附表1 白云鄂博矿区代表性岩石

Appendix Table 1 Typical rocks in Bayan Obo Mining

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 名称 | 样品 | 电阻率 | 磁化率 | 密度 | 特征描述 |
| (Ω·m) | (×10-3SI) | (g/cm3) |
| 白云岩 |  | 7332.2 | 4.15 | 3.172 | 白云鄂博矿区的主要成矿岩石(She et al., 2021)，形态多样，分类多样，如稀土矿化、铁矿化、硅化、霓长岩化等 |
| 细粒白云岩 |  | 4544774 | 0.05 | 2.657 | 多分布于主、东矿，粒径小于0.2mm, 由白云石、独居石、磷灰石和重晶石组成.较粗粒白云岩形成晚.具有Fe质到Mg质，再到Ca质的演化顺序.体现了岩浆演化过程(Yang et al., 2019) |
| 片麻岩 |  | 395228 | 0.06 | 2.615 | 变质岩，矿区基底岩石的一种 |
| 板岩 |  | 205.04 | 0.03 | 2.884 | 具有热液叠加，矿区内有大量的霓长岩化板岩 |
| 闪长岩 |  | 148200 | 0.58 | 2.884 | 基底岩石，含有大量闪长石,石英颗粒 |
| 硅质岩 |  | 637394 | 0.08 | 2.614 | 富含大量二氧化硅，滨海沉积相 |
| 花岗岩 |  | 10919 | 0.07 | 2.464 | 矿区基底岩石，是矿区内发育面积最大的岩浆岩，与白云鄂博群呈侵入的关系，在矿区南面从东部接触带到西部阿布达、北部均有出露，在矿区内没有发育(王凯怡等，2012; She et al., 2021) |
| 萤石、铁矿化白云岩 |  | 739466 | 426.78 | 3.341 | 常常发育在接触带分界处 |
| 铁矿石 |  | 3748.6 | 202.76 | 3.706 | 铁矿石，伴生稀土矿,稀土元素含量较高.本片中样本直径d=2.5cm |
| 铁矿石 |  | 1148.9 | 758.35 | 3.720 | 铁矿物主要有磁铁矿、赤铁矿 |
| 铁矿石 |  | 16.75 | 1005.59 | 3.730 | — |
| 铁矿化白云岩 |  | 60.34 | 578.73 | 3.260 | — |
| 白云岩型铁矿石 |  | 697.62 | 534.83 | 3.490 | 部分风化 |

附表2 白云鄂博部分岩样品岩石化学成分电子探针分析结果

Appendix Table 2 Electron probe analysis results of rock chemical composition in Bayan Obo samples

