|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **LABTIUM OY** | | | | | | | | | | | | | **U.S. GEOLOGICAL SURVEY** | | | |
|  | **Susivuori** | | **Haudankalliot** | | **Saarineva** | | **Hanhimäki** | | **Tallmossen** | | **Långbådan** | |  | **Frakaninkalliot** | |  |  |
|  | grano-diorite | xenolith | granite | xenolith | granite | xenolith | granite | xenolith | quartz monzonite | xenolith | grano-diorite | xenolith |  | granite | xenolith |  |  |
|  | **A2231** | **A2232** | **A2233** | **A2234** | **A2235** | **A2236** | **A2237** | **A2238** | **A2239** (a) | **A2240** | **A2241** | **A2242** |  | **A2292** | **A2293** | **unit** | **method** |
| SiO2 | 68.0 | 55.4 | 65.7 | 45.1 | 66.9 | 70.7 | 67.1 | 68.4 | 65.7 | 67.4 | 67.9 | 65.4 |  | 65.0 | 66.3 | % | XRF |
| TiO2 | 0.82 | 0.89 | 0.80 | 1.27 | 0.68 | 0.77 | 0.70 | 0.70 | 0.86 | 1.00 | 0.79 | 1.51 |  | 0.70 | 0.61 | % | XRF |
| Al2O3 | 15.7 | 20.5 | 16.2 | 23.1 | 16.6 | 13.7 | 15.9 | 15.0 | 16.95 | 14.0 | 15.6 | 15.3 |  | 15.5 | 14.2 | % | XRF |
| Fe2O3 t | 4.54 | 8.15 | 5.97 | 14.2 | 4.56 | 5.16 | 6.07 | 5.39 | 5.12 | 7.52 | 5.11 | 6.63 |  | 6.04 | 6.05 | % | XRF |
| MnO | 0.04 | 0.08 | 0.06 | 0.20 | 0.04 | 0.06 | 0.06 | 0.05 | 0.07 | 0.12 | 0.04 | 0.07 |  | 0.04 | 0.13 | % | XRF |
| MgO | 1.83 | 3.77 | 2.33 | 6.15 | 2.02 | 2.31 | 2.46 | 2.40 | 2.24 | 3.06 | 1.92 | 2.08 |  | 2.54 | 2.54 | % | XRF |
| CaO | 2.33 | 2.07 | 2.4 | 1.66 | 2.07 | 2.09 | 1.77 | 3.48 | 2.97 | 2.31 | 2.59 | 3.18 |  | 1.94 | 4.75 | % | XRF |
| Na2O | 2.91 | 3.21 | 2.82 | 1.90 | 3.08 | 2.65 | 2.32 | 2.52 | 3.32 | 2.36 | 3.41 | 2.76 |  | 2.91 | 1.26 | % | XRF |
| K2O | 3.37 | 5.45 | 3.23 | 4.18 | 3.62 | 2.23 | 3.11 | 1.68 | 2.42 | 1.83 | 2.09 | 2.33 |  | 3.34 | 1.46 | % | XRF |
| P2O5 | 0.07 | 0.07 | 0.08 | 0.06 | 0.13 | 0.06 | 0.12 | 0.13 | 0.06 | 0.04 | 0.27 | 0.48 |  | 0.20 | 0.14 | % | XRF |
| Cr2O3 | n.a. | n.a. | n.a | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. |  | 0.02 | 0.01 | % | XRF |
| LOI | n.a. | n.a. | n.a | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. |  | 1.29 | 1.8 | % | Combustion |
| **Total** | **99.60** | **99.60** | **99.59** | **97.83** | **99.70** | **99.72** | **99.61** | **99.75** | **99.66** | **99.64** | **99.71** | **99.73** |  | **99.52** | **99.25** | % |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Sc | 11.2 | 22.2 | 17.2 | 46.1 | 10.8 | 13.0 | 13.7 | 16.3 | 17.8 | 31.8 | 8.84 | 19.6 |  | 11 | 16 | ppm | ICP-MS |
| V | 85.3 | 168 | 122 | 266 | 99.6 | 110 | 87.0 | 139 | 143 | 175 | 74.6 | 75.8 |  | 96 | 100 | ppm | ICP-MS |
| Cr | 73.2 | 154 | 99.0 | 266 | 65.7 | 82.0 | 81.1 | 105 | 87.6 | 182 | 57.8 | 53.2 |  | 80 | 80 | ppm | ICP-MS |
| Co | 29.1 | 27.2 | 31.8 | 43.0 | 29.3 | 28.5 | 26.8 | 37.7 | 31.9 | 39.7 | 25.6 | 28.7 |  | 30.1 | 34.6 | ppm | ICP-MS |
