniemi	Lohja	Calcite	In the center of Lohja	1800-l	1914-1924, 1937-1963	918 577	838 746	Calcite	Turtiainen 1954
Tytyri	Lohja	Calcite	Also = Collision or Tarbarby; Solhem is also nearby, still in operation in 2002	1824e	1911-	34 482 592	34 113 431	Calcite, Wollastonite	Westling 1824, Bremer 1825 s. 75, Holmberg 1858 s. 28, Furuhjelm 1884, Eskola et al 1919 s. 40, Sandström 1943, Holm 1951, Hoving 1951, Kalla 1952, Parras & Tavela 1954, Latva 1971
Kukkianjärvi	Luopioinen	Calcite	Also = Kuohijoki or Korkeila; mined lime for the construction of Häme Castle	1000-l	Keskiajalla	*4 500*	*4 050*	Calcite	Tilas 1738, Gadd & Lilius 1789, Lundström 1814 s. 82, Westling 1824, Bremer 1825 s. 5, Westling 1824-39, Holmberg 1858 s. 132, Furuhjelm 1886, Eskola et al 1919 s. 115, Lundén 1988
Halpanen	Mikkeli	Calcite	Also = Kalkkiniemi	1839	1840-l - ?	*1 200*	*1 080*	Calcite	Valtaus 1839, Holmberg 1858 s. 201, Frosterus 1902 s. 18, Eskola et al 1919 s. 127, Puustinen 1986, Valjakka 1987, Vihola 1992
Kaukmäki	Muurla	Calcite	Also = Distance; location inaccurate	1824e	1858e	*30*	*27*	Calcite	Bremer 1824 s. 33, Sawenius 1825, Holmberg 1858 s. 92, Moberg 1890 s. 43, Eskola et al 1919 s. 81
Frugård	Mäntsälä	Calcite	Also = Kalkkisaari, Alikartano or Numminen; burned close to lime	1825e	1810-1905	*9 300*	*8 370*	Calcite, Vesuvianite, Wollastonite	Bremer 1825 s. 53, Holmberg 1857 s. 14, Holmberg 1858 s. 14, Moberg 1889d s. 31, Eskola et al 1919 s. 14, Kulonpalo 1947, Pääkkönen 1948, Härme 1978, Rosenberg et al 1993
Ernholm	Nauvo	Calcite	Location inaccurate	1890e	1890-l	*31 000*	*27 900*	Calcite	Moberg 1890 s. 25, Eskola et al 1919 s. 103
Finnby	Nauvo	Calcite	Location inaccurate	1824e	1824e	*30*	*27*	Calcite	Bremer 1824 s. 78, Moberg 1890 s. 25, Eskola et al 1919 s. 103
Gyttjan	Nauvo	Calcite	Also = Sheep credit	1890e	1890e	*30*	*27*	Calcite	Moberg 1890b s. 28, Eskola et al 1919 s. 102
Väcklaks	Nauvo	Calcite	Also = Väcklaksnäset; location inaccurate	1839e	1890-l	*30*	*27*	Calcite	Lauraeus 1839, Holmberg 1858 s. 79, Moberg 1890 s. 25, Eskola et al 1919 s. 103
Karisjärvi	Nummi-Pusula	Calcite	An old limestone quarry in Pusula	1857e	1857e	*30*	*27*	Calcite	Holmberg 1857 s. 18, Holmberg 1858 s. 32, Furuhjelm 1884, Eskola et al 1919 s. 35
Yli-Periäinen	Nurmijärvi	Calcite	In the Rajamäki area	1904e	1904e	*500*	*450*	Calcite	Eskola et al 1919 s. 31,
Kinnumäki	Orimattila	Calcite	Also = Rautamäki	1827e	1903 viimeksi	*30*	*27*	Calcite	John 1827, Holmberg 1858 s. 18, Furuhjelm 1884, Moberg 1888e s. 36, Eskola et al 1919 s. 14, Lehijärvi 1964
Huso	Paimio	Calcite	Four quarries	1795e	1824e	*800*	*720*	Calcite	Gadd & Gummerus 1795, Holmberg 1858 s. 72, Moberg 1890 s. 41, Eskola et al 1919 s. 87, Ahtola 1998
Iltula	Paimio	Calcite	Also = Briitanmäki; location inaccurate	1824e	1830e	*30*	*27*	Calcite	Bremer 1824 s. 27, Moberg 1890 s. 41, Eskola et al 1919 s. 88
Kurki	Paimio	Calcite	Several quarries	1795e	1824 ainakin	*800*	*720*	Calcite	Gadd & Gummerus 1795, Wathén 1856, Holmberg 1858 s. 72, Moberg 1890 s. 41, Eskola et al 1919 s. 88
Bläsnäs	Parainen	Calcite	Also = Nääs? From Bläsnäs pier a little to the northwest right by the sea	1795e	1800-l	*30*	*27*	Calcite	Gadd & Gummerus 1795, Westling 1828, Holmberg 1857 s. 26, Holmberg 1858 s. 76, Furuhjelm 1884, Eskola et al 1919 s. 96

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table C1-6. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Ersby-Gropen-itäinen	Parainen	Calcite	Continuations of the Simonby quarries to the east	In the 18th centurya	1740-l - 1800-l	*75 000*	*67 500*	Calcite	Gadd & Mallén 1768, Westling 1828, von Jossa 1839, Holmberg 1858 s. 73, Eskola et al 1919 s. 94, Öhman 1971
Ersby-Gropen-läntinen	Parainen	Calcite	Continuations of the Simonby quarries to the east	In the 18th centurya	1740-l - 1800-l	*83 000*	*74 700*	Calcite	Gadd & Mallén 1768, Westling 1828, von Jossa 1839, Holmberg 1858 s. 73, Eskola et al 1919 s. 94, Öhman 1971
Ersby-itä	Parainen	Calcite	Continuations of the Simonby quarries to the east	In the 18th centurya	1740-l - 1800-l	*112 000*	*100 800*	Calcite	Gadd & Mallén 1768, Westling 1828, von Jossa 1839, Holmberg 1858 s. 73, Eskola et al 1919 s. 94, Öhman 1971
Ersby-länsi	Parainen	Calcite	Continuations of the Simonby quarries to the east	In the 18th centurya	1740-l - 1800-l	*200 000*	*180 000*	Calcite	Gadd & Mallén 1768, Westling 1828, von Jossa 1839, Holmberg 1858 s. 73, Eskola et al 1919 s. 94, Öhman 1971
Forsström	Parainen	Calcite	Quarries in Storgård and Norrgård	1919e	1919e	*30*	*27*	Calcite	Eskola et al 1919 s. 90
Hyvilempi	Parainen	Calcite	Several quarries	In the 18th century	In the 18th centuryo - 1800-l	*600*	*540*	Calcite	Westling 1828, Elmgren 1847, Holmberg 1857 s. 26, Holmberg 1858 s. 76, Moberg 1890 s. 39, Eskola et al 1919 s. 98, Suomen talousseura 1978
Kräkberget	Parainen	Calcite	Also = Grottberget	1919e	1919e	*10 000*	*9 000*	Calcite	Eskola et al 1919 s. 96, Laitakari 1920, Suomen talousseura 1978
Lapplaks	Parainen	Calcite	Also = Kalkholm	Before the year 1828	1857e	*1 000*	*900*	Calcite	Westling 1828, Holmberg 1857 s. 27, Holmberg 1858 s. 76, Furuhjelm 1884a, Eskola et al 1919 s. 101, Laitakari 1920
Limberg-Skräbböle	Parainen	Calcite	The main quarry in the Pargas area, still in operation in 2002	1919e	Keskiajalta alkaen, 1898-	*30*	*27*	Calcite	von Jossa 1839, Holmberg 1858 s. 73, Eskola et al 1919 s. 91, Öhman 1967b, Suomen talousseura 1978
Norrby-Söderby	Parainen	Calcite	Location inaccurate	1890e	1800-l	*30*	*27*	Calcite	Moberg 1890 s. 39, Eskola et al 1919 s. 88
Ontala	Parainen	Calcite	In Pettyby	Before the year 1828	1740-l - In the early 19th century	*10 000*	*9 000*	Calcite	Westling 1828, Holmberg 1857 s. 27, Holmberg 1858 s. 77, Eskola et al 1919 s. 100, Suomen talousseura 1978
Parainen	Parainen	Calcite	Also = Limberg and Skräbböle; common name for the existing quarries in Pargas; location inaccurate	1000-l	Keskiajalta alkaen, 1898-	96 083 874	78 996 984	Calcite	Westling 1828, Holmberg 1857, Holmberg 1858 s. 73, Eskola et al 1919 s. 90, Laitakari 1920, Paraisten Kalkkivuori Osakeyhtiö 1921, Nyström 1951, Metzger 1954, Jöever 1989, Smeds 1998
Parsby-kalkki	Parainen	Calcite	Limestone quarries in the Pargas area	Before the year 1828	1800-l	*20 000*	*18 000*	Calcite	Westling 1828, Elmgren 1847, Holmberg 1857 s. 27, Eskola et al 1919 s. 97, Suomen talousseura 1978
Pettiby	Parainen	Calcite	Limestone quarries in the Pargas area	In the 18th centurya	1740e - In the early 20th century	*250 000*	*225 000*	Calcite	Westling 1828, Holmberg 1858 s. 76, Eskola et al 1919 s. 100, Suomen talousseura 1978
Piukkala	Parainen	Calcite	Continuations of the Ersby quarries to the east	1792e	1792e - 1800-l	*50 000*	*45 000*	Calcite	Westling 1828, Holmberg 1858 s. 75, Eskola et al 1919 s. 93, Suomen talousseura 1978

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table C1-7. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Sammfälligheten	Parainen	Calcite	East of the Limberg quarry	1919e	1919e	*30*	*27*	Calcite	Eskola et al 1919 s. 90
Simonby-Gropen-itäinen	Parainen	Calcite	The westernmost quarries in Pargas	In the 18th centurya	1740-l - In the early 19th century	*90 000*	*81 000*	Calcite	Westling 1828, Elmgren 1847, Holmberg 1858 s. 75, Eskola et al 1919 s. 95
Simonby-Gropen-läntinen	Parainen	Calcite	The westernmost quarries in Pargas	In the 18th centurya	1740-l - In the early 19th century	*70 000*	*63 000*	Calcite	Westling 1828, Elmgren 1847, Holmberg 1858 s. 75, Eskola et al 1919 s. 95
Skötudden	Parainen	Calcite	Also = Atu limestone mine	1858e	1800-l	*30*	*27*	Calcite	Holmberg 1858 s. 78, Moberg 1890b s. 24, Eskola et al 1919 s. 101, Pehrman 1931, Suomen talousseura 1978
Sydmo	Parainen	Calcite	Limestone quarries in the Pargas area	1919e	1919e	*30*	*27*	Calcite	Eskola et al 1919 s. 100
Sysilaks	Parainen	Calcite	Also = Sysilahti	Before the year 1828	1857e	*1 500*	*1 350*	Calcite	Westling 1828, Elmgren 1847, Holmberg 1857 s. 27, Holmberg 1858 s. 77, Suomen talousseura 1978
Tara	Parainen	Calcite	Old lime quarries in the Pargas area	Before the year 1828	1917e	*10 000*	*9 000*	Calcite	Westling 1828, Holmberg 1857 s. 26, Holmberg 1858 s. 76, Moberg 1890 s. 39, Eskola et al 1919 s. 98, Suomen talousseura 1978
Tennby	Parainen	Calcite	Also = Birch hook	1890e	1800-l	*45 000*	*40 500*	Calcite	Moberg 1890 s. 38, Eskola et al 1919 s. 89, Suomen talousseura 1978
Yliskylä-Perniö	Perniö	Calcite	Also = Pitkäjärvi or Öfverby	1824e	1800-l	*30*	*27*	Calcite	Bremer 1824 s. 52, Sawenius 1825, Holmberg 1857 s. 32, Holmberg 1858 s. 90, Eskola et al 1919 s. 66
Inkere	Pertteli	Calcite	Also = Kalkkimäki; mined for the Inkere glass factory	1790e	1865e?	*3 000*	*2 700*	Calcite	Bremer 1824 s. 33, Sawenius 1825, Holmberg 1857 s. 33, Holmberg 1858 s. 92, Furuhjelm 1884, Moberg 1890 s. 42, Eskola et ala 1919 s. 81
Ordeenmäki	Pertteli	Calcite	Location inaccurate	1825e	1858e	*30*	*27*	Calcite	Sawenius 1825, Holmberg 1858 s. 92, Eskola et al 1919 s. 81
Tuotiskallio	Pertteli	Calcite	Location inaccurate	1825e	1858e	*130*	*117*	Calcite	Sawenius 1825, Holmberg 1858 s. 92, Moberg 1890 s. 41, , Eskola et al 1919 s. 81
Valkjärvi	Pohja	Calcite	Also = Skogböle limestone mine, quarries Blomsterdal, Jämmerdal, Valkjärvi, Lustikulla	1825e	1900e	*3 100*	*2 790*	Calcite	Sawenius 1825, Furuhjelm 1884, Holmberg 1858 s. 40, Eskola et al 1919 s. 27
Kotijärvi	Pornainen	Calcite	In Laukkoski	1860-l	1860-l	*1 100*	*990*	Calcite	Eskola et al 1919 s. 15
Vanha-Krouvari	Pornainen	Calcite	In Laukkoski	1830-l	1830-l	*600*	*540*	Calcite	Eskola et al 1919 s. 15
Kalkholmen-Porvoo	Porvoo	Calcite	Also = Sundö iron mine	1753	1753	*30*	*27*	Calcite	Bremer 1825 s. 109, Holmberg 1858 s. 16, Furuhjelm 1884, Renvall 1934
Kriping	Porvoo	Calcite	Location inaccurate	1919e	1919e	*30*	*27*	Calcite, Wollastonite	Eskola et al 1919 s. 13
Molnby	Porvoo	Calcite	Close to the border of Pernaja	1814e	In the early 20th century, vielä 1915	*30*	*27*	Calcite, Wollastonite	Lundström 1814, John 1827, Holmberg 1858 s. 16, Furuhjelm 1884, Moberg 1888d s. 43, Eskola et al 1919 s. 13, Laitala 1984
Sunesund	Porvoo	Calcite	Ironworks cartridge Nohrström excavated	1753	1753	*30*	*27*	Calcite, Magnetite	Bremer 1825 s. 109, Holmberg 1858 s. 16, Furuhjelm 1884, Renvall 1934
Åkersholmen-kalkki	Porvoo	Calcite	Also = Sundö's second limestone mine, Styrmansholmen	1825e	1825e	*30*	*27*	Calcite	Bremer 1825 s. 109, Holmberg 1858 s. 16, Furuhjelm 1884, Renvall 1934
Salonsaari	Ruokolahti	Calcite	Also = Suikkala	1800-l	1800-l	*5 000*	*4 500*	Calcite	Väyrynen 1951, Nykänen & Meriläinen 1991

