**Table S2.** *Mineral compositions used for thermobarometry*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample | ME126 | ME126 | ME126 | ME126 | ME126 | ME126 | ME126 | ME131 | ME131 | ME131 | ME131 | ME131 | ME131 |
| Mineral | Bt | Bt | Ms | Chl | Pl | Pl | Pl | Hbl | Hbl | Hbl | Ep | Pl | Bt |
| Location | matrix | vein wall | matrix | vein | matrix | matrix | vein | core | outer | rim |  |  |  |
| Note | mean | - | mean | - | low an | high an | mean | - | mean | mean | mean | mean | mean |
| SiO2 | 36.4 | 36.0 | 48.2 | 26.1 | 60.5 | 56.8 | 55.9 | 50.5 | 46.6 | 42.7 | 38.4 | 45.6 | 36.7 |
| TiO2 | 1.6 | 2.6 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.4 | 0.5 | 0.2 | 0.0 | 2.5 |
| Al2O3 | 18.0 | 17.4 | 31.6 | 20.4 | 25.5 | 28.0 | 28.7 | 4.5 | 8.5 | 11.0 | 25.5 | 35.5 | 15.5 |
| Fe2O3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 11.2 | 0.0 | 0.0 |
| FeO | 18.8 | 20.1 | 3.1 | 24.0 | 0.1 | 0.0 | 0.0 | 15.4 | 17.7 | 22.2 | 0.0 | 0.3 | 20.7 |
| MnO | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.9 | 0.8 | 0.8 | 0.3 | 0.0 | 0.4 |
| MgO | 10.7 | 10.2 | 1.6 | 15.6 | 0.0 | 0.0 | 0.2 | 13.1 | 10.6 | 6.8 | 0.0 | 0.0 | 10.5 |
| CaO | 0.3 | 0.0 | 0.2 | 0.2 | 6.5 | 9.4 | 10.0 | 12.0 | 12.0 | 11.9 | 23.4 | 18.2 | 0.1 |
| Na2O | 0.2 | 0.0 | 0.3 | 0.3 | 7.9 | 6.1 | 5.4 | 0.4 | 0.7 | 0.8 | 0.0 | 1.0 | 0.0 |
| K2O | 10.1 | 9.7 | 10.6 | 0.0 | 0.2 | 0.1 | 0.1 | 0.3 | 0.8 | 1.2 | 0.0 | 0.0 | 10.2 |
| Totals | 96.2 | 96.2 | 96.1 | 86.7 | 100.6 | 100.5 | 100.4 | 97.3 | 98.2 | 98.0 | 99.0 | 100.7 | 96.5 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Oxygens | 22 | 22 | 22 | 14 | 8 | 8 | 8 | 23 | 23 | 23 | 12.5 | 8 | 22 |
| Si | 5.49 | 5.47 | 6.42 | 2.77 | 2.68 | 2.53 | 2.50 | 7.45 | 6.95 | 6.58 | 3.00 | 2.09 | 5.59 |
| Ti | 0.18 | 0.29 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.04 | 0.05 | 0.01 | 0.00 | 0.28 |
| Al | 3.21 | 3.11 | 4.95 | 2.54 | 1.33 | 1.47 | 1.51 | 0.78 | 1.50 | 2.00 | 2.34 | 1.92 | 2.79 |
| Fe3+ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.66 | 0.00 | 0.00 |
| Fe2+ | 2.37 | 2.55 | 0.35 | 2.12 | 0.00 | 0.00 | 0.00 | 1.90 | 2.21 | 2.86 | 0.00 | 0.01 | 2.63 |
| Mn | 0.01 | 0.02 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.11 | 0.10 | 0.11 | 0.02 | 0.00 | 0.06 |
| Mg | 2.41 | 2.30 | 0.32 | 2.46 | 0.00 | 0.00 | 0.02 | 2.89 | 2.36 | 1.56 | 0.00 | 0.00 | 2.39 |
| Ca | 0.05 | 0.00 | 0.02 | 0.03 | 0.31 | 0.45 | 0.48 | 1.90 | 1.92 | 1.96 | 1.96 | 0.89 | 0.02 |
| Na | 0.07 | 0.00 | 0.07 | 0.05 | 0.67 | 0.53 | 0.47 | 0.12 | 0.21 | 0.25 | 0.00 | 0.09 | 0.00 |
