|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Dyar et al., Deposit, American Mineralogist, vol. 99, MayJune (2014).  Table 2. Mössbauer Parameters of Fe-Bearing Phosphate Minerals | | | | |  |  |
| ID |  | δ (mm/s) | Δ (mm/s) | Γ (mm/s) | area (% of total area) | normalized c2 |
| Alluaudite | ML-P40 (2) | 0.43 | 0.44 | 0.26 | 100 | 5.51 |
| Alluaudite, ferro-alluaudite | ML-P14 | 1.27 | 2.75 | 0.30 | 10 | 1.36 |
| Alluaudite, ferro-alluaudite | ML-P14 | 0.44 | 0.45 | 0.26 | 90 | 1.36 |
| Arrojadite | ML-P25 | 0.33 | 0.79 | 0.30 | 4 | 1.497 |
| Arrojadite | ML-P25 | 1.19 | 1.13 | 0.30 | 6 | 1.497 |
| Arrojadite | ML-P25 | 1.22 | 1.73 | 0.30 | 16 | 1.497 |
| Arrojadite | ML-P25 | 1.20 | 2.15 | 0.30 | 31 | 1.497 |
| Arrojadite | ML-P25 | 1.18 | 2.65 | 0.30 | 28 | 1.497 |
| Arrojadite | ML-P25 | 1.21 | 3.08 | 0.30 | 16 | 1.497 |
| Arsenocrandallite | DD150 | 0.39 | 1.17 | 0.55 | 51 | 5.581 |
| Arsenocrandallite | DD150 | 0.40 | 0.46 | 0.32 | 49 | 5.581 |
| Barbosalite | DD248-A | 1.10 | 3.52 | 0.23 | 25 | 1.156 |
| Barbosalite | DD248-A | 0.29 | 0.56 | 0.30 | 28 | 1.156 |
| Barbosalite | DD248-A | 0.44 | 0.41 | 0.26 | 47 | 1.156 |
| Barbosalite | DD134 | 0.43 | 0.38 | 0.29 | 56 | 1.312 |
| Barbosalite | DD134 | 0.39 | 1.53 | 0.38 | 17 | 1.312 |
| Barbosalite | DD134 | 1.10 | 3.56 | 0.27 | 27 | 1.312 |
| Bobierrite | MDD11 | 1.21 | 3.24 | 0.31 | 49 | 1.871 |
| Bobierrite | MDD11 | 1.18 | 2.41 | 0.28 | 40 | 1.871 |
| Bobierrite | MDD11 | 0.26 | 0.85 | 0.61 | 11 | 1.871 |
| Chalcosiderite | ML-P39 | 0.38 | 1.09 | 0.25 | 62 | 1.36 |
| Chalcosiderite | ML-P39 | 0.41 | 0.43 | 0.26 | 38 | 1.36 |
| Childrenite | ML-P29 | 1.24 | 1.66 | 0.25 | 100 | 0.94 |
| Dufrenite | ML-P34-D | 0.38 | 0.96 | 0.61 | 60 | 76.795 |
| Dufrenite | ML-P34-D | 0.38 | 0.54 | 0.29 | 40 | 76.795 |
| Fairfieldite | DD171 | 1.23 | 2.94 | 0.30 | 71 | 3.069 |
| Fairfieldite | DD171 | 1.06 | 2.45 | 0.40 | 4 | 3.069 |
| Fairfieldite | DD171 | 0.41 | 0.94 | 0.54 | 25 | 3.069 |
| Ferrisicklerite | DD162-A | 0.42 | 0.47 | 0.28 | 51 | 1.74 |
| Ferrisicklerite | DD162-A | 0.44 | 1.44 | 0.32 | 46 | 1.74 |
| Ferrisicklerite | DD162-A | 1.22 | 2.75 | 0.28 | 3 | 1.74 |
| Ferristrunzite | ML-P15 | 0.39 | 0.76 | 0.48 | 72 | 1.368 |