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table C1-8. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Moisio	Salo	Calcite	Limestone quarries in the Salo area	1824e	1824e	*1 500*	*1 350*	Calcite	Bremer 1824 s. 33, Holmberg 1857 s. 33, Holmberg 1858 s. 92, Furuhjelm 1884, Moberg 1890 s. 42, Eskola et al 1919 s. 82
Anttila-Sauvo	Sauvo	Calcite	Several quarries	1919e	1919e	*30*	*27*	Calcite	Eskola et al 1919 s. 87
Dikaböle	Sauvo	Calcite	Several quarries	1919e	1919e	*30*	*27*	Calcite	Eskola et al 1919 s. 87
Järvenkylä	Sauvo	Calcite	Also = Träskby; three quarries	1824e	1824e, 1885-1892, 1899-1900	*41 500*	*37 350*	Calcite	Bremer 1824 s. 27, Holmberg 1858 s. 72, Moberg 1890 s. 41, Furuhjelm 1884, Eskola et al 1919 s. 83, Lehijärvi 1955 s. 16, Ahtola 1988, Kujanen 1996, Seppänen et al 2000
Kosundböle	Sauvo	Calcite	Sauvon lime quarries	1824e	1800-l	*30*	*27*	Calcite	Bremer 1824 s. 27, Holmberg 1858 s. 72, Furuhjelm 1884, Moberg 1890 s. 41, Eskola et al 1919 s. 83
Marike-itäinen	Sauvo	Calcite	Also = Iso-Marjo; several quarries	1884e	1884e-1800-lo, In the early 20th century-1915, 1940-la	*3 900*	*3 510*	Calcite, Wollastonite	Furuhjelm 1884, Eskola et al 1919 s. 84, Lehijärvi 1955 s. 16, Kujanen 1996, Ahtola 1998
Marike-läntinen	Sauvo	Calcite	Also = Iso-Marjo; several quarries	1884e	1884e-1800-lo, In the early 20th century-1915, 1940-la	*30*	*27*	Calcite, Wollastonite	Furuhjelm 1884, Eskola et al 1919 s. 84, Lehijärvi 1955 s. 16, Kujanen 1996, Ahtola 1998
Pataraütila	Sauvo	Calcite	Sauvon lime quarries	1919e	1919e	*30*	*27*	Calcite, Phlogopite	Eskola et al 1919 s. 87, Lehijärvi 1955 s. 16
Rikarniemi	Sauvo	Calcite	Sauvon lime quarries, several quarries	1919e	1919e	*30*	*27*	Calcite	Eskola et al 1919 s. 87
Löparö	Sipoo	Calcite	A small mining company	1919e	1919e	*30*	*27*	Calcite	Eskola et al 1919 s. 16
Mårtensby-Sipoo	Sipoo	Calcite	Also = Martinkylä; mined for the Savio cement plant	1825e	1870-l	*18 000*	*16 200*	Calcite, Graphite	Sawenius 1824-25, Holmberg 1857 s. 22, Holmberg 1858 s. 11, 15, Moberg 1889d s. 30, Eskola et al 1919 s. 15, Härme 1978
Takvedaholmen-kalkki	Sipoo	Calcite	Location inaccurate	1857e	1888 ainakin	*30*	*27*	Calcite	Holmberg 1857 s. 22, Holmberg 1858 s. 15, Furuhjelm 1884a, Moberg 1888 s. 34, Eskola et al 1919 s. 17
Gårdskulla	Siuntio	Calcite	Location inaccurate	1884e	1884e	*800*	*720*	Calcite	Furuhjelm 1884, (Sergelius 1904), Eskola et al 1919 s. 23, Saikkonen 1992
Kynnars	Siuntio	Calcite	A couple of quarries on the shore of Lappträki	1884e	1884e	*30*	*27*	Calcite	Furuhjelm 1884, Eskola et al 1919 s. 22
Tjusträsk	Siuntio	Calcite	Location inaccurate	1860-l	1860-l	*30*	*27*	Calcite	Eskola et al 1919 s. 23
Tuppala	Siuntio	Calcite	Also = Tupala	1825e	1825e	*30*	*27*	Calcite	Bremer 1825 s. 67, Furuhjelm 1884, Eskola et al 1919 s. 24
Kirju	Suomusjärvi	Calcite	Also = Kitula	1889e	1915 vielä	*10 000*	*9 000*	Calcite	Moberg 1889c s. 38, Eskola et al 1919 s. 52
Rautsuo	Suomusjärvi	Calcite	Also = Pompus, Rautsuo	1825e	1825e	*9 500*	*8 550*	Calcite	Sawenius 1825, Holmberg 1858 s. 56, Moberg 1889c s. 38, Eskola et al 1919 s. 52
Salmijärvi-kalkki	Suomusjärvi	Calcite	Also = Kitula limestone mine	1825e	1858e	*30*	*27*	Calcite	Sawenius 1825, Holmberg 1858 s. 56
Bastböle	Särkisalo	Calcite	Excavated for Teijo's blast furnace	1825e	Vanhat, 1852	*30*	*27*	Calcite	Sawenius 1825, Valtaus 1852, Holmberg 1857 s. 33, Furuhjelm 1884, Granholm & Häggblom 1969

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table C1-9. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Förby	Särkisalo	Calcite	Known since the Middle Ages, still in operation in 2002	1825e	Keskiajalta alkaen, 1329, 1589, 1882-	9 151 163	8 760 884	Calcite	Sawenius 1825, Holmberg 1858 s. 91, Furuhjelm 1884, Eskola et al 1919 s. 66, Hellström 1932, Garberg 1939, Ahlfors 1954, Alanko 1958, Granholm & Häggblom 1969, Mikkola 1971, Saarmaa 1983
Kaukosalo	Särkisalo	Calcite	Also = Kolsjö or Tvärminne lime quarry; mined for the Trollshovda blast furnace	1795e	Vanhat, 1958-1962	59 854	59 854	Calcite	Gadd & Gummerus 1795, Sawenius 1825, Valtaus 1846, Eskola et al 1919 s. 66, Granholm & Häggblom 1969, Mikkola 1971
Kota	Särkisalo	Calcite	Also = Kotva; mined for the Trollshovda blast furnace	1846e	1846	*30*	*27*	Calcite	Valtaus 1846, Eskola et al 1919 s. 69
Lillandeshalsen	Särkisalo	Calcite	Also = Lowland Neck; at least three quarries	1825e	1825e	*2 200*	*1 980*	Calcite	Sawenius 1825, Eskola et al 1919 s. 69
Murom-kalkki	Särkisalo	Calcite	Särkisalo lime quarries	1825e	1800-l	*30*	*27*	Calcite	Sawenius 1825, Westling 1835, Hultin 1897 s. 278
Niksor-eteläinen	Särkisalo	Calcite	Several quarries, excavated for the blast furnaces at Dali and Skogby	1795e	In the 18th centuryo - 1828	*30*	*27*	Calcite	Gadd & Gummerus 1795, Bremer 1824 s. 52, Westling 1834, Holmberg 1858 s. 90, Furuhjelm 1884, Eskola et al 1919 s. 69, Hellström 1932, Ekman 1936, Metzger 1948
Niksor-pohjoinen	Särkisalo	Calcite	Several quarries, excavated for the blast furnaces at Dali and Skogby	1795e	In the 18th centuryo - 1828	*30*	*27*	Calcite	Gadd & Gummerus 1795, Bremer 1824 s. 52, Westling 1834, Holmberg 1858 s. 90, Furuhjelm 1884, Eskola et al 1919 s. 69, Hellström 1932, Ekman 1936, Metzger 1948
Pettu	Särkisalo	Calcite	Särkisalo lime quarries	1825e	1800-lo	*3 000*	*2 700*	Calcite	Sawenius 1825, Eskola et al 1919 s. 69
Hermansö-kalkki	Tammisaari	Calcite	There is also an iron mine in the limestone	In the 18th century	1847	*30*	*27*	Calcite	Westling 1835, Holmberg 1858 s, 41, Furuhjelm 1884
Kalkholmen-Tammisaari	Tammisaari	Calcite	Location inaccurate	1832e	1830-l	*30*	*27*	Calcite	Lauraeus 1835-52, Furuhjelm 1884, Holmberg 1858 s. 42, Eskola et al 1919 s. 30
Peuransuosaari	Tammisaari	Calcite	Limestone quarries in the toboggan area	1825e	1825e	*30*	*27*	Calcite	Sawenius 1825, Holmberg 1857 s. 13, Holmberg 1858 s. 45, Furuhjelm 1884, Eskola et al 1919 s. 31, Tavela 1950
Rusutjärvi	Tuusula	Calcite	Also = Mykkylä?	1889e	1889e	*30*	*27*	Calcite	Moberg 1889d s. 30, Eskola et al 1919 s. 22
Driksbäck	Vantaa	Calcite	Location inaccurate	Before the year 1828	1857e	*30*	*27*	Calcite, Wollastonite	Westling 1828, Holmberg 1857 s. 6, Holmberg 1858 s. 8, Eskola et al 1919 s. 20
Gårds	Vantaa	Calcite	In the vineyard	In the 18th century	In the 18th century, 1800-lo	*30*	*27*	Calcite	Holmberg 1857 s. 6, Holmberg. 1858 s. 10, Moberg 1881, Eskola et al 1919, Saltikoff et al 1994
Helsinginmäki	Vantaa	Calcite	In Hämeenkylä	1800-l	1800-l?	*30*	*27*	Calcite	Holmberg 1858 s. 12, Eskola et al 1919 s. 21, Aurola 1946, Halonen 1954, Saltikoff et al 1994
Henriksdal	Vantaa	Calcite	Today = Heikinlaakso	1888e	1888e	*30*	*27*	Calcite	Moberg 1888 s. 33, Furuhjelm 1884, Eskola et al 1919 s. 19
Härtsinmäki	Vantaa	Calcite	In Hämeenkylä	1858e	1800-l?	*30*	*27*	Calcite	Holmberg 1858 s. 12, Eskola et al 1919 s. 21, Aurola 1946, Halonen 1954, Saltikoff et al 1994
Kakolanmäki	Vantaa	Calcite	In Hämeenkylä	1858e	1800-l?	*30*	*27*	Calcite	Holmberg 1858 s. 12, Eskola et al 1919 s. 21, Aurola 1946, Halonen 1954, Saltikoff et al 1994