| Ni | 22.2 | 49.9 | 42.2 | 83.9 | 29.1 | 24.2 | 34.0 | 42.4 | 36.7 | 35.7 | 24.7 | 21.4 |  | 42 | 42 | ppm | ICP-MS |
| Cu | 21.9 | 16.1 | 42.9 | 64.9 | 24.1 | 6.68 | 31.6 | 29.5 | 37.8 | 19.6 | 25.6 | 23.4 |  | 26 | 28 | ppm | ICP-MS |
| Zn | 103 | 142 | 119 | 211 | 83.7 | 94 | 107 | 103 | 88.2 | 115 | 89.3 | 113 |  | 110 | 98 | ppm | ICP-MS |
| Y | 13.6 | 21.4 | 20.0 | 44.4 | 11.4 | 9.6 | 8.6 | 17.8 | 30.2 | 72.1 | 14.4 | 27.6 |  | 18.3 | 20.8 | ppm | ICP-MS |
| Zr (b) | 178 | 112 | 147 | 113 | 196 | 144 | 129 | 177 | 164 | 212 | 180 | 197 |  | 219 | 202 | ppm | XRF (Labtium), ICP-MS (USGS) |
| Nb (b) | <5 | <5 | <5 | <5 | <5 | 6 | 7 | <5 | <5 | <5 | 6 | 12 |  | 19 | 11 | ppm | XRF (Labtium), ICP-MS (USGS) |
| Mo | 0.97 | <0.5 | 1.75 | 1.07 | 0.75 | <0.5 | 1.04 | 0.54 | 0.86 | 0.53 | 0.76 | 0.86 |  | <2 | <2 | ppm | ICP-MS |
| Cd | 0.48 | 0.47 | 0.53 | 0.73 | 0.29 | 0.33 | 0.27 | 0.36 | 0.61 | 0.79 | 0.38 | 0.50 |  | <0.2 | 0.3 | ppm | ICP-MS |
| Li | 10.0 | 29.7 | 9.74 | 91.5 | 42.0 | 35.9 | 15.1 | 16.4 | 19.7 | 18.8 | 80.6 | 105 |  | 50 | 50 | ppm | ICP-MS |
| Be | 1.92 | 5.03 | 2.01 | 17.0 | 2.07 | 0.65 | 8.20 | 1.24 | 0.86 | 0.55 | 2.61 | 1.40 |  | <5 | <5 | ppm | ICP-MS |
| Hf | 4.12 | 3.24 | 2.50 | 2.69 | 3.13 | 3.94 | 2.58 | 4.02 | 2.84 | 4.45 | 3.65 | 4.59 |  | 6 | 5 | ppm | ICP-MS |
| Rb | 148 | 212 | 156 | 249 | 166 | 142 | 160 | 85.6 | 88.7 | 84.0 | 153 | 171 |  | 184 | 91.3 | ppm | ICP-MS |
| Sr | 249 | 294 | 245 | 208 | 298 | 220 | 164 | 310 | 297.5 | 219 | 209 | 233 |  | 174 | 183 | ppm | ICP-MS |
| Ba | 896 | 1560 | 751 | 747 | 820 | 417 | 563 | 377 | 597 | 417 | 192 | 159 |  | 388 | 110 | ppm | ICP-MS |
| Ga (b) | 18 | 20 | 19 | 28 | 15 | <15 | 19 | <15 | <15 | <15 | 20 | 16 |  | 23 | 19 | ppm | XRF (Labtium), ICP-MS (USGS) |
| Tl | 1.51 | 2.21 | 1.33 | 2.31 | 1.14 | 1.02 | 1.19 | 0.68 | 1.2 | 1.18 | 0.96 | 1.15 |  | 1 | 0.6 | ppm | ICP-MS |
| As | 0.74 | <0.5 | 0.77 | 0.59 | 4.10 | <0.5 | 1.29 | <0.5 | 0.82 | <0.5 | 4.94 | 1.42 |  | <30 | <30 | ppm | ICP-MS |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **Susivuori** | | **Haudankalliot** | | **Saarineva** | | **Hanhimäki** | | **Tallmossen** | | **Långbådan** | |  | **Frakaninkalliot** | |  |  |
|  | grano-diorite | xenolith | granite | xenolith | granite | xenolith | granite | xenolith | quartz monzonite | xenolith | grano-diorite | xenolith |  | granite | xenolith |  |  |
|  | **A2231** | **A2232** | **A2233** | **A2234** | **A2235** | **A2236** | **A2237** | **A2238** | **A2239** (a) | **A2240** | **A2241** | **A2242** |  | **A2292** | **A2293** | **unit** | **method** |
| Sn | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 2.76 | 2.56 |  | 2 | 1 | ppm | ICP-MS |
| Sb | <0.1 | <0.1 | <0.1 | <0.1 | 0.13 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.18 | 0.16 |  | <0.1 | <0.1 | ppm | ICP-MS |