| Ferristrunzite | ML-P15 | 0.41 | 0.38 | 0.39 | 28 | 1.368 |
| Ferrolaueite | MDD20 | 1.28 | 3.10 | 0.30 | 19 | 1.189 |
| Ferrolaueite | MDD20 | 0.39 | 1.31 | 0.30 | 30 | 1.189 |
| Ferrolaueite | MDD20 | 0.37 | 0.32 | 0.30 | 10 | 1.189 |
| Ferrolaueite | MDD20 | 0.25 | 0.66 | 0.30 | 41 | 1.189 |
| Frondelite | DD130 | 0.40 | 0.76 | 0.46 | 61 | 1.45 |
| Frondelite | DD130 | 0.41 | 0.26 | 0.26 | 39 | 1.45 |
| Gormanite | MDD13 | 1.19 | 2.02 | 0.27 | 77 | 1.01 |
| Gormanite | MDD13 | 1.22 | 2.54 | 0.30 | 12 | 1.01 |
| Gormanite | MDD13 | 1.04 | 2.98 | 0.30 | 5 | 1.01 |
| Gormanite | MDD13 | 0.31 | 1.22 | 0.30 | 6 | 1.01 |
| Graftonite | ML-P24 | 1.11 | 1.84 | 0.30 | 44 | 1.3616 |
| Graftonite | ML-P24 | 1.26 | 1.95 | 0.30 | 9 | 1.3616 |
| Graftonite | ML-P24 | 1.18 | 2.34 | 0.30 | 26 | 1.3616 |
| Graftonite | ML-P24 | 1.23 | 2.96 | 0.30 | 20 | 1.3616 |
| Hagendorfite | DD237 | 1.36 | 2.66 | 0.24 | 21 | 1.080 |
| Hagendorfite | DD237 | 1.30 | 2.23 | 0.25 | 25 | 1.080 |
| Hagendorfite | DD237 | 1.20 | 1.68 | 0.41 | 26 | 1.080 |
| Hagendorfite | DD237 | 0.23 | 1.00 | 0.28 | 28 | 1.080 |
| Hagendorfite | DD184 | 1.24 | 2.95 | 0.30 | 25 | 1.427 |
| Hagendorfite | DD184 | 1.25 | 2.09 | 0.30 | 29 | 1.427 |
| Hagendorfite | DD184 | 1.20 | 1.86 | 0.33 | 29 | 1.427 |
| Hagendorfite | DD184 | 0.35 | 0.69 | 0.30 | 17 | 1.427 |
| Hureaulite | ML-P31-A | 1.23 | 2.39 | 0.31 | 33 | 1.02 |
| Hureaulite | ML-P31-A | 1.22 | 1.23 | 0.24 | 67 | 1.02 |
| Kulanite | MDD16 | 1.20 | 1.78 | 0.30 | 43 | 1.19 |
| Kulanite | MDD16 | 1.26 | 1.71 | 0.30 | 24 | 1.19 |
| Kulanite | MDD16 | 1.23 | 1.35 | 0.30 | 22 | 1.19 |
| Kulanite | MDD16 | 0.36 | 0.56 | 0.33 | 11 | 1.19 |
| Kulanite | ML-P32 | 1.20 | 1.96 | 0.30 | 5 | 1.36 |
| Kulanite | ML-P32 | 1.22 | 1.43 | 0.30 | 47 | 1.36 |
| Kulanite | ML-P32 | 1.22 | 1.72 | 0.30 | 35 | 1.36 |
| Kulanite | ML-P32 | 0.41 | 0.47 | 0.30 | 14 | 1.36 |
| Landesite | ML-P26 | 1.22 | 1.59 | 0.26 | 38 | 2.03 |
| Landesite | ML-P26 | 1.23 | 2.38 | 0.24 | 52 | 2.03 |
| Landesite | ML-P26 | 0.26 | 0.79 | 0.37 | 10 | 2.03 |
| Laueite | DD210 | 0.24 | 0.76 | 0.40 | 5 | 2.6 |
| Laueite | DD210 | 0.37 | 1.52 | 0.30 | 5 | 2.6 |