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table C1-10. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Lustigkulla	Vantaa	Calcite	A couple of small quarries	In the 18th century	In the 18th century, 1800-lo	*30*	*27*	Calcite	Holmberg 1857 s. 6, Holmberg. 1858 s. 10, Moberg 1881, Eskola et al 1919, Saltikoff et al 1994
Mårtensby-Vantaa-kalkki-itäinen	Vantaa	Calcite	Excavated for the use of the Vantaa blast furnace	1839e	1839-1860?	*7 000*	*6 300*	Calcite	Valtaus 1839, Eskola et al 1919 s. 20, Saltikoff et al 1994
Mårtensby-Vantaa-kalkki-läntinen	Vantaa	Calcite	Excavated for the use of the Vantaa blast furnace	1839e	1839-1860?	*30*	*27*	Calcite	Valtaus 1839, Eskola et al 1919 s. 20, Saltikoff et al 1994
Sillböle-Hevoshaka	Vantaa	Calcite	In the area of the Sillböle iron mine	1744	1800-l	*30*	*27*	Calcite	Eskola et al 1919 s.20, Saltikoff et al 1994
Sillböle-kalkki	Vantaa	Calcite	In the area of the Sillböle iron mine	1744	1800-l	*5 200*	*4 680*	Calcite	Eskola et al 1919 s.20, Saltikoff et al 1994
Stubbacka	Vantaa	Calcite	Also = Vinikby, nowadays = Viinikkala	In the 18th century	In the 18th century, 1877- ?	*1 600*	*1 440*	Calcite	Westling 1828, Valtaus 1836, Holmberg 1857 s. 6, Holmberg. 1858 s. 10, Nordenskiöld 1855, Moberg 1881, Furuhjelm 1884, Moberg 1888b s. 33, Eskola et al 1919 s. 20, Saltikoff et al 1994
Mustaluoto	Velkua	Calcite	Also = Mustiluoto	1835e	1858e	*30*	*27*	Calcite	Lauraeus 1835-52, Holmberg 1858 s. 81, Furuhjelm 1886, Moberg 1890 s. 40, Eskola et al 1919 s. 104
Räyrinki	Veteli	Calcite	Also = Löja and Lång	1829e	1901	*30*	*27*	Calcite, Pyrite, Pyrrhotite, Chalcopyrite	Westling 1829, Holmberg 1858 s. 117, Valtaus 1901, Eskola 1923, Laitakari 1937, Laitakari 1942, Turkka 1994
Billböle	Västanfjärd	Calcite	Location inaccurate	1825e	1825e	*30*	*27*	Calcite	Sawenius 1825, Nordenskiöld 1855, Holmberg 1857 s. 30, Holmberg 1858 s. 84, Furuhjelm 1884, Eskola et al 1919 s. 77
Bredvik	Västanfjärd	Calcite	Limestone quarries in the Kemiö area	1825e	1825e	*20 000*	*18 000*	Calcite	Sawenius 1825, Lemberg 1870, Eskola et al 1919 s. 76, Ahlfors 1954, Lindroos 1987
Brännboda	Västanfjärd	Calcite	Limestone quarries in the Kemiö area	1825e	1800-l	*30*	*27*	Calcite	Sawenius 1825, Lemberg 1870, Lindroos 1987
Dalbo	Västanfjärd	Calcite	Limestone quarries in the Kemiö area	1825e	1825e	*30*	*27*	Calcite	Hannu Seppänen 1997
Illo	Västanfjärd	Calcite	Also = Grägnäs	1825e	1882-1952	232 820	139 561	Calcite, Dolomite (5%)	Sawenius 1825, Holmberg 1857 s. 31, Holmberg 1858 s. 85, Lemberg 1870, Eskola et al 1919 s. 75, Metzger 1948, Ahlfors 1954, Ahtola 1998
Lammala	Västanfjärd	Calcite	Also = Norrlammala; quarries Östergård, Mellangård	1825e	1825e, -1938	71 770	52 879	Calcite, Dolomite (5%)	Sawenius 1825, Holmberg 1858 s. 85, Eskola et al 1919 s. 72, Hellström 1932, Metzger 1948, Nyström 1951, Lindroos 1987
Ängsholm	Västanfjärd	Calcite	Limestone quarries in the Kemiö area	1919e	1919e	*30*	*27*	Calcite	Eskola et al 1919 s. 75
Kupari	Alajärvi	Calcite-dolomite	Also = Copper Rock	1836	1836- ?	*30*	*27*	Dolomite	Valtaus 1836, Eskola et al 1919 s. 122, Lundén 1988, Turkka 1994
Hennijoki	Alastaro	Calcite-dolomite	Also = Hänjoki; the quarry was already emptied during the Order (1737); location inaccurate	1737e	1737e	*30*	*27*	Dolomite	Tilas 1737, Gadd 1792, Bremer 1824 s. 119, Holmberg 1858 s. 98, Wilkman 1989 s. 53, Eskola et al 1919 s. 112

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table C1-11. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Mattila-Alastaro	Alastaro	Calcite-dolomite	Probably also = Rekivuori, Räkivuori or Rakkuuori; location inaccurate	1737e	1737e	*30*	*27*	Dolomite	Tilas 1737, Holmberg 1858 s. 98, Wilkman 1898 s. 53
Nordsjö	Helsinki	Calcite-dolomite	Also = Vuosaari	In the 18th century	In the 18th century, 1800-l, 1939-1965	16 272	16 472	Calcite, Dolomite	Sawenius 1825, Holmberg, 1857 s. 6, Holmberg 1858 s. 6, Nordenskiöld 1855, Furuhjelm 1884, Eskola et al. 1919 s.18, Tavela 1954, Konttinen 1972, Saltikoff et al 1994
Kalkkivuori	Hyvinkää	Calcite-dolomite	Also = User	1808e	1808e	*3 000*	*2 700*	Calcite, Dolomite	Bremer 1825 s. 51, Holmberg 1858 s. 13, Furuhjelm 1884, Eskola et al 1919 s. 31, Härme 1954
Perheniemi	Iitti	Calcite-dolomite	Also = Sääksjärvi; already excavated during the reign of Birjer in Hämeenlinna	1200-la	1200-l, 1950-l	*30 000*	*27 000*	Calcite, Dolomite, Wollastonite	John 1827, Holmberg 1858 s. 18, Solitander 1884, Furuhjelm 1884, Moberg 1888a, Eskola et al 1919 s. 11, Arhe 1980, Lundén 1982a
Huutokoski-kalkki	Joroinen	Calcite-dolomite	Limestone deposits in Joroinen	1964?	1964	*30*	*27*	Dolomite, Calcite	Palm 1964, Vorma 1971, Boström 1987
Lapinmäki	Joroinen	Calcite-dolomite	Also = Lahnalahti	1830e	1830e	*30*	*27*	Dolomite, Calcite	Westling 1830, Holmberg 1858 s. 203, Valtaus 1859, Furuhjelm 1882, Furuhjelm 1887, Korsman 1973
Tuomipuro	Joroinen	Calcite-dolomite	Also = Italian village	1916e	1916e	*800*	*720*	Dolomite, Calcite	Eskola et al 1919 s. 131, Reinikainen 1991
Iso-Rummukkajärvi	Jäppilä	Calcite-dolomite	Also = Ala-Rummukkajärvi	1500-l	1860-l?	*30*	*27*	Dolomite, Calcite (15%)	Frosterus 1903, Eskola et al 1919 s. 131, Lappalainen 1961, Reinikainen 1991
Pieni-Rummukkajärvi	Jäppilä	Calcite-dolomite	Also = Ylä-Rummukkajärvi	1500-l	1860-l?	*30*	*27*	Dolomite, Calcite (15%)	Frosterus 1903, Eskola et al 1919 s. 131, Lappalainen 1961, Reinikainen 1991
Tuulensuu	Jäppilä	Calcite-dolomite	Also = Taipale	1916e	1860-l?	*1 000*	*900*	Dolomite, Calcite (15%)	Eskola et al 1919 s. 132, Lappalainen 1961, Reinikainen 1991
Uusi-Rummukka	Jäppilä	Calcite-dolomite	Rummukkajärvi limestone deposits	1916e	1860-l?	*30*	*27*	Dolomite, Calcite (15%)	Reinikainen 1991
Ylin-Rummukka	Jäppilä	Calcite-dolomite	Rummukkajärvi limestone deposits	1916e	1860-l?	*30*	*27*	Dolomite, Calcite (15%)	Reinikainen 1991
Ruokojärvi	Kerimäki	Calcite-dolomite	Also = Louhi; still operational in 2002	1792e	1800-l, ainakin 1906-1908, 1937-	12 517 392	11 795 742	Calcite, Dolomite	Rinman 1792, Valtaus 1846, Eskola et al 1919 s. 132, Hackman 1933 s. 34, Heiskanen 1954, Lehtinen 1999
Varmo	Kesälahti	Calcite-dolomite	Also = Ahola or Varmonniemi	1938	1992-1998	67 117	67 117	Dolomite, Calcite	Aurola 1953/GTK, Westerholm 1964, Nykänen 1975
Rekijoki	Kiikala	Calcite-dolomite	Also = Rekkio; location inaccurate	1825e	1889e	*30*	*27*	Calcite, Dolomite	Sawenius 1825, Moberg 1889 s. 38
Varesjärvi	Kiikala	Calcite-dolomite	Also = Island or Crow Corps; three quarries; location inaccurate	1825e	1825e, ainakin 1915	*30*	*27*	Calcite, Dolomite	Sawenius 1825, Holmberg 1857 s. 32, Holmberg 1858 s. 92, Moberg 1889c s. 38, Eskola et al 1919 s. 53

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table C1-12. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Hauksuo	Kisko	Calcite-dolomite	Several quarries	1919e	1919e	*30*	*27*	Calcite, Dolomite	Eskola et al 1919 s. 61
Hauksuonlahti	Kisko	Calcite-dolomite	Old limestone quarries in the rail area	1919e	1919e	*30*	*27*	Calcite, Dolomite	Eskola et al 1919 s. 61
Lapinkylä-kalkki	Kisko	Calcite-dolomite	Old limestone quarries in the rail area	1919e	1919e	*30*	*27*	Calcite, Dolomite	Eskola et al 1919 s. 65
Liipola-kalkki	Kisko	Calcite-dolomite	Location inaccurate	1919e	1919e	*30*	*27*	Calcite, Dolomite	Eskola et al 1919 s. 65
Marjaniemi-kalkki	Kisko	Calcite-dolomite	Location inaccurate	1919e	1919e	*30*	*27*	Calcite, Dolomite	Eskola et al 1919 s. 65
Melleri	Kisko	Calcite-dolomite	Probably also = Rinteenmäki	1825e	1858e	*5 000*	*4 500*	Calcite, Dolomite	Sawenius 1825, Nordenskiöld 1855, Holmberg 1858 s. 55, Eskola et al 1919 s. 64
Multsilta	Kisko	Calcite-dolomite	Near the shore of Lake Sääjärvi	1908e	1908e	*1 000*	*900*	Calcite, Dolomite	Eskola et al 1919 s. 58
Orijärvi-kalkki	Kisko	Calcite-dolomite	At the Orijärvi mine	1919e	1919e	*30*	*27*	Calcite, Galena	Eskola et al 1919 s. 57
Pahalahti-kalkki	Kisko	Calcite-dolomite	A small old quarry near the old Pahalahti iron mine	1919e	1919e	*30*	*27*	Calcite, Dolomite	Eskola et al 1919 s. 62
Sorro	Kisko	Calcite-dolomite	Also = Sorila of Riilahti	1908e	1908e	*2 000*	*1 800*	Calcite, Dolomite	Eskola et al 1919 s. 61
Viiari	Kisko	Calcite-dolomite	Also = Wiikari	1795e	1814e, 1949-1962-	*191 400*	*174 000*	Calcite, Dolomite	Gadd & Gummerus 1795, Lundström 1814, Sawenius 1824-25, Holmberg 1857, Holmberg 1858 s. 55, Eskola et al 1919 s. 64
Kippolanmäki	Kiuruvesi	Calcite-dolomite	Also = Niemiskylä	1800-l	1800-l	*400*	*360*	Calcite, Wollastonite	Eskola et al 1919 s. 151, Wilkman 1931 s.49, Marttila 1981
Hiirola	Mikkeli	Calcite-dolomite	Also = Taatiainen or Leppäahon Louhikivi, Arola, Kiurunruukki, Veikka	1840	1840-l -?, 1920-l, 1938-1939	*61 700*	*55 530*	Calcite, Dolomite	Valtaus 1840, Eskola et al 1919 s. 125, Metzger & Marmo 1953, Tiusanen 1986, Vihola 1992
Humalataponkorpi	Nummi-Pusula	Calcite-dolomite	Location inaccurate	1904e	1904e	*1 800*	*1 620*	Calcite, Dolomite (40%)	Eskola et al 1919 s. 35, Hellström 1932
Koivaankulma	Nummi-Pusula	Calcite-dolomite	Pusula limestone quarries	1800-l	1858e	*30*	*27*	Calcite, Dolomite (40%)	Hannu Seppänen suullisesti 1997
Kraami	Nummi-Pusula	Calcite-dolomite	Also = Röhkölä or Varttila	1824e	1857e	*500*	*450*	Calcite, Dolomite (40%)	Westling 1824, Holmberg 1857 s. 18, Holmberg 1858 s. 31, Moberg 1889c s. 39, Furuhjelm 1884 s. 45, Eskola et al 1919 s. 39
Kuivala	Nummi-Pusula	Calcite-dolomite	Pusula limestone quarries	1830e	1800-l	*3 500*	*3 150*	Calcite, Dolomite (40%)	Westling 1824-39, Holmberg 1858 s. 32, Eskola et al 1919 s. 38, Hellström 1932
Lähteenoja-itäinen	Nummi-Pusula	Calcite-dolomite	Högfors Oy last excavated in 1931	1919e	1919e, ainakin 1931, 1950-l	*20 000*	*18 000*	Calcite, Dolomite (20%), Wollastonite	Eskola et al 1919 s. 36, Hellström 1932, Aurola 1955
Lähteenoja-läntinen	Nummi-Pusula	Calcite-dolomite	Högfors Oy last excavated in 1931	1919e	1919e, ainakin 1931, 1950-l	*30*	*27*	Calcite, Dolomite (20%), Wollastonite	Eskola et al 1919 s. 36, Hellström 1932, Aurola 1955
Pöyrymäki	Nummi-Pusula	Calcite-dolomite	Several lime quarries in Pusula; location inaccurate	1904e	1904e	*10 000*	*9 000*	Calcite, Dolomite (40%)	Eskola et al 1919 s. 38, Hellström 1932

