**Heyerdahlite, Na3Mn7Ti2(Si4O12)2O2(OH)4F(H2O)2, a new mineral of the astrophyllite supergroup from the Larvik Plutonic complex, Norway: Description and crystal structure**

E. Sokolova, M. C. Day, F. C. Hawthorne and R. Kristiansen

Supplementary Table. Anisotropic displacement parameters (Å2) for heyerdahlite.

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| --- | --- | --- | --- | --- | --- | --- |
| Atom | *U*11 | *U*22 | *U*33 | *U* 23 | *U* 13 | *U* 12 |
| M(1) | 0.0053(4) | 0.0120(5) | 0.0171(4) | 0.0075(5) | 0.0036(3) | 0.0023(5) |
| M(2) | 0.0055(5) | 0.0110(5) | 0.0189(6) | 0.0057(5) | 0.0037(4) | 0.0021(5) |
| M(3) | 0.0063(5) | 0.0121(5) | 0.0203(6) | 0.0089(4) | 0.0055(4) | 0.0034(4) |
| M(4) | 0.0064(6) | 0.0096(6) | 0.0157(7) | 0.0049(5) | 0.0026(5) | 0.0020(5) |
| D | 0.0032(3) | 0.0095(4) | 0.0167(3) | 0.0063(4) | 0.0034(2) | 0.0021(4) |
| T(1) | 0.0070(7) | 0.0087(7) | 0.0159(8) | 0.0062(6) | 0.0030(6) | 0.0022(6) |
| T(2) | 0.0067(7) | 0.0083(7) | 0.0161(7) | 0.0046(6) | 0.0038(6) | 0.0033(6) |
| T(3) | 0.0070(6) | 0.0085(7) | 0.0173(7) | 0.0058(7) | 0.0031(5) | 0.0030(7) |
| T(4) | 0.0058(7) | 0.0094(6) | 0.0110(7) | 0.0052(5) | 0.0029(6) | 0.0027(5) |
| A(1) | 0.051(2) | 0.044(2) | 0.0275(14) | 0.014(2) | 0.0053(13) | 0.012(3) |
| A(2) | 0.024(2) | 0.026(3) | 0.0196(17) | 0.009(3) | 0.0042(14) | 0.006(3) |
| B | 0.0210(14) | 0.0165(17) | 0.0193(12) | 0.0039(17) | 0.0027(10) | 0.0034(18) |
| O(1) | 0.008(2) | 0.0111(19) | 0.017(2) | 0.0053(16) | 0.0023(17) | 0.0023(16) |
| O(2) | 0.008(2) | 0.0077(19) | 0.0138(19) | 0.0008(17) | 0.0011(16) | 0.0063(17) |
| O(3) | 0.0120(18) | 0.0099(19) | 0.0148(16) | –0.0006(19) | 0.0030(13) | 0.009(2) |
| O(4) | 0.010(2) | 0.0092(18) | 0.012(2) | 0.0016(16) | 0.0036(17) | 0.0013(17) |
| O(5) | 0.007(2) | 0.018(2) | 0.024(2) | 0.0092(18) | 0.0055(18) | 0.0019(16) |
| O(6) | 0.014(2) | 0.028(3) | 0.018(2) | 0.006(2) | 0.0095(18) | –0.002(2) |
| O(7) | 0.014(2) | 0.021(2) | 0.018(2) | 0.0082(18) | 0.0054(18) | 0.0112(18) |
| O(8) | 0.027(3) | 0.027(3) | 0.021(2) | 0.013(2) | 0.010(2) | 0.022(2) |
| O(9) | 0.021(2) | 0.024(2) | 0.020(2) | 0.006(2) | –0.0014(18) | 0.017(2) |
| O(10) | 0.020(2) | 0.0084(18) | 0.021(2) | 0.0071(16) | –0.0001(18) | 0.0003(16) |
| O(11) | 0.022(2) | 0.0113(19) | 0.023(2) | 0.0079(17) | 0.0075(19) | 0.0037(17) |
| O(12) | 0.011(2) | 0.031(3) | 0.018(2) | 0.013(2) | –0.0020(17) | –0.0088(19) |
|  | 0.0107(15) | 0.0116(18) | 0.0139(14) | 0.0052(18) | 0.0025(11) | 0.0060(18) |
| (1) | 0.010(2) | 0.012(2) | 0.013(2) | 0.0043(17) | 0.0002(17) | 0.0001(17) |
| (2) | 0.015(3) | 0.012(2) | 0.018(2) | 0.0021(19) | 0.0039(19) | 0.0038(18) |
|  | 0.0157(19) | 0.013(2) | 0.0136(15) | 0.001(2) | 0.0017(13) | 0.005(2) |