| Laueite | DD210 | 1.25 | 1.76 | 0.28 | 91 | 2.6 |
| Lazulite | DD125 | 1.13 | 3.29 | 0.29 | 66 | 1.1461 |
| Lazulite | DD125 | 1.22 | 1.87 | 0.26 | 13 | 1.1461 |
| Lazulite | DD125 | 0.27 | 0.66 | 0.59 | 21 | 1.1461 |
| Lazulite | DD206 | 1.22 | 1.76 | 0.31 | 79 | 3.184 |
| Lazulite | DD206 | 0.35 | 0.77 | 0.30 | 21 | 3.184 |
| Lazulite | DD208 | 1.12 | 3.28 | 0.28 | 66 | 0.931 |
| Lazulite | DD208 | 0.95 | 2.42 | 0.32 | 3 | 0.931 |
| Lazulite | DD208 | 0.29 | 0.64 | 0.60 | 31 | 0.931 |
| Lipscombite | MDD9 | 0.40 | 0.85 | 0.51 | 69 | 5.180 |
| Lipscombite | MDD9 | 0.41 | 0.44 | 0.32 | 31 | 5.180 |
| Lithiophyllite | DD135 | 1.24 | 2.97 | 0.29 | 94 | 1.344 |
| Lithiophyllite | DD135 | 0.36 | 0.62 | 0.43 | 6 | 1.344 |
| Ludlamite | DD219 | 1.23 | 2.42 | 0.23 | 41 | 1.4577 |
| Ludlamite | DD219 | 1.27 | 1.87 | 0.41 | 25 | 1.4577 |
| Ludlamite | DD219 | 0.29 | 0.65 | 0.26 | 34 | 1.4577 |
| Lulzacite | DD197 | 1.21 | 2.58 | 0.38 | 18 | 1.0885 |
| Lulzacite | DD197 | 1.12 | 2.03 | 0.29 | 15 | 1.0885 |
| Lulzacite | DD197 | 1.24 | 1.78 | 0.28 | 68 | 1.0885 |
| Luneburgite | DD218 | 1.14 | 2.63 | 0.28 | 24 | 0.818 |
| Luneburgite | DD218 | 1.22 | 1.85 | 0.26 | 46 | 0.818 |
| Luneburgite | DD218 | 0.42 | 0.85 | 0.46 | 11 | 0.818 |
| Luneburgite | DD218 | 0.12 | 0.63 | 0.47 | 19 | 0.818 |
| Maricite | MDD14 | 1.17 | 3.01 | 0.40 | 7 | 1.247 |
| Maricite | MDD14 | 1.21 | 2.21 | 0.23 | 83 | 1.247 |
| Maricite | MDD14 | 0.32 | 0.90 | 0.50 | 10 | 1.247 |
| Messelite | DD228 | 1.20 | 3.17 | 0.29 | 100 | 1.777 |
| Metavivianite | DD319 | 1.21 | 3.03 | 0.25 | 30 | 2.324 |
| Metavivianite | DD319 | 1.23 | 2.77 | 0.39 | 14 | 2.324 |
| Metavivianite | DD319 | 0.43 | 0.77 | 0.41 | 56 | 2.324 |
| Phosphosiderite | ML-P22 | 0.45 | 0.23 | 0.30 | 59 | 1.541 |
| Phosphosiderite | ML-P22 | 0.43 | 0.47 | 0.46 | 41 | 1.541 |
| Purpurite | DD270 | 0.43 | 1.71 | 0.29 | 56 | 1.1975 |
| Purpurite | DD270 | 0.40 | 0.74 | 0.45 | 44 | 1.1975 |
| Purpurite | DD227 | 0.43 | 1.48 | 0.50 | 60 | 0.978 |
| Purpurite | DD227 | 0.41 | 0.58 | 0.43 | 40 | 0.978 |
| Roscherite | DD274 | 1.14 | 1.77 | 0.31 | 28 | 3.693 |
| Roscherite | DD274 | 1.30 | 1.69 | 0.27 | 58 | 3.693 |
| Roscherite | DD274 | 0.35 | 0.84 | 0.59 | 15 | 3.693 |