Table C1-13. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Remonmäki	Nummi-Pusula	Calcite-dolomite	Several lime quarries in Pusula	1889e	1889e	*30*	*27*	Calcite, Dolomite (40%), Wollastonite	Moberg 1889c s. 39, Eskola et al 1919 s. 37, Hellström 1932
Vileninmäki	Nummi-Pusula	Calcite-dolomite	Several lime quarries in Pusula	In the 18th century	In the 18th centuryo	*11 500*	*10 350*	Calcite	Moberg 1889c s. 39, Eskola et al 1919 s. 35, Hellström 1932, Aurola 1955
Kalkkisaari-Pieksämäki	Pieksämäen mlk	Calcite-dolomite	Several quarries on the island	1916e	1916e	*30*	*27*	Dolomite, Calcite (15%)	Eskola et al 1919 s. 130, Reinikainen 1991
Brunkomträsk	Pohja	Calcite-dolomite	Location inaccurate	1889e	1889e	*30*	*27*	Calcite, Dolomite	Moberg 1889 s. 33, Eskola et al 1919 s. 30
Hiukkajoki	Punkaharju	Calcite-dolomite	Also = Susikoski	1857e	1800-l	*30*	*27*	Calcite	Holmberg 1857 s. 51, Holmberg 1857b s. 7, Eskola et al 1919 s. 134, Hackman 1933 s. 35, Nykänen 1983
Lemola	Pälkäne	Calcite-dolomite	Also = Äimälä	1878e	1915e	*800*	*720*	Calcite, Dolomite	Gylling 1878, Gylling 1881, Furuhjelm 1887, Eskola et al 1919 s. 115, Aurola 1946, Matisto 1976
Kapustansaari	Rantasalmi	Calcite-dolomite	Also = Pyyvilä	1873e	1873e	*30*	*27*	Calcite, Graphite	Valtaus 1873, Furuhjelm 1887, Aartovaara 1911, Hackman 1933 s. 33, Korsman 1973
Läpikäytävänniemi	Rantasalmi	Calcite-dolomite	Excavated for the Orivisalo blast furnace; location inaccurate	1872e	1872	*30*	*27*	Dolomite	Valtaus 1872
Selkäluodonkari	Rantasalmi	Calcite-dolomite	On the island of Haukivesi	1933e	1933e	*30*	*27*	Calcite, Graphite	Hackman 1933 s. 33
Tuusjärvi	Rantasalmi	Calcite-dolomite	On the island of Lake Tuusjärvi	1830e	1830e	*30*	*27*	Calcite, Pyrite	Westling 1830, Holmberg 1858 s. 204
Ruskeala	Ruskeala	Calcite-dolomite	Also = Matarinaraara; also mined marble	1765	1767-1788, 1813-	*500 000*	*450 000*	Calcite, Dolomite	Rinman 1792, Lundström 1814 s. 49, Bremer 1825 s. 192, Holmberg 1858 s. 236, Eskola et al 1919 s. 158, Rosberg et al 1923 s. 382, Metzger 1925, Hackman 1933 s. 71, Hoving 1951
Kalkkiniemi-Savonlinna	Savonlinna	Calcite-dolomite	Location inaccurate	In the 18th century	In the 18th century, 1836	*30*	*27*	Calcite	Lundström 1814, Valtaus 1836, Holmberg 1858 s. 205
Otamo	Siikainen	Calcite-dolomite	Also = Kurikka; still operational in 2002	1971	1978-	5 163 633	3 917 108	Dolomite, Calcite	Blomqvist 1974, Lundén 1988
Kalkkiranta	Sipoo	Calcite-dolomite	Also = Nevas, Kalkstrand, Kokaludden and Träskby and Sipoo, now = Kalkkiranta; still operational in 2002	1600e	1600-l, 1938-	5 333 967	5 213 554	Calcite, Dolomite (10%)	Bremer 1925 s. 52, Holmberg 1857 s. 22, Holmberg 1858 s. 15, Moberg 1888b s. 33, Eskola et al 1919 s. 16, Metzger 1948, Hoving 1951, Tavela 1954, Parras 1967
Krockholmen	Sipoo	Calcite-dolomite	Location inaccurate	1825e	1825e	*30*	*27*	Calcite, Dolomite	Bremer 1825 s. 39, Eskola et al 1919 s. 17
Kockis	Siuntio	Calcite-dolomite	Also mined for the Virkkala cement plant	1904e	1904e	*6 500*	*5 850*	Calcite, Dolomite	Sergelius 1904, Eskola et al 1919 s. 24, Aurola 1946b, Saikkonen 1992
Veijans-kalkki	Siuntio	Calcite-dolomite	Also = Braskis, Weijans, Väjans or Veijola	1855e	1857e	*400*	*360*	Calcite, Dolomite	Nordenskiöld 1855, Holmberg 1857 s. 11, Holmberg 1858 s. 22, Moberg 1889 s. 33, Furuhjelm 1884, Eskola et al 1919 s. 23, Saikkonen 1992
Väkkärä	Urjala	Calcite-dolomite	Also = Kalkkimäki or Vähkärä	1737e	1849?	*30*	*27*	Dolomite	Tilas 1737, Gadd & Lilius 1789, Bremer 1825 s. 29, Sawenius 1834, Valtaus 1849, Holmberg 1858 s. 138, Furuhjelm 1886, Sederholm 1892 s. 67, Eskola et al 1919 s. 116
Nuupala	Vammala	Calcite-dolomite	Also = Kalkkimäki; location inaccurate	1789e	1825e	*30*	*27*	Dolomite, Calcite	Gadd & Sanmark 1789, Lauraeus 1857, Holmberg 1858 s. 103
Matkusjoki	Vampula	Calcite-dolomite	Vampula lime quarries, still in operation in 2002	1759e	Vanhat, 1999-	112 434	52 731	Calcite, Dolomite	Gadd & Carenius 1759, Holmberg 1858, Eskola et al 1919 s.113, Koskinen 1953, Hakala 1995, KTM 2000

Table C1-14. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Punola	Vampula	Calcite-dolomite	Also = Vampula; still operational in 2002	1982	1983-	5 855 762	3 124 343	Dolomite	Rosenqvist 1983, Hakala 1995
Siivikkala	Vampula	Calcite-dolomite	Vampula lime quarries	1500-l	1500-In the 18th century, 1989-1999	505 501	264 739	Dolomite	Gadd & Carenius 1759, Gadd & Sandmark 1792, Lauraeus 1855, Wilkman 1898 s. 52, Eskola et al 1919 s. 113, Koskinen 1953, Harinen 1989, Hakala 1995
Tamare	Vampula	Calcite-dolomite	Also = Tammare or now Lime Mountain; several quarries	1500-l	1759e, 1856?	*10 000*	*9 000*	Dolomite	Gadd & Carenius 1759, Gadd & Sandmark 1792, Westling 1830, Bremer 1824 s. 124, Holmberg 1858 s. 98, Wilkman 1898 s. 52, Eskola et al 1919 s. 113, Koskinen 1953, Hakala 1995
Haapakylä	Vihti	Calcite-dolomite	Also = Calm; three quarries	In the 18th century	In the 18th century, 1800-lo	*2 200*	*1 980*	Calcite, Dolomite	Lauraeus 1856, Holmberg 1857 s. 20, Holmberg 1858 s, 34, Furuhjelm 1884a, Eskola et al 1919 s. 35, Parras 1941
Mangård	Vihti	Calcite-dolomite	Also = Kalkkimäki	1884e	1884e	*1 000*	*900*	Dolomite	Furuhjelm 1884a, Eskola et al 1919 s. 33
Moksi	Vihti	Calcite-dolomite	Several quarries	1916e	1916e	*900*	*810*	Calcite, Dolomite (10 %)	Eskola et al 1919 s. 32
Stenbacka	Vihti	Calcite-dolomite	Location inaccurate	1919e	1919e	*150*	*135*	Calcite, Dolomite	Eskola et al 1919 s. 34, Parras 1941
Uusitalo	Vihti	Calcite-dolomite	Midway between Moks and Mangård	1882e	1882e	*30*	*27*	Calcite, Dolomite	Eskola et al 1919 s. 33
Kotakangas	Vimpeli	Calcite-dolomite	Vimpel lime quarries	1800-l	1800-l, 1934-1962	*1 400 000*	*1 400 000*	Dolomite, Calcite	Eskola et al 1919 s. 122, Metzger 1954, Lundén 1988, Turkka 1994
RyyDiamonda	Vimpeli	Calcite-dolomite	Vimpel lime quarries, still in operation in 2002	1916e	1916e, 1962-	6 317 007	5 490 081	Dolomite, Calcite	Eskola et al 1919 s. 122, Lundén 1967a, Öhman 1973, Lundén 1988, Smeds 1998
Vesterbacka	Vimpeli	Calcite-dolomite	Also = Huosianmaan Moskua; still operational in 2002	1836e	1916e, 1992-	333 934	245 011	Dolomite, Calcite	Valtaus 1836, Eskola et al 1919 s. 119, Boström 1972a, Lundén 1988, Harinen 1990, Turkka 1994
Ankele	Virtasalmi	Calcite-dolomite	On the northeast shore of Lake Ankeleenjärvi in a shallow rock, still in operation in 2002	1902e	1966-	2 504 773	2 101 657	Dolomite, Calcite	Frosterus 1902 s. 18, Eskola et al 1919 s. 17, Lundén 1967b, Perttula 1990, Smeds 1998
Montola	Virtasalmi	Calcite-dolomite	Also = Meadow pond	1906	1909-1976	3 869 360	3 750 220	Dolomite, Calcite	Eskola et al 1919 s. 128, Metzger 1936a, Nyström 1951, Metzger 1954, Lappalainen 1961, Sandberg & Mitts 1966, Smeds 1998
Varsanoja	Ypäjä	Calcite-dolomite	Also = Kalkkimäki	1737e	1737e	*30*	*27*	Dolomite	Tilas 1737 s. 166, Gadd & Lilius 1789, Sawenius 1825, Holmberg 1858 s. 146, Wilkman 1898 s. 54, Eskola et al 1919 s. 112
Aretsaari	Harlu	Dolomite	Also = Limestone Islands; mined marble in the churches of St. Petersburg	1768e	1768 jälkeen - ?	*30*	*27*	Dolomite	Alopaeus 1787, Lundström 1814 s. 30, Bremer 1825 s. 202, Holmberg 1857, Holmberg 1858 s. 242, Atlas 1899, Eskola et al 1919 s. 157