| K | 1.95 | 1.88 | 1.79 | 0.00 | 0.01 | 0.01 | 0.01 | 0.06 | 0.16 | 0.24 | 0.00 | 0.00 | 1.97 |
| Sum | 15.74 | 15.63 | 13.98 | 9.99 | 5.00 | 5.00 | 4.98 | 15.23 | 15.45 | 15.61 | 7.99 | 5.00 | 15.72 |
| X(Mg) | 0.50 | 0.47 | 0.48 | 0.54 |  |  |  | 0.60 | 0.52 | 0.35 |  |  | 0.48 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample | ME148 | ME148 | ME148 | ME148 | ME148 | ME148 | ME151 | ME151 | ME151 | ME151 | ME151 |
| Mineral | Grt | Grt | St | Bt | Ms | Pl | Grt | Bt | Ms | Pl | Kfs |
| Location | rim | core |  |  |  |  |  |  |  |  |  |
| Note | mean | mean | mean | mean | mean | mean | mean | mean | mean | mean | mean |
| SiO2 | 37.4 | 36.9 | 27.4 | 35.0 | 45.6 | 57.6 | 37.3 | 35.2 | 45.6 | 54.3 | 65.9 |
| TiO2 | 0.0 | 0.1 | 0.6 | 2.4 | 0.8 | 0.0 | 0.1 | 3.6 | 1.5 | 0.0 | 0.2 |
| Al2O3 | 21.1 | 20.7 | 55.2 | 19.4 | 35.6 | 27.4 | 20.7 | 17.4 | 32.3 | 29.8 | 19.0 |
| Fe2O3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| FeO | 32.4 | 28.0 | 12.6 | 20.4 | 1.6 | 0.1 | 21.8 | 21.6 | 3.8 | 0.2 | 0.2 |
| MnO | 3.7 | 8.4 | 0.6 | 0.2 | 0.0 | 0.0 | 14.8 | 0.8 | 0.1 | 0.0 | 0.1 |
| MgO | 2.8 | 1.5 | 1.3 | 9.1 | 0.6 | 0.0 | 1.6 | 7.7 | 0.8 | 0.0 | 0.0 |
| CaO | 3.5 | 4.8 | 0.0 | 0.1 | 0.1 | 8.7 | 5.0 | 0.1 | 0.0 | 11.6 | 0.1 |
| Na2O | 0.3 | 0.3 | 0.0 | 0.4 | 0.6 | 6.6 | 0.0 | 0.0 | 0.0 | 4.6 | 0.6 |
| K2O | 0.0 | 0.0 | 0.0 | 9.9 | 10.3 | 0.1 | 0.0 | 9.5 | 9.0 | 0.2 | 15.1 |
| Totals | 101.1 | 100.7 | 97.8 | 96.9 | 95.3 | 100.6 | 101.4 | 95.8 | 93.0 | 100.8 | 101.0 |
| +ZnO |  |  | 0.6 |  |  |  |  |  |  |  |  |
| Oxygens | 12 | 12 | 46 | 22 | 22 | 8 | 12 | 22 | 22 | 8 | 8 |
| Si | 2.98 | 2.98 | 7.56 | 5.29 | 6.08 | 2.57 | 2.99 | 5.42 | 6.24 | 2.43 | 2.99 |
| Ti | 0.00 | 0.01 | 0.13 | 0.28 | 0.08 | 0.00 | 0.01 | 0.42 | 0.15 | 0.00 | 0.01 |
| Al | 1.98 | 1.97 | 18.01 | 3.47 | 5.59 | 1.44 | 1.95 | 3.16 | 5.21 | 1.58 | 1.02 |
| Fe3+ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fe2+ | 2.16 | 1.89 | 2.92 | 2.58 | 0.18 | 0.00 | 1.46 | 2.79 | 0.44 | 0.01 | 0.01 |
| Mn | 0.25 | 0.57 | 0.13 | 0.03 | 0.00 | 0.00 | 1.00 | 0.10 | 0.01 | 0.00 | 0.00 |
| Mg | 0.33 | 0.19 | 0.55 | 2.04 | 0.13 | 0.00 | 0.19 | 1.76 | 0.16 | 0.00 | 0.00 |
| Ca | 0.30 | 0.42 | 0.00 | 0.01 | 0.01 | 0.42 | 0.42 | 0.01 | 0.00 | 0.56 | 0.00 |
| Na | 0.04 | 0.04 | 0.00 | 0.12 | 0.17 | 0.57 | 0.00 | 0.00 | 0.00 | 0.40 | 0.05 |
| K | 0.00 | 0.00 | 0.00 | 1.90 | 1.76 | 0.01 | 0.00 | 1.86 | 1.57 | 0.01 | 0.87 |
| Sum | 8.05 | 8.06 | 29.30 | 15.71 | 14.00 | 5.00 | 8.03 | 15.51 | 13.78 | 4.99 | 4.95 |
| X(Mg) | 0.13 | 0.09 | 0.16 | 0.44 |  |  | 0.12 | 0.39 | 0.26 |  |  |