| Satterlyite | MDD18 | 1.20 | 2.26 | 0.30 | 60 | 10.19 |
| Satterlyite | MDD18 | 1.20 | 1.93 | 0.32 | 37 | 10.19 |
| Satterlyite | MDD18 | 0.19 | 0.73 | 0.13 | 2 | 10.19 |
| Strengite | DD293-A | 0.42 | 0.35 | 0.29 | 68 | 2.749 |
| Strengite | DD293-A | 0.45 | 0.33 | 0.40 | 32 | 2.749 |
| Strengite | ML-P16 | 0.39 | 0.55 | 0.30 | 35 | 1.01 |
| Strengite | ML-P16 | 0.42 | 0.30 | 0.30 | 65 | 1.01 |
| Strunzite | HMM108175 | 1.21 | 3.19 | 0.24 | 8 | 1.02 |
| Strunzite | HMM108175 | 1.12 | 2.75 | 0.30 | 3 | 1.02 |
| Strunzite | HMM108175 | 1.16 | 2.36 | 0.33 | 10 | 1.02 |
| Strunzite | HMM108175 | 0.40 | 0.65 | 0.34 | 80 | 1.02 |
| Tarbuttite | DD306 | 0.37 | 0.71 | 0.58 | 81 | 1.587 |
| Tarbuttite | DD306 | 0.37 | 0.48 | 0.24 | 19 | 1.587 |
| Triphylite | DD193-B | 1.21 | 2.98 | 0.23 | 18 | 1.475 |
| Triphylite | DD193-B | 1.26 | 1.35 | 0.34 | 3 | 1.475 |
| Triphylite | DD193-B | 0.47 | 1.23 | 0.47 | 23 | 1.475 |
| Triphylite | DD193-B | 0.42 | 0.43 | 0.32 | 55 | 1.475 |
| Triphylite | DD271-A | 1.10 | 3.14 | 0.30 | 14 | 2.7232 |
| Triphylite | DD271-A | 1.05 | 2.68 | 0.30 | 10 | 2.7232 |
| Triphylite | DD271-A | 1.05 | 2.03 | 0.30 | 10 | 2.7232 |
| Triphylite | DD271-A | 0.64 | 1.14 | 0.30 | 17 | 2.7232 |
| Triphylite | DD271-A | 0.68 | 0.76 | 0.32 | 9 | 2.7232 |
| Triphylite | DD271-A | 0.35 | 1.07 | 0.41 | 40 | 2.7232 |
| Triphylite | DD301B | 1.09 | 3.49 | 0.30 | 5 | 4.502 |
| Triphylite | DD301B | 1.23 | 2.97 | 0.27 | 53 | 4.502 |
| Triphylite | DD305-A | 1.24 | 2.98 | 0.26 | 92 | 1.303 |
| Triphylite | DD305-A | 0.41 | 0.48 | 0.43 | 8 | 1.303 |
| Triphylite | DD308-A | 1.24 | 2.95 | 0.30 | 47 | 1.512 |
| Triphylite | DD308-A | 1.20 | 2.31 | 0.30 | 12 | 1.512 |
| Triphylite | DD308-A | 1.12 | 1.73 | 0.30 | 41 | 1.512 |
| Triphylite | DD308-T | 1.29 | 3.48 | 0.33 | 12 | 1.4945 |
| Triphylite | DD308-T | 1.23 | 2.93 | 0.27 | 30 | 1.4945 |
| Triphylite | DD308-T | 1.24 | 2.25 | 0.43 | 18 | 1.4945 |
| Triphylite | DD308-T | 1.11 | 1.66 | 0.29 | 28 | 1.4945 |
| Triphylite | DD308-T | 0.31 | 0.72 | 0.36 | 12 | 1.4945 |
| Triphylite | MDD7 | 1.23 | 3.00 | 0.27 | 39 | 3.701 |
| Triphylite | MDD7 | 1.03 | 2.67 | 0.53 | 20 | 3.701 |
| Triphylite | MDD7 | 0.41 | 0.93 | 0.39 | 22 | 3.701 |