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table C1-15. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Hopunvaara-kalkki	Impilahti	Dolomite	Also = Hopunsuonmäki	1814e	1819 jälkeen - ?	*44 000*	*39 600*	Dolomite, Sphalerite	Lundström 1814 s. 36, Valtaus 1819, Bremer 1825 s. 195, Holmberg 1857 s. 62, Arppe 1858, Furuhjelm 1886, Eskola et al 1919 s. 165
Neuvosenmäki	Impilahti	Dolomite	Also = Bear's Hill or Bear's Back	1848	1848	*30*	*27*	Dolomite	Valtaus 1848, Lisitzin 1892 s. 148
Pusunsaari-kalkki	Impilahti	Dolomite	On the island of Ladoga	1848	1848	*30*	*27*	Feldspar, Quartz	Valtaus 1848
Huosiaisniemi	Juankoski	Dolomite	Also = Huosiaisvuori, probably also = Lehkonsaari	1792e	In the 18th century alkaen - 1916e	*100 000*	*90 000*	Dolomite, Calcite, Amphibole	Rinman 1792, Westling 1830, Valtaus 1849, Holmberg 1858 s. 213, Aartovaara 1911, Eskola et al 1919 s. 140, Frosterus & Wilkman 1920 s. 106
Kakkosaari	Juankoski	Dolomite	Several quarries, excavated for the blast furnace in Strömfors	1841	1841 - 1877 jälkeen	*30*	*27*	Dolomite	Valtaus 1841, Valtaus 1877
Likosaari	Juankoski	Dolomite	Excavated for the Strömfors blast furnace	1825e	1820-l	*30*	*27*	Dolomite	Bremer 1825 s. 122, Westling 1830, Holmberg 1857 s. 53, Holmberg 1858 s. 213, Eskola et al 1919 s. 141, Frosterus & Wilkman 1920 s. 91 ja 105
Olkisaari	Juankoski	Dolomite	Siikajärvi limestone quarries	1830e	1830e	*30*	*27*	Dolomite	Westling 1830, Valtaus 1877
Pisakoski	Juankoski	Dolomite	Siikajärvi limestone quarries; location inaccurate	1855e	1825e	*30*	*27*	Dolomite	Bremer 1825, Nordenskiöld 1855, Holmberg 1857 s. 53, Holmberg 1858 s. 213
Riihisaari	Juankoski	Dolomite	Siikajärvi limestone quarries	1877e	1877 jälkeen - ?	*30*	*27*	Dolomite	Valtaus 1877
Matara	Juuka	Dolomite	Also = Juuka or once Mataralehonkallio; still operational in 2002	1919e	1979-	327 692	281 992	Dolomite	Eskola et al 1919 s. 143, Pekkala 1970, Yli-Kohla 1984
Petrovaara	Juuka	Dolomite	Several quarries (Kajoo)	1792e	1876 jälkeen - ?	*12 500*	*11 250*	Dolomite	Rinman 1792, Valtaus 1876, Furuhjelm 1881, Atlas 1899, Aartovaara 1911, Eskola et al 1919 s. 145, Frosterus & Wilkman 1920, Pekkala 1967
Valkealampi-itäinen	Juuka	Dolomite	Four quarries	1919e	1919e	*30*	*27*	Dolomite	Eskola et al 1919 s. 144, Pekkala 1967
Valkealampi-kaakkoinen	Juuka	Dolomite	A small mining company	1919e	1919e	*30*	*27*	Dolomite	Eskola et al 1919 s. 144
Talckunamaa	Kiiminki	Dolomite	Limestone deposits in the Oulu area	1919e	1919 jälkeen - ?	*30*	*27*	Dolomite	Eskola et al 1919 s. 186, Stigzelius et al 1970 s. 178
Teeriholma	Kisko	Dolomite	On the island of Lake Määrijärvi	1919e	1919e	*30*	*27*	Dolomite	Eskola et al 1919 s. 58
Aakenusjoki	Kittilä	Dolomite	An old lime quarry near the village of Kittilä	1861e	1857 ainakin	*30*	*27*	Dolomite	Albrecht 1841-61, Thoreld 1857,Wathén 1858, Holmberg 1858 s. 196, Sternvall 1892, Eskola et al 1919 s. 230
Hiltulanlahti	Kuopio	Dolomite	Also = Hukanniemi	1814	1814-1916e	*200*	*180*	Dolomite	Valtaus 1814, Hjelt 1882, Eskola et al 1919 s. 137, Wilkman 1923, Wilkman 1938 s. 38
Honkalahti	Kuopio	Dolomite	Old limestone quarries in the Kuopio area	1814e	1814 alkaen - ?	*30*	*27*	Dolomite	Lundström 1814, Westling 1824-39, Valtaus 1846, Thoreld 1852, Holmberg 1857 s. 52, Holmberg 1858 s. 209, Thoreld 1863, Eskola et al 1919 s. 137, Wilkman 1923, Wilkman 1938

Table C1-16. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Humalajoki	Kuopio	Dolomite	Old limestone quarries in the Kuopio area	1790	Vanhat, 1863 - ?	*30*	*27*	Dolomite	Thoreld 1863, Eskola et al 1919 s. 137, Wilkman 1938 s. 39
Jynkkä	Kuopio	Dolomite	Old limestone quarries in the Kuopio area, several quarries	1852e	1852e - vielä 1916 - ?	*55 000*	*49 500*	Dolomite	Thoreld 1852, Atlas 1899, Aartovaara 1911, Eskola et al 1919 s. 136, Wilkman 1938 s. 35, Rytkönen 1975Aurola 1950
Korsumäki	Kuopio	Dolomite	Also = Henriksnäs	1800	1841 ainakin, viimeksi 1890-l	*30 000*	*27 000*	Dolomite	Lundström 1814 s. 76, Westling 1830, Valtaus 1841, Thoreld 1863, Holmberg 1858 s. 209, Aartovaara 1910, Eskola et al 1919 s. 136, Wilkman 1923 s. 41, Wilkman 1938 s. 36
Matkusjärvi	Kuopio	Dolomite	Excavated for Sourun Ruukki	1923e	In the early 19th century	*30*	*27*	Dolomite	Wilkman 1923 s. 47, Wilkman 1938 s. 39
Tiihottarenmäki	Kuopio	Dolomite	Also = Likolamminmäki	1823	1823 - ?	*30*	*27*	Dolomite	Valtaus 1823, Westling 1830, Thoreld 1863, Holmberg 1857 s. 52, Holmberg 1858 s. 209, Eskola et al 1919 s. 137, Wilkman 1923 s. 49, Wilkman 1938
Väärälahti	Kuopio	Dolomite	Old limestone quarries in the Kuopio area	1923e	In the early 19th century	*30*	*27*	Dolomite	Wilkman 1923 s. 47, Wilkman 1938 s. 39
Kalkkisalmi	Maaninka	Dolomite	Also = Triangle	1864e	1800-l, 1984	*30*	*27*	Dolomite	Thoreld 1864, Eskola et al 1919 s. 140, Saikkonen 1985
Pitkäselkä	Muhos	Dolomite	In Pikkarila	1951	1985e	*30*	*27*	Dolomite	Stigzelius et al 1970 s.180, Kesola 1985
Lehtomäki	Nilsiä	Dolomite	Limestone deposits in the Kinahm period	1919e	1914e	*450*	*405*	Dolomite	Eskola et al 1919 s. 141, Wilkman 1938 s. 41
Hahtola-kalkki	Paltamo	Dolomite	Location inaccurate	1919e	1919e	*30*	*27*	Dolomite	Eskola et al 1919 s. 174, Wilkman 1931 s. 189, Stigzelius et al 1970 s. 161
Heiskala	Paltamo	Dolomite	Limestone quarries in the boiling village	1919e	1919e	*30*	*27*	Dolomite	Eskola et al 1919 s.180, Wilkman 1931 s. 187, Stigzelius et al 1970 s. 160, T. Heino suullisesti 2000
Koikerojärvi	Paltamo	Dolomite	Also = Heponiemi	1860	1860 - ?, ainakin alkaen 1905 - ?	*30*	*27*	Dolomite	Valtaus 1860, Thoreld 1864, Eskola et al 1919 s.180, Wilkman 1931 s. 187, Stigzelius et al 1970 s. 158, Pihl 1985
Kukkula	Paltamo	Dolomite	The last excavation of Kajaani Oy ended in 1925	1600-l	1600-l, In the early 20th century - 1924	*30*	*27*	Dolomite	Valtaus 1857, Eskola et al 1919 s. 176, Wilkman 1931 s. 191, Väylä 1995
Leppikangas	Paltamo	Dolomite	Melalahti limestone quarries	1800-l	1800-l	*30*	*27*	Dolomite	Aurola 1953, Stigzelius et al 1970 s. 165
Norssinniemi	Paltamo	Dolomite	On the western shore of Lake Koikerojärvi	1860e	1919e	*30*	*27*	Dolomite	Valtaus 1860, Eskola et al 1919 s.181, Wilkman 1931 s. 187, Stigzelius et al 1970 s. 160
Pieni Matalajärvi	Paltamo	Dolomite	Melalahti limestone quarries; location inaccurate	1919e	1919e	*30*	*27*	Dolomite	Eskola et al 1919 s. 177, Wilkman 1931 s. 191, Stigzelius et al 1970 s. 167
Reetinniemi	Paltamo	Dolomite	Also = Paltamo or Varessaari or Rekiniemi; still operational in 2002	1860	1860 - ?, 1985-	301 014	291 414	Dolomite	Valtaus 1860, Eskola et al 1919 s. 178, Wilkman 1931 s. 186, Stigzelius et al 1970 s. 153, Lundén 1983, Hiltunen 1989, Mid-Norden 1995
Körölä	Puolanka	Dolomite	Excavated for Kurimo Ironworks	1858	1858 - ?	*30*	*27*	Dolomite	Valtaus 1858, Eskola et al 1919 s. 185
Vuorijärvi	Puolanka	Dolomite	Excavated for Kurimo and Ämmä ironworks	1862	1862-1878?	*30*	*27*	Dolomite	Valtaus 1862, Eskola et al 1919 s. 185

Table C1-17. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Körölä	Puolanka	Dolomite	Excavated for Kurimo Ironworks	1858	1858 - ?	*30*	*27*	Dolomite	Valtaus 1858, Eskola et al 1919 s. 185
Vuorijärvi	Puolanka	Dolomite	Excavated for Kurimo and Ämmä ironworks	1862	1862-1878?	*30*	*27*	Dolomite	Valtaus 1862, Eskola et al 1919 s. 185
Kalkkiniemi-Pälkjärvi	Pälkjärvi	Dolomite	Excavated for the blast furnaces of Värtsilä and Möhkö	1899e	1916e	*250*	*225*	Dolomite, Pyrite, Pyrrhotite	Atlas 1899, Eskola et al 1919 s. 152, Hackman 1933 s. 74
Kotiniemi	Pälkjärvi	Dolomite	Excavated for the blast furnaces of Värtsilä and Möhkö	1899e	1834 jälkeen - ?	*30*	*27*	Dolomite	Atlas 1899, Eskola et al 1919 s. 152, Hackman 1933 s. 74
Ullaanvaara	Pälkjärvi	Dolomite	Excavated for the blast furnaces of Värtsilä and Möhkö	1857	1857 - ?	*30*	*27*	Dolomite	Valtaus 1857, Solitander 1884, Solitander 1892, Atlas 1899, Eskola et al 1919 s. 152, Hausen 1930 s. 27, Hackman 1933 s. 74
Kalkkijänkä	Rovaniemen mlk	Dolomite	Location inaccurate	1905e	1919e	*30*	*27*	Dolomite	Hackman 1918 s. 32, Eskola et al 1919 s. 195, Rosberg et al 1931
Kalkkinulkki	Rovaniemen mlk	Dolomite	Also = Kivalonotta	1858e	1904e	*1 500*	*1 350*	Dolomite	Holmberg 1858 s. 191, Hackman 1918, Eskola et al 1919 s. 197, Rosberg et al 1931
Ristiniemi	Salmi	Dolomite	Also = Kaunisniemi; several quarries	1907e	1907e	*1 500*	*1 350*	Dolomite	Trüstedt 1907, Eskola et al 1919 s. 166
Petäinen	Siilinjärvi	Dolomite	Also = Limestone meadow or Gutter pond or Curved pond side	1815e	1916e	*600*	*540*	Dolomite	Valtaus 1815, Thoreld 1852, Eskola et al 1919 s. 137, Wilkman 1938 s. 39
Kintsinniemi	Soanlahti	Dolomite	Excavated at least as far back as 1933	1899e	1899e - 1930-l	*27 000*	*24 300*	Dolomite	Atlas 1899, Eskola et al 1919 s. 162, Rosberg et al 1923 s. 386, Hausen 1930 s. 72, Hackman 1933 s. 108, Jaatinen 1997 s. 166
Myllykoski	Soanlahti	Dolomite	Also = Prolanvaara limestone mine	1919e	1919e	*30*	*27*	Dolomite	Eskola et al 1919 s. 164, Hausen 1930 s. 72, Jaatinen 1997 s. 166
Hukkala	Suojärvi	Dolomite	Excavated for the blast furnace at the Annantha factory	1850e	1916e	*30*	*27*	Dolomite, Hematite	Valtaus 1850?, Eskola et al 1919 s. 168, Metzger 1924
Kokonpesä-kalkki	Suojärvi	Dolomite	Also = Full nest; mined for the Blast Furnace at the Annant Factory	1919e	1919e - ?	*30*	*27*	Dolomite, Hematite	Eskola et al 1919 s. 169, Metzger 1924
Pöpönsaari-kalkki	Suojärvi	Dolomite	Excavated for the blast furnace at the Annantha factory	1850	1850 jälkeen - ?	*30*	*27*	Dolomite	Valtaus 1850, Eskola et al 1919 s. 168, Metzger 1924

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

Table C1-18. Historical carbonate rock mines operating in Finland (Source: Puustinen 2003)