| Bi | 0.15 | 0.12 | 0.14 | 0.18 | 0.26 | 0.11 | 0.15 | 0.14 | 0.15 | 0.15 | 0.22 | 0.21 |  | 0.1 | 0.1 | ppm | ICP-MS |
| La | 79.7 | 56.4 | 55.3 | 64.5 | 54.5 | 58.8 | 33.8 | 47.8 | 85.5 | 77.1 | 51.0 | 48.0 |  | 37.2 | 35.1 | ppm | ICP-MS |
| Ce | 166 | 111 | 115 | 134 | 112 | 121 | 69.7 | 95.5 | 173.5 | 154 | 108 | 105 |  | 75.5 | 72.8 | ppm | ICP-MS |
| Pr | 19.6 | 12.8 | 13.6 | 15.8 | 13.0 | 14.0 | 8.27 | 11.0 | 20.2 | 17.8 | 13.1 | 13.5 |  | 9.07 | 8.44 | ppm | ICP-MS |
| Nd | 72.0 | 47.4 | 50.6 | 58.5 | 48.0 | 50.5 | 30.0 | 40.7 | 72.9 | 63.5 | 50.5 | 54.5 |  | 34.3 | 32 | ppm | ICP-MS |
| Sm | 11.7 | 8.15 | 9.17 | 10.5 | 8.44 | 8.33 | 5.76 | 7.21 | 11.9 | 10.9 | 9.78 | 12.6 |  | 6.6 | 5.4 | ppm | ICP-MS |
| Eu | 1.67 | 2.18 | 1.63 | 1.49 | 1.71 | 1.21 | 1.06 | 1.73 | 1.74 | 1.31 | 1.27 | 1.50 |  | 0.92 | 0.96 | ppm | ICP-MS |
| Gd | 10.5 | 7.81 | 8.31 | 10.6 | 7.49 | 7.77 | 5.10 | 6.61 | 10.75 | 12.0 | 8.87 | 12.4 |  | 5.89 | 4.83 | ppm | ICP-MS |
| Tb | 0.99 | 0.96 | 0.93 | 1.48 | 0.80 | 0.74 | 0.58 | 0.80 | 1.23 | 2.01 | 1.04 | 1.68 |  | 0.79 | 0.71 | ppm | ICP-MS |
| Dy | 3.61 | 4.73 | 4.26 | 7.88 | 3.10 | 2.62 | 2.24 | 3.86 | 6.09 | 13.0 | 3.96 | 7.25 |  | 3.87 | 3.5 | ppm | ICP-MS |
| Ho | 0.56 | 0.80 | 0.77 | 1.52 | 0.47 | 0.39 | 0.36 | 0.72 | 1.19 | 2.73 | 0.58 | 1.14 |  | 0.61 | 0.67 | ppm | ICP-MS |
| Er | 1.40 | 2.17 | 2.22 | 4.36 | 1.23 | 1.03 | 1.00 | 2.09 | 3.43 | 7.39 | 1.43 | 2.83 |  | 1.57 | 1.84 | ppm | ICP-MS |
| Tm | 0.15 | 0.29 | 0.28 | 0.62 | 0.13 | 0.12 | 0.11 | 0.28 | 0.45 | 1.01 | 0.17 | 0.35 |  | 0.22 | 0.28 | ppm | ICP-MS |
| Yb | 0.99 | 1.90 | 1.99 | 4.22 | 0.79 | 0.79 | 0.77 | 1.96 | 3.02 | 6.33 | 0.94 | 2.19 |  | 1.2 | 1.9 | ppm | ICP-MS |
| Lu | 0.14 | 0.29 | 0.29 | 0.64 | 0.12 | 0.13 | 0.11 | 0.29 | 0.45 | 0.88 | 0.12 | 0.31 |  | 0.21 | 0.3 | ppm | ICP-MS |
| Th | 35.1 | 20.5 | 24.1 | 23.9 | 19.3 | 22.3 | 13.9 | 16.1 | 26.1 | 25.3 | 17.6 | 13.1 |  | 14.3 | 12.9 | ppm | ICP-MS |
| U | 1.82 | 1.79 | 2.21 | 2.39 | 3.19 | 2.12 | 2.26 | 3.06 | 2.31 | 1.80 | 3.07 | 3.42 |  | 2.55 | 2.82 | ppm | ICP-MS |
| Pb | 26.1 | 35.4 | 23.3 | 18.0 | 24.1 | 14.6 | 15.5 | 16.3 | 20.8 | 15.1 | 16.1 | 12.3 |  | 15 | 7 | ppm | ICP-MS |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Sat temp Zirc (c) | 834 |  | 817 |  | 846 |  | 822 |  | 823 |  | 835 |  |  | 827 |  | °C |  |
| Sat temp Mnz (d) | 870 |  | 842 |  | 842 |  | 830 |  | 874 |  | 832 |  |  | 805 |  | °C |  |
|  | | | | | | | | | | | | | | | | | |
| (a) Average of two analyses | | | | | | | | | | | | | | | | | |
| (b) Zr, Nb, and Ga were analyzed as oxide-% by XRF in Labtium, and recalculated to ppm | | | | | | | | | | | | | | | | | |
| (c) Saturation temperature according to Watson & Harrison (1983) | | | | | | | | | | | | | | | | | |
| (d) Saturation temperature according to Montel (1993), with 5 % water content | | | | | | | | | | | | | | | | | |