| Triphylite | MDD7 | 0.62 | 1.10 | 0.53 | 20 | 3.701 |
| Triphylite | ML-P38 | 1.22 | 2.95 | 0.26 | 93 | 1.28 |
| Triphylite | ML-P38 | 0.42 | 0.41 | 0.32 | 7 | 1.28 |
| Triplite | DD129 | 1.25 | 2.89 | 0.37 | 24 | 2.469 |
| Triplite | DD129 | 1.24 | 1.74 | 0.31 | 69 | 2.469 |
| Triplite | DD129 | 0.31 | 0.94 | 0.55 | 7 | 2.469 |
| Triplite | DD302 | 1.25 | 1.93 | 0.42 | 44 | 5.402 |
| Triplite | DD302 | 1.23 | 2.76 | 0.26 | 56 | 5.402 |
| Trolleite | DD157 | 0.21 | 0.90 | 0.39 | 39 | 8.050 |
| Trolleite | DD157 | 0.52 | 0.90 | 0.43 | 61 | 8.050 |
| Varulite | DD321 | 1.29 | 2.34 | 0.51 | 27 | 1.773 |
| Varulite | DD321 | 1.42 | 1.12 | 0.29 | 16 | 1.773 |
| Varulite | DD321 | 0.35 | 0.77 | 0.43 | 33 | 1.773 |
| Varulite | DD321 | 0.30 | 0.43 | 0.50 | 24 | 1.773 |
| Vivianite | DD171 | 1.22 | 3.15 | 0.28 | 40 | 1.595 |
| Vivianite | DD171 | 1.24 | 2.33 | 0.45 | 34 | 1.595 |
| Vivianite | DD171 | 0.35 | 0.86 | 0.54 | 27 | 1.595 |
| Vivianite | DD311 | 1.23 | 2.96 | 0.28 | 55 | 1.983 |
| Vivianite | DD311 | 1.18 | 2.43 | 0.31 | 32 | 1.983 |
| Vivianite | DD311 | 0.30 | 0.64 | 0.66 | 13 | 1.983 |
| Vivianite | DD312A | 1.23 | 2.94 | 0.30 | 53 | 1.835 |
| Vivianite | DD312A | 1.19 | 2.47 | 0.30 | 21 | 1.835 |
| Vivianite | DD312A | 1.18 | 2.02 | 0.30 | 7 | 1.835 |
| Vivianite | DD312A | 0.29 | 1.03 | 0.30 | 10 | 1.835 |
| Vivianite | DD312A | 0.20 | 0.36 | 0.30 | 9 | 1.835 |
| Vivianite | DD315A | 1.23 | 2.93 | 0.30 | 29 | 1.200 |
| Vivianite | DD315A | 1.17 | 2.44 | 0.35 | 26 | 1.200 |
| Vivianite | DD315A | 1.23 | 1.83 | 0.29 | 18 | 1.200 |
| Vivianite | DD315A | 0.37 | 0.65 | 0.61 | 27 | 1.200 |
| Vivianite | DD323 | 1.22 | 2.85 | 0.37 | 22 | 5.071 |
| Vivianite | DD323 | 1.24 | 1.79 | 0.32 | 56 | 5.071 |
| Vivianite | DD323 | 0.35 | 0.74 | 0.54 | 22 | 5.071 |
| Wagnerite | DD330 | 1.23 | 2.65 | 0.43 | 77 | 1.326 |
| Wagnerite | DD330 | 1.24 | 1.80 | 0.30 | 7 | 1.326 |
| Wagnerite | DD330 | 0.20 | 1.09 | 0.67 | 16 | 1.326 |
| Whiteite | DD329 | 0.24 | 0.74 | 0.61 | 11 | 1.57 |
| Whiteite | DD329 | 1.21 | 2.12 | 0.31 | 89 | 1.57 |
| Zanazziite | DD337 | 1.23 | 2.13 | 0.83 | 75 | 12.684 |
| Zanazziite | DD337 | 0.43 | 0.95 | 0.46 | 25 | 12.684 |