Mine	Municipality	Target Mineral	Commentary	Year of discovery	Years of operation	Total-extraction (t)	Ore enriched (t)	Ore minerals	Literature references
Kalkkimaa	Tornio	Dolomite	Very old quarry, still in operation in 2002	1838e	1838e, 1903 ainakin, 1917-	6 427 840	6 475 833	Dolomite	Thoreld 1857, Holmberg 1858 s. 185, Rein 1867, Eskola et al 1919 s. 187, Härme 1949, Enkovaara et al 1953, Härme 1954, Rauma-Repola 1983
Aitosaari	Vehmersalmi	Dolomite	Also = Hautosaari	1938e	In the early 19th century	*30*	*27*	Dolomite	Wilkman 1938 s. 43
Juonionlahti	Vehmersalmi	Dolomite	Also = Lime Island; location inaccurate	1825e	1825e	*30*	*27*	Dolomite	Bremer 1825 s. 123, Thoreld 1852, Holmberg 1857 s. 52, Holmberg 1858 s. 210, Turunen 1930
Laajalahti	Vehmersalmi	Dolomite	On the peninsulas of Laajalahti, Kuusikkoniemi, Kalkkiniemi, Papinniemi	1919e	1919e	*30*	*27*	Dolomite	Eskola et al 1919 s. 140, Wilkman 1938 s. 42
Nuottiniemi	Vehmersalmi	Dolomite	Five quarries; location inaccurate	In the 18th centurya	In the 18th centurya - In the early 20th century	*30*	*27*	Dolomite	Eskola et al 1919 s. 137
Pitkälahti	Vehmersalmi	Dolomite	Lime burning at least as early as 1651	1651e	Vanhat, 1875-1925	*38 000*	*34 200*	Dolomite	Bremer 1825 s. 123, Thoreld 1852, Holmberg 1857 s. 52, Holmberg 1858 s. 210, Eskola et al 1919 s. 137, Turunen 1930, Wilkman 1938 s. 44, Rytkönen 1975
Suurenkivensaari	Vehmersalmi	Dolomite	On the island	1938e	In the early 19th century	*30*	*27*	Dolomite	Wilkman 1938 s. 43
Total carbonate rock mines						**277 624 921**	**240 193 788**		

ABBREVIATIONS FOR YEARS (examples)

1828e	Before the year 1828	1900-la	In the early 20th century	1961-	Since 1961
1700-l	In the 18th century	In the late 20th century	In the late 20th century		

12 APPENDIX D – LIST OF HISTORICAL INDUSTRIAL SITES

Table D1-1. Historical industrial sites operating in Finland (Source: Puustinen 2003)

Historical Industrial Sites	Municipality	Institute	Commentary	Founding Year	Years of operation	Literature references
Imatra	Outokumpu	Copper Smelter	Copper smelter was moved from Imatra to Harjavalta 1944	1935	1935-1944	Jääski Society, Outokumpu's copper plant
Herajoki	Eno	Copper Smelter	Copper smelter; owners of G.A. Nabokoff, I. Snjettkoff	1815	1815-1844	Bremer 1825 s. 170, Laine 1948 s. 52, Pölönen 1999, Vesajoki 2000
Pitkäranta	Impilahti	Copper Smelter	Copper smelter; owners V.I. Omeljanoff, Pitkäranta Company, Pitkäranta Copper and Tin Company, Laatokka Mining Company	1818	1818-1904	Furuhjelm 1885c, Laitinen 1938, Palmunen 1939, Laine 1948 s. 32, Laine 1955, Koponen 1982
Kärkelä	Karjalohja	Copper Smelter	Copper smelter; owners J.J. Kijk, R. Finlay and subsequent owners of Fiskars Ruukki	1765	1765-1882	Hultin 1897, Nikander 1929, Laine 1948 s. 102
Bäkkseide	Mustasaari	Copper Smelter	Also = Hyttbäck; copper smelter; owners H. Ingesson (vorsi of Korsholm Castle); possibly attempted to smelt copper ore	1561	1561-1563	Holmberg 1858 s. 112, Fontell 1884, Ström 1932, Åkerblom 1935, Puukko 1972, Vasabladet 1969
Kornankoski	Pudasjärvi	Copper Smelter	Copper smelter; owners M. Toppelius and J. Waara, G.Skogman, N. Spolander; Innaativaara smelter	1768	1768-1779	Bremer 1824 s. 171, Wathén 1858, Hultin 1897, Schalin 1905
Åminnefors-sinkki	Pohja	Zinc Smelter	Zinc smelter; owners of G.M. Westman, Åminneforsin Zinkki Oy	1875	1875-1883	Laine 1948 s. 63
Björkboda	Dragsfjärd	Blast Furnace, Rock Ore	Also = Sunnanå in the same place; owners A. Ramsay	1732	1732-1842	Hultin 1897, Laine 1907, Laine 1948 s. 192, Hyttinen 1997, Tuominen 1998
Dalsbruk	Dragsfjärd	Blast Furnace, Rock Ore	Also = Taalintehdas; owners W. af Petersen, C.A. and W. Ramsay, J. Stunz	1686	1686-1928	Hultin 1897, Laine 1907, Svedlin 1936, Laine 1948 s. 192, Lukala 1986, Nirkko et al 1990, Hyttinen 1997, Tuominen 1998
Sunnå	Dragsfjärd	Blast Furnace, Rock Ore	Also = Björkboda in the same place; owners A. Ramsay	1732	1732-1842	Hultin 1897, Laine 1948 s. 192, Hyttinen 1997, Tuominen 1998
Kauttua	Eura	Blast Furnace, Rock Ore	Owned by L. Creutz, A.H. Falck, A. Ahlström	1689	1689-1907	Hultin 1897, Laine 1907, Laine 1948 s. 291, Levanto 1956, Jokipii 1962, Hyttinen 1997, Tuominen 1998
Hämekoski	Harlu	Blast Furnace, Rock Ore	Owners Wärtsilä Oy, smelter since 1921, originally Läskelä Manufactory, owners N.L. Arppe	1920	1920-1939	Laine 1952 s. 496, Nirkko et al 1990, Hyttinen 1997
Lupikko	Impilahti	Blast Furnace, Rock Ore	Owned by J. Soldan, C.A. Standerskjöld	1866	1866-1875	Palmunen 1939, Laine 1948 s. 706, Hyttinen 1997
Ristioja	Impilahti	Blast Furnace, Rock Ore	Owners of Alexandroffsky Steel Foundry, State Bank of Russia	1899	1899-1917	Palmunen 1939, Laine 1955 s. 33
Fagervik	Inkoo	Blast Furnace, Rock Ore	Owned by C. Billsten, M. and F. Hisinger	1646	1646-1902	Hultin 1897, Laine 1907, Laine 1948 s. 81, Hyttinen 1997, Tuominen 1998
Orisberg	Isokyrö	Blast Furnace, Rock Ore	Also = Orismala; owners of L.M. Björkenheim	1676	1676-1900	Hultin 1897, Laine 1907, Liakka, 1920, Laine 1948 s. 158, Hyttinen 1997, Tuominen 1998
Jokioinen	Jokioinen	Blast Furnace, Rock Ore	Also = Someone; owners of E.G. von Willebrant, J. Brehmer, Oy Ferraria Ab; the manufactory continues to this day	1804	1804-1931	Hultin 1897, Laine 1907, Laine 1948 s. 424, Hyttinen 1997
Männäinen	Kalanti	Blast Furnace, Rock Ore	Owned by A. Nordencrantz, S. af Ugglas	1741	1741-1815	Hultin 1897, Laine 1907, Laine 1948 s. 336, Nevavuori 1976, Hyttinen 1997, Tuominen 1998
Svartå	Karjaa	Blast Furnace, Rock Ore	Also = Mustio; owners J. Wolle, P. Thorwöste, M. and F. Linder	1560	1560-1901	Hultin 1897, Laine 1907, Ekman 1936, Laine 1948 s. 68, Nordström 1962, Hyttinen 1997, Tuominen 1998
Högfors	Karkkila	Blast Furnace, Rock Ore	Also = Karkkila; owners J.J. Dreilinck, Joseph Brehmer, W. Brehmer, J. Brehmer	1820	1820-1906	Laine 1948 s. 446, Ekman 1953, Högforsin tehdas 1953, Nirkko et al 1990, Schulman 1991, Aalto & Rentola 1992, Tuominen 1998, Salokorpi 1999
Fredriksberg	Kullaa	Blast Furnace, Rock Ore	Also = Fredriksberg and Fredriksfors (Leineperi) in the same place; owners of B.J. Hastfehr, J. Beckman, A.H. Falck, A. Ahlström	1771	1771-1902	Hultin 1897, Laine 1907, Laine 1948 s. 348, Härö 1994, Hyttinen 1997, Tuominen 1998
Leineperi	Kullaa	Blast Furnace, Rock Ore	Also = Fredriksfors and Fredriksberg in the same area; owners of B.J. Hastfehr, J. Beckman, A.H. Falck, A. Ahlström	1771	1771-1902	Hultin 1897, Laine 1907, Laine 1948 s. 348, Levanto 1956, Härö 1994, Hyttinen 1997, Tuominen 1998
Noormarkku	Noormarkku	Blast Furnace, Rock Ore	Owners of C.K. de Carnall, K.J. Lönegren, A. Ahlström	1806	1806-1920	Hultin 1897 s. 222, Laine 1907, Laine 1948 s. 436, Levanto 1956, Hyttinen 1997
Kimo	Oravainen	Blast Furnace, Rock Ore	Owners A. Sahlstedt, L.M. Björkenheim	1703	1703-1891	Hultin 1897, Laine 1907, Laine 1948 s. 158, Hyttinen 1997, Tuominen 1998
Oravainen	Oravainen	Blast Furnace, Rock Ore	Owners of L.M. Björkenheim	1703	1703-1866	Hultin 1897, Laine 1907, Laine 1948 s. 158, Kulla 1996, Hyttinen 1997
Köngäs	Pajala	Blast Furnace, Rock Ore	In Sweden, the old Peräpohja; owners A. Grape, A. and J. Momma, Wästerbottens, A. Steinholtz, J. Ekström, K.Sohlberg	1645	1645-1879	Paulaharju 1923 s. 55, Arrela 1958, Peura 1987
Forsby	Pernaja	Blast Furnace, Rock Ore	Also = Koskenkylä; owners L. Creutz, J.H. Nohrström, L. Falckenheim	1682	1682-1828	Hultin 1897, Laine 1907, Laine 1948 s. 186, Hyttinen 1997
Kirjakkala	Perniö	Blast Furnace, Rock Ore	Owners R. Bremer, V.Z. Bremer	1686	1686-1908	Hultin 1897, Laine 1907, Ekman 1936, Laine 1948 s. 232, Innamaa 1982, Hyttinen 1997, Tuominen 1998
Koski	Perniö	Blast Furnace, Rock Ore	Owned by J. Montgomery, B.M. Björkman, J. von Julin	1679	1679-1890	Hultin 1897, Laine 1907, Nikander 1929, Laine 1948 s. 102, Koskis Bruk 1981, Innamaa 1982, Hyttinen 1997

Table D1-2. Historical industrial sites operating in Finland (Source: Puustinen 2003)

Historical Industrial Sites	Municipality	Institute	Commentary	Founding Year	Years of operation	Literature references
Kuusto	Perniö	Blast Furnace, Rock Ore	Owners K. Fleming, C.J. Sallmén, J.J. von Julin, C.A.F. Björkenheim	1732	1732-1834	Hultin 1897, Laine 1907, Laine 1948 s. 327, Innamaa 1982, Hyttinen 1997
Mathildedal	Perniö	Blast Furnace, Rock Ore	Owners V.Z. Bremer	1852	1852-1859	Laine 1907, Laine 1948 s. 232, Innamaa 1982, Hyttinen 1997, Tuominen 1998
Näse	Perniö	Blast Furnace, Rock Ore	Also = Latokartanotai Näsebruk; owners K. Fleming, C.J. Sallmén, J.J. von Julin, C.A.F. Björkenheim	1834	1834-1895	Laine 1948 s. 327, Innamaa 1982, Hyttinen 1997
Pohjankylä	Perniö	Blast Furnace, Rock Ore	Also = Bottom; owners L. Creutz	1689	1689-1710	Hultin 1897 s. 65, Laine 1948 s. 233, Hyttinen 1997
Tykö	Perniö	Blast Furnace, Rock Ore	Also = Teijo; owners L. Creutz, H.E. Stenbock, K. Fleming, J.J. Kijk, R. Bremer, V.Z. Bremer, P.A. Carlborg	1686	1686-1908	Hultin 1897, Laine 1907, Ekman 1936, Laine 1948 s. 232, Innamaa 1982, Hyttinen 1997, Tuominen 1998
Antskog	Pohja	Blast Furnace, Rock Ore	Owners J. Wolle, P. Thorwöste, B.M. Björkman, J. von Julin	1630	1630-1880	Hultin 1897, Laine 1907, Laine 1948 s. 102, Hyrttinen 1997
Billnäs	Pohja	Blast Furnace, Rock Ore	Also = Pinjainen; owners C. Billsten, J.W. Hisinger, J. Hisinger, M. Hisinger, J.F.M. Hisinger	1641	1641-1905	Hultin 1897, Laine 1907, Laine 1948 s. 81, Tegengren 1949, Helsing 1986, Hyttinen 1997, Tuominen 1998
Fiskars	Pohja	Blast Furnace, Rock Ore	Owners P. Thorwöste, B.M. Björkman, J. von Julin; the manufactory continues to this day	1649	1649-1904	Hultin 1897, Laine 1907, Nikander 1929, Laine 1948 s. 102, Nirkko et al 1990, Kulvik & Siltavuori 1993, Tuominen 1998, Anttila et al 2001
Åminnefors	Pohja	Blast Furnace, Rock Ore	Owners of A.H.L. Gyllenberg	1875	1875-1977	Nikander 1929, Laine 1948 s. 519
Strömfors	Ruotsinpyhtää	Blast Furnace, Rock Ore	Also = Petjärvi; owners J. Creutz, V., J.H. and P.H. af Forselles	1698	1698-1950	Hultin 1897, Laine 1907, Laine 1948 s. 311, Sirén 1971, Hyttinen 1997, Tuominen 1998
Östermyra	Seinäjoki	Blast Furnace, Rock Ore	Also = Seinäjoki; there was also a powder factory in the period 1824-1890, owned by A.J., G.A. and G.A. Wasastjerna	1798	1798-1903	Furuhjelm 1881 s. 76, Hultin 1897, Laine 1907, Laine 1948 s. 411, Hyttinen 1997
Nyby	Siuntio	Blast Furnace, Rock Ore	Also = Svidya or Suitia; owners E. Fleming, Finland's oldest Rautaruukki in Kvarnby; location inaccurate	1530	1530-1558	Hultin 1897 s. 14, Nordström 1962, Härö 1994
Kullaa	Tammisaari	Blast Furnace, Rock Ore	Also = Koskis; Owners of C.A. Wefverstedt, J. Montgomerie	1728	1728-1754	Hultin 1897 s. 107, s. 148, Laine 1948 s. 104, Hyttinen 1997
Skogby	Tammisaari	Blast Furnace, Rock Ore	Owners C. Billsten, M. Hisinger, F. Hisinger	1682	1682-1908	Hultin 1897, Laine 1907, Nikander 1929, Laine 1948 s. 81, Hyttinen 1997, Tuominen 1998, Lundqvist 2001
Trollshovda	Tammisaari	Blast Furnace, Rock Ore	Owners J. von Julin	1840	1840-1915	Nikander 1929, Laine 1948 s. 102, Hyttinen 1997
Mariefors	Tuusula	Blast Furnace, Rock Ore	Also = Kellokoski; owners of L.O. Nysten, J. Solitander, L.M.R. Björkenheim, W. Ramsay	1795	1795-1980	Hultin 1897, Laine 1907, Laine 1948 s. 400, Hyttinen 1997, Tuominen 1998
Vanda	Vantaa	Blast Furnace, Rock Ore	Also = Vantaa; owners V.Z. Bremer	1837	1837-1907	Laine 1948 s. 482, Hyttinen 1997, Saltikoff 2002
Vitele	Vitele	Blast Furnace, Rock Ore	In Russia, near the Finnish border on the shores of Lake Ladoga; Owners: N.I. Putiloff; used Välimäki iron ore	1894	1894-1904	Laine 1955 s. 74, Hyttinen 1997
Möhkö	Ilomantsi	Blast Furnace, Rock Ore	Owned by A. von Rauch, N.L. Arppe	1837	1837-1907	Solitander 1884, Kaukoranta 1935, Laine 1948 s. 620, Putkinen 1960, Björn 1991, Hyttinen 1997, Tuominen 1998, Salokorpi 1999
Siltakoski	Impilahti	Blast Furnace, Rock Ore	Also = Nadešda; owners G.H. Löfström, no blast furnace was built	1851	1851	Laine 1948 s. 695
Huutokoski	Joroinen	Blast Furnace, Rock Ore	Also = Catherine or Ekaterine; owners of N.I. Putiloff	1858	1858-1877	Solitander 1884, Laine 1948 s. 678, Hyttinen 1997, Salokorpi 1999
Juantehdas	Juankoski	Blast Furnace, Rock Ore	Also = Strömsdal; owners of A.W. Tigerstedt, D. Ponomareff, A. von Alfthan, Kymin Oy	1746	1746-1911	Solitander 1884, Hoving 1946, Laine 1948 s. 526, Forsberg & Kankkunen 1996, Hyttinen 1997, Tuominen 1998, Salokorpi 1999
Säyneinen	Juankoski	Blast Furnace, Rock Ore	Also = Gustafsfors; owners P.J. Loss, A.W. Tigerstedt	1821	1821-1858	Laine 1948 s. 607, Hyttinen 1997, Tuominen 1998
Souru	Karttula	Blast Furnace, Rock Ore	Also = Karttula; owners of Souru Ironworks P.F. Semjannikoff and V.A. Poletika, Pietarin rauta- ja rautalankatehdas Oy	1868	1868-1907	Solitander 1884, Raatikainen 1945, Laine 1948 s. 712, Hyttinen 1997
Raivola	Kivennapa	Blast Furnace, Rock Ore	Owners P. Soltikoff, Russian Artillery Department	1800	1800-1875	Lundström 1814 s. 22, Hultin 1897 s. 224, Laine 1907, Laine 1948 s. 546, Hyttinen 1997
Rautakoski	Loppi	Blast Furnace, Rock Ore	Owners of A.F. Sohlman, Rautakoski Oy	1850	1850-1905	Laine 1948 s. 507, Kallenautio 1976, Hyttinen 1997
Katariina	Muolaa	Blast Furnace, Rock Ore	Owners of Boris Galitz, not built	1852	1852	Laine 1948 s. 676
Kuuskoski	Noormarkku	Blast Furnace, Rock Ore	Owners of G.A. Fredriksson, not built	1849	1849	Laine 1948 s. 504
Kuokkastenkoski	Nurmes	Blast Furnace, Rock Ore	Owners of A.J. Mustonen	1879	1879-1905	Solitander 1884, Laine 1948 s. 718, Putkinen 1960, Hyttinen 1997
Arrakoski	Padasjoki	Blast Furnace, Rock Ore	Owners of R.M. von Fieandt	1853	1853-1905	Laine 1948 s. 513, Hyttinen 1997
Vieru	Padasjoki	Blast Furnace, Rock Ore	Now also = Myllykoski; Owners of R.M. von Fieandt	1853	1853-1905	Böök 1934, Laine 1948 s. 513, Laine 1952 s. 168, Hyttinen 1997

Table D1-3. Historical industrial sites operating in Finland (Source: Puustinen 2003)

Historical Industrial Sites	Municipality	Institute	Commentary	Founding Year	Years of operation	Literature references
Haapakoski	Pieksämäen mlk	Blast Furnace, Rock Ore	Owners of J.E.A. Boije af Gennäs, N.I. Putiloff	1842	1842-1905	Solitander 1884, Laine 1948 s. 633, Kautovaara 1986, Nirkko et al 1990, Hyttinen 1997, Salokorpi 1999
Lieviskänkoski	Puumala	Blast Furnace, Rock Ore	Owners H.W.J Zilliacus and Carl Lojander, not built	1855	1855	Laine 1948 s. 677
Sumpula	Rautu	Blast Furnace, Rock Ore	Owners A. Fock, A. Fock	1827	1827-1882	Laine 1948 s. 596, Hyttinen 1997
Oravi	Savonlinna	Blast Furnace, Rock Ore	Also = Squirrel piece; owners N. Putiloff, A. Neiglick	1868	1868-1901	Solitander 1884, Laine 1948 s. 715, Hyttinen 1997
Jyrkkäkoski	Sonkajärvi	Blast Furnace, Rock Ore	Owned by Z. Franzén, J.E. Malmborg, P. Wahl	1831	1831-1918	Solitander 1884, Laine 1948 s. 611, Nirkko et al 1990, Ylisirniö 1990, Hyttinen 1997, Tuominen 1998
Annantehdas	Suojärvi	Blast Furnace, Rock Ore	Also = Pyhän Anna factory or Suojärvi iron factory; owners A. Orlov-Tsesmenski, F., S. and V. Gromoff	1809	1809-1905	Lundström 1814 s. 46, Laine 1907, Laine 1933, Laine 1948 s. 557, Pelkonen 1965, Hyttinen 1997
Ämmä	Suomussalmi	Blast Furnace, Rock Ore	Owners J. Wegelius, a company from Oulu	1841	1841-1877	Laine 1948 s. 698, Hakala 1982, Hyttinen 1997
Tampere	Tampere	Blast Furnace, Rock Ore	Owners N.J. Idman, C.A. Ramsay, G.A. Wasastjerna, A. Törngren	1842	1842-1877	Laine 1948 s. 643, Hyttinen 1997
Kattilankoski	Tohmajärvi	Blast Furnace, Rock Ore	Owners Gauro Pyykkönen and Erik Parviainen, not built	1860	1860	Laine 1948 s. 697
Kurimo	Utajärvi	Blast Furnace, Rock Ore	Owners of Oulu-based company, Kurimon-Ämmän rautatehdas Oy, The Finland Charcoal Iron Works Company Limited	1854	1854-1878	Laine 1948 s. 687, Hyttinen 1997
Varkaus	Varkaus	Blast Furnace, Rock Ore	Owned by G. Wrede, E.J. Längman, P. Wahl	1815	1815-1908	Solitander 1884, Laine 1948 s. 571, Hyttinen 1997, Salokorpi 1999
Värtsilä	Värtsilä	Blast Furnace, Rock Ore	Owners of N.L. Arppe, Värtsilä Oy	1851	1851-1920	Solitander 1884, Gripenberg 1922, Kaukoranta 1935, Laine 1948 s. 656, Putkinen 1960, Haavikko 1984, Nirkko et al 1990, Salokorpi 1999
Ylikaltimonkoski	Eno	Bloomery (a type of metallurgical furnace)	Owners D. Siitonen, P. Schreyberg and A. Piironen, not built	1854	1854	Furuhjelm 1881 s. 77, Laine 1952 s. 177
Hiiskoski	Ilomantsi	Bloomery (a type of metallurgical furnace)	Owners of A.J. Mustonen, not built	1879	1879	Laine 1952 s. 111, Hyttinen 1997
Ilajankoski	Ilomantsi	Bloomery (a type of metallurgical furnace)	Owners C. Huovinen (oldest cabin), E. Dahlström, G. Löfström, N.L. Arppe, A.J. Mustonen, S. Parviainen	1836	1836-1847	Furuhjelm 1881 s. 77, Laine 1952 s. 106, Björn 1991, Hyttinen 1997
Käenkoski	Ilomantsi	Bloomery (a type of metallurgical furnace)	Owners of E.J. Längman, N.L. Arppe, A.J. Mustonen, S. Parviainen	1839	1839-1880	Furuhjelm 1881 s. 76, Kaukoranta 1935, Laine 1952 s. 108, Björn 1991, Hyttinen 1997
Alajoki	Juva	Bloomery (a type of metallurgical furnace)	Owners A. Bagge, not built; location inaccurate	1849	1849-1881e	Furuhjelm 1881 s. 77, Laine 1952 s. 177
Hyppyrinkoski	Kaavi	Bloomery (a type of metallurgical furnace)	Owners Samuel Corneér	1795	1795-1802	Furuhjelm 1881 s. 76, Tuomi 1984
Kortteinen	Kaavi	Bloomery (a type of metallurgical furnace)	Owned by Anders Landgren et al., A.W. Tigerstedt	1823	1823-1851	Furuhjelm 1881 s. 76, Laine 1952 s. 94, Tuomi 1984, Hyttinen 1997
Kiminki	Karstula	Bloomery (a type of metallurgical furnace)	Owners of the Kiming Block Company, G.A. Wasastjerna, A., G.V. and and. Donner	1839	1839-1897	Furuhjelm 1881 s. 76, Laine 1952 s. 150, Nirkko et al 1990
Mankilankoski	Kaustinen	Bloomery (a type of metallurgical furnace)	Owners J. Rauma and Mankilankoski company	1868	1868-1878	Furuhjelm 1881 s. 76, Laine 1952 s. 165
Jukajoki	Kontiolahti	Bloomery (a type of metallurgical furnace)	Owners J. Lukkarinen	1862	1862-1865	Furuhjelm 1881 s. 77, Laine 1952 s. 118, Tuomi 1984
Haaga	Kortesjärvi	Bloomery (a type of metallurgical furnace)	Also = Rantala; owners of G.A. Lindqvist	1825	1825-1852	Furuhjelm 1881 s, 76, Laine 1952 s. 147
Purmala	Kortesjärvi	Bloomery (a type of metallurgical furnace)	Also = "Prostens cabin"; the owners are not known, it was originally reported that they were in Lappajärvi, no more detailed information	1881e	1881e	Furuhjelm 1881 s. 76, Laine 1952 s. 177
Saarikoski-Kuhmo	Kuhmo	Bloomery (a type of metallurgical furnace)	Also = Akonkoski; owners of F.E. Bergström	1874	1874-1878	Furuhjelm 1881 s. 77, Laine 1952 s. 145
Niklasfors	Kuru	Bloomery (a type of metallurgical furnace)	Also = Kuru, Nygård; owners of N.J. Idman	1825	1825-1858	Furuhjelm 1881 s. 76, Laine 1952 s. 166

Table D1-4. Historical industrial sites operating in Finland (Source: Puustinen 2003)

Historical Industrial Sites	Municipality	Institute	Commentary	Founding Year	Years of operation	Literature references
Kuusankoski	Laukaa	Bloomery (a type of metallurgical furnace)	Owners K. Niemelä and E. Järvenpää, not built	1863	1863	Laine 1952 s. 177
Pankakoski	Lieksa	Bloomery (a type of metallurgical furnace)	Owners J. Hällström, I. Stenius	1829	1829-1903	Furuhjelm 1881 s. 76, Solitander 1884, Laine 1952 s. 96, Putkinen 1960, Järvinen 1991, Hyttinen 1997
Vieki	Lieksa	Bloomery (a type of metallurgical furnace)	Owners K.G. Hällström and K.G. Stenius, not built	1837	1837	Furuhjelm 1881 s. 76, Laine 1952 s. 98
Vinkiänkoski	Längelmäki	Bloomery (a type of metallurgical furnace)	Owners of K.E. Wetterhoff, K.J. Collin and A.W. Helsinki, not built	1852	1852	Laine 1952 s. 177
Yskjärvi	Muolaa	Bloomery (a type of metallurgical furnace)	Owned by G. Nasaroff	1868	1868-1872	Laine 1952 s. 175
Mänttä	Mänttä	Bloomery (a type of metallurgical furnace)	Owners of A.G.A. Palmfelt, not built	1855	1855	Laine 1952 s. 178
Palonurmi	Nilsiä	Bloomery (a type of metallurgical furnace)	Also = Korkeakoski; owners Pietikäinen	1854	1854-1866	Furuhjelm 1881 s. 77, Laine 1962 s. 113
Palojärvi	Nurmes	Bloomery (a type of metallurgical furnace)	Owners H. Heikkinen	1825	1825-1827	Laine 1952 s. 93
Könninluoma	Nurmo	Bloomery (a type of metallurgical furnace)	Also = Königsbäck; owners are unknown, no details	1881e	1881e	Furuhjelm 1881 s. 76
Stytinkoski	Nurmo	Bloomery (a type of metallurgical furnace)	Owners unknown, no details	1881e	1881e	Furuhjelm 1881 s. 76
Kives	Paltamo	Bloomery (a type of metallurgical furnace)	Also = Varisjoki in the same place, Myllyranta auxiliary cabin; owners of C.G. Bergbom, a company from Oulu, a company from St. Petersburg	1852	1852-1859	Wathén 1858, Furuhjelm 1881 s. 77, Laine 1952 s. 143
Varisjoki	Paltamo	Bloomery (a type of metallurgical furnace)	Also = Testicle in the same place, Myllyranta auxiliary cabin; owners of C.G. Bergbom, a company from Oulu, a company from St. Petersburg	1852	1852-1859	Wathén 1858, Laine 1952 s. 143
Kaaranneskoski	Pello	Bloomery (a type of metallurgical furnace)	Also = Karanäs or Kaarannes; owners of E.D. Christier, O. Ekström; worked together with Ruukki in Köngäs	1795	1795-1807	Wathén 1858, Furuhjelm 1881 s. 78, Rosberg et al 1931, Arrela 1958, Peura 1987
Koskensaari	Petäjävesi	Bloomery (a type of metallurgical furnace)	Owners of J.E.A. Boije, a company from Jyväskylä	1850	1850-1897	Furuhjelm 1881 s. 76, Laine 1952 s. 157, Kalpio 1988, Hyttinen 1997
Pengerkoski	Petäjävesi	Bloomery (a type of metallurgical furnace)	Owners of C.H. John, E. Wallens	1841	1841-1847	Furuhjelm 1881 s. 76, Laine 1952 s. 150
Porsaskoski	Pieksämäen mlk	Bloomery (a type of metallurgical furnace)	Owners of H.G. and A. Sikanen, J. Bruun, C. Husgafvel	1838	1838-1885	Furuhjelm 1881 s. 77, Solitander 1884, Laine 1952 s. 168
Korkeakoski	Pielavesi	Bloomery (a type of metallurgical furnace)	Owned by F. and S. Paldani, J.A. and E. Fellman	1839	1839-1882	Furuhjelm 1881 s. 77, Laine 1952 s. 113, Hyttinen 1997
Lapinniemi	Pielavesi	Bloomery (a type of metallurgical furnace)	The owners are unknown, there must have been a cabin for local residents, no details	1800-lo	1800-lo	Nirkko et al 1990
Paasikoski	Pielavesi	Bloomery (a type of metallurgical furnace)	Owners of A. Tschernichin, not built	1841	1841	Furuhjelm 1881 s. 77, Laine 1952 s. 177
Saaninkoski	Pihtipudas	Bloomery (a type of metallurgical furnace)	Also = Saarikoski, Vierun auxiliary cabin; owners of G.A. Lindqvist, L.G. Schultz	1845	1845-1870	Furuhjelm 1881 s. 76, Laine 1952 s. 147, 177
Sukkulajoki	Polvijärvi	Bloomery (a type of metallurgical furnace)	Owners of A.J. Europaeus, not built	1839	1839	Laine 1952 s. 177
Jaurakkakoski	Pudasjärvi	Bloomery (a type of metallurgical furnace)	The owners are unknown, not built	1880	1881	Furuhjelm 1881 s. 78
Timonen	Pudasjärvi	Bloomery (a type of metallurgical furnace)	Also = Hirvaskoski; owners of A.W. Ramberg, L. Candelin	1841	1841-1877	Furuhjelm 1881 s. 77, Laine 1952 s. 137
Ultimojankoski	Pudasjärvi	Bloomery (a type of metallurgical furnace)	Owners of Lingonblad and Hejdeman, not built	1852	1852	Laine 1952 s. 177
Vesikoski	Pyhäjärvi	Bloomery (a type of metallurgical furnace)	Owners Z. Durchman, Z. Franzén, H. Sjöberg	1840	1840-1876	Wathén 1858, Furuhjelm 1881 s. 77, Laine 1952 s. 133
Tuusjärvi	Rantasalmi	Bloomery (a type of metallurgical furnace)	Owners unknown, No details available	1830	1830-l	Böcker 1835, Laine 1952 s. 168
Sinettä	Rovaniemen mlk	Bloomery (a type of metallurgical furnace)	Owners of I.M. Clementoff, no further details	1788	1788-1858e	Wathén 1858, Rein 1867, Furuhjelm 1881 s. 77
Petäjäkoski	Sotkamo	Bloomery (a type of metallurgical furnace)	Owners of J.K. Wichmann, P. Wahl	1838	1838-1880	Furuhjelm 1881 s. 77, Laine 1952 s. 127, Wilmi 1997, Hyttinen 1997
Näljängänkoski	Suomussalmi	Bloomery (a type of metallurgical furnace)	The owners are unknown, not built; location inaccurate	1880	1880-1881	Furuhjelm 1881 s. 78

Table D1-5. Historical industrial sites operating in Finland (Source: Puustinen 2003)

Historical Industrial Sites	Municipality	Institute	Commentary	Founding Year	Years of operation	Literature references
Myllyranta	Utajärvi	Bloomery (a type of metallurgical furnace)	Owners of C.G. Bergbom, a company from Oulu, a company from St. Petersburg	1838	1838-1859	Furuhjelm 1881 s. 77, Laine 1952 s. 119
Urimolahti	Varpaisjärvi	Bloomery (a type of metallurgical furnace)	Also = Urimalahti; Owners of L.F. Engström, L.F. Dahlström	1792	1792-1858	Furuhjelm 1881 s. 76, Laine 1952 s. 81, Hyttinen 1997
Kauppilanjoki	Vieremä	Bloomery (a type of metallurgical furnace)	Also = Ostokoski, Salahm's auxiliary cabin; owners E. and L.F. Dahlström, Z. Franzén	1849	1849-1876	Furuhjelm 1881 s. 77, Laine 1952 s. 116
Nissilä	Vieremä	Bloomery (a type of metallurgical furnace)	Salahm's auxiliary cabin; owners E. and L.F. Dahlström, Z. Franzén	1844	1840-1873	Furuhjelm 1881 s. 77, Laine 1952 s. 115
Saarikoski-Vieremä	Vieremä	Bloomery (a type of metallurgical furnace)	Salahm's auxiliary cabin; owners E. and L.F. Dahlström, Z. Franzén	1841	1841-1870	Laine 1952 s. 112
Salahmi	Vieremä	Bloomery (a type of metallurgical furnace)	Owners E. and L.F. Dahlström, Z. Franzén	1807	1807-1908	Furuhjelm 1881 s. 77, Solitander 1884, Laine 1952 s. 85, Hyttinen 1997, Tuominen 1998, Salokorpi 1999
Saaresjoki	Vuolijoki	Bloomery (a type of metallurgical furnace)	Myllyranta auxiliary cabin; owners of C.G. Bergbom, a company from Oulu, a company from St. Petersburg	1844	1844-1855	Wathén 1858, Laine 1952 s. 142
Inha	Ähtäri	Bloomery (a type of metallurgical furnace)	Also = Gustafsfors; owners of E.G. Roschier, G.A. Wasastjerna, C. and E.J. Bähr, A.W. Lagergren, A.N. Keirkner, Oy Fiskars Ab	1841	1841-1962	Furuhjelm 1881 s. 76, Laine 1952 s. 159, Nirkko et al 1990, Inhan tehtaat 1991, Hahne 1994, Hyttinen 1997
Sippola	Anjalankoski	Manufacturing Factory	Owned by J. Creutz	1691	1691-1705	Hultin 1897 s. 72, Hellgren 1957
Läskelä	Harlu	Manufacturing Factory	Owners of N.L. Arppe, K.L. Arppe	1859	1859-1888	Laine 1952 s. 496
Henriksdal	Hämeenkoski	Manufacturing Factory	Also = rapids; owners H.J. Dufva, A. Korhonen	1867	1867-1888	Laine 1952 s. 492
Kuohunkoski	Jyväskylän mlk	Manufacturing Factory	Owners K.G. Strömberg	1878	1878-1884	Laine 1952 s. 497
Vexiö	Kangasala	Manufacturing Factory	Also = Vääksy; owners of F.W. Favorin, the ingot cabin was not established	1837	1837-1845	Laine 1950 s. 121, Laine 1952 s. 479
Pohjolankoski	Keuruu	Manufacturing Factory	Owners P. Saxberg	1879	1879-1885	Laine 1952 s. 498
Juvankoski	Kuolemajärvi	Manufacturing Factory	Owners J. Thorwörste; location inaccurate	1687	1687-1704	Hultin 1897 s. 71, Laine 1907, Roos 1924, Hyttinen 1997
Pori	Pori	Manufacturing Factory	Also = Pori nail factory; owners of C.J. Borg, T. Walenkamph	1864	1864-1866	Laine 1952 s. 493
Renfors	Tampere	Manufacturing Factory	Owners V.L. Renfors	1849	1849-1863	Laine 1952 s. 482
Turku	Turku	Manufacturing Factory	Owners F. de Ron, Åbo Jern Manufactory Bolag, C.M.M. Armfelt, A. Armfelt	1855	1855-1898	Laine 1952 s. 483
Peippola	Uusikirkko	Manufacturing Factory	Owned by D. v. Demienoff, J. Österman and V. Iljin	1800	1800-1844	Lundström 1814 s. 19, Hultin 1897 s. 224, Laine 1907, Laine 1948 s. 421, Hyttinen 1997
Nurmi	Vahviala	Manufacturing Factory	Also = Nurmi fine factory; owners of Hackman & Co	1875	1875-1891	Laine 1952 s. 497
Tervajoki	Vahviala	Manufacturing Factory	Owned by J. Brochman	1798	1798-1809	Lundström 1814 s. 16, Hultin 1897 s. 223, Laine 1950 s. 120
Pero	Viipuri	Manufacturing Factory	Also = Vyborg or Peron nail factory; owners J. Bandholz, A.W. Berg, I. Rasterajeff	1862	1862-1885	Solitander 1884, Laine 1952 s. 486
Huppoinen	Viipurin mlk	Manufacturing Factory	Owned by P. Fremling and Tesk; location inaccurate	1696	1696-1704	Hultin 1897 s. 73
Yläsäiniö	Viipurin mlk	Manufacturing Factory	Owners of J. Brochmann?	1761	1761-1813	Hultin 1897 s. 224
Yläsäiniön naulatehdas	Viipurin mlk	Manufacturing Factory	Owners Collet, V. Neustrojeff, L. Petroff	1874	1874-1885	Laine 1952 s. 495