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 样品号 | SiO2 | Al2O3 | Fe2O3T | MgO | CaO | ΣLREE |
| (wt%) | | | | | (×10-6) |
| BPK-2 | 14.54 | 0.25 | 27.99 | 12 | 13.35 | \* |
| BPK-3 | 17.67 | 0.15 | 50.41 | 6.78 | 3.01 | \* |
| BPK-4 | 61.83 | 15.88 | 6.64 | 2.79 | 3.73 | \* |
| BPK-6 | 0.51 | 0.03 | 14.7 | 13.5 | 23.1 | 28370 |
| BPK-17 | 5.08 | 0.14 | 70.05 | 2.76 | 7.96 | \* |
| BPK-23 | 3.82 | 0.75 | 2.63 | 5.14 | 44 | \* |
| SCK31-2A | 56.68 | 16.32 | 1.27 | 0.26 | 2.03 | 776.4 |
| SCK-31-2B | 0.62 | 0.07 | 15.02 | 10.15 | 28.1 | 730.9 |
| SW-1 | 50.97 | 14.7 | 9.87 | 9.18 | 8.22 | \* |
| SW-2 | 79.68 | 2.62 | 2.74 | 3.03 | 4.99 | \* |
| SW-3 | 80.54 | 3.93 | 3.91 | 1.33 | 4.36 | \* |
| SW-4 | 79.42 | 7.55 | 3.95 | 1.77 | 0.55 | \* |
| SW-5 | 74.65 | 12.97 | 3.32 | 0.13 | 0.88 | \* |
| SW-6 | 73.05 | 13.8 | 2.9 | 0.3 | 1.34 | \* |
| SW-7 | 74.75 | 13.15 | 3.04 | 0.09 | 0.69 | \* |
| SW-8 | 72.75 | 13.92 | 3.3 | 0.33 | 0.72 | \* |
| MBYS-1 | 49.13 | 17.38 | 14.16 | 4.57 | 9.67 | \* |
| MBYS-2 | 1.91 | 0.62 | 0.57 | 0.61 | 53 | \* |
| MBYS-3 | 39.2 | 0.91 | 6.88 | 35.9 | 2.84 | \* |
| MBYS-5 | 2.11 | 0.05 | 42.94 | 8.87 | 16.2 | \* |
| MBYS-6 | 38.75 | 14.36 | 11.13 | 14.9 | 1.91 | \* |
| MBYS-7 | 0.47 | <0.01 | 91.04 | 0.33 | 2.82 | \* |
| MBYS-8 | 0.74 | 0.1 | 7.54 | 16.75 | 28 | \* |
| MBYS-9 | 80.43 | 6.53 | 5.59 | 0.55 | 0.08 | \* |
| MBYS-10 | 61.84 | 17.18 | 1.92 | 1.13 | 1.16 | \* |
| MBYS-12 | 47.82 | 4.681 | 21.49 | 4.225 | -0.135 | \* |
| MBYS-15 | 4.55 | 0.07 | 4.96 | 11.9 | 34.6 | \* |
| MBYS-21 | 94.8 | 0.43 | 2.46 | 0.18 | 0.32 | \* |
| MBYS-22 | 53.8 | 0.22 | 16.8 | 4.31 | 3.6 | 23698 |
| MBYS-28 | 88.08 | 1.12 | 2.67 | 2.29 | 3.21 | \* |
| MBYS-29 | 66.43 | 15.42 | 6.17 | 0.91 | 2.81 | \* |
| MBYS-30 | 50.97 | 17.3 | 11.25 | 4.43 | 7.48 | \* |
| MBYS-31 | 51.27 | 16.18 | 11.12 | 6.01 | 10.45 | \* |
| MBYS-51-2 | 0.83 | 0.22 | 0.66 | 21.3 | 29.8 | \* |
| MBYS-52 | 13.5 | 0.1 | 29.6 | 0.27 | 25.3 | 102420 |
| MBYS-53 | 23.8 | 0.16 | 31.6 | 0.26 | 13.75 | 102310 |
| H21BY01 | 47.52 | 16.73 | 11.02 | 7.32 | 7.51 | 147.95 |
| H21BY02 | 47.14 | 16.55 | 11.16 | 7.98 | 9.01 | 136.13 |
| H21BY03 | 47.89 | 16.74 | 11.2 | 7.76 | 8.25 | 116.8 |
| H21BY04 | 0.3 | 0.01 | 57.59 | 5.68 | 11.95 | 978.7 |
| H21BY06 | 15.1 | 0.01 | 73.28 | 0.11 | 0.75 | 1759 |
| H21BY07 | 43.42 | 15.62 | 13.18 | 12.15 | 0.66 | 123.25 |
| H21BY08 | 43.2 | 15.79 | 12.86 | 12.05 | 0.69 | 112.15 |
| H21BY09 | 43.91 | 15.07 | 9.39 | 12.65 | 1.18 | 298.25 |
| H21BY10 | 17.82 | 0.09 | 64.62 | 5.69 | 1.08 | 8888 |
| H21BY11 | 8.53 | 0.46 | 54.08 | 4.54 | 6.38 | 4873 |
| H21BY12 | 22.84 | 0.04 | 63.49 | 0.18 | 3.04 | 3295 |
| H21BY13 | 47.42 | 0.33 | 26.21 | 8.02 | 1.14 | 13633 |
| H21BY14 | 40.2 | 0.23 | 28.5 | 8.74 | 1.64 | 27660 |
| H21BY15 | 41.51 | 14.72 | 10.16 | 13.5 | 0.8 | 328.3 |
| H21BY17 | 1.15 | <0.01 | 60.08 | 7.85 | 7.44 | 2193.5 |
| H21BY18 | 94.29 | 2.21 | 1.3 | 0.03 | 0.09 | 44.98 |
| H21BY19 | 32.97 | 2.49 | 2.26 | 12.35 | 18.85 | 24.95 |
| H21BY20 | 90.12 | 3.81 | 0.91 | 0.03 | 0.64 | 46.53 |
| H21BY21 | 87.26 | 4.3 | 5.34 | 0.27 | 0.11 | 100.43 |
| H21BY22 | 90.29 | 4.66 | 1.68 | 0.27 | 0.11 | 111.31 |
| H21BY23 | 16.6 | 0.05 | 14.35 | 0.19 | 16.8 | 130700 |
| H21BY24 | 74.33 | 12.81 | 3.76 | 0.51 | 0.16 | 824.9 |
| H21BY25 | 71.96 | 13.84 | 3.16 | 0.49 | 0.14 | 336.55 |
| H21BY26 | 6.79 | 2.22 | 77.57 | 0.17 | 0.34 | 84.23 |
| H21BY27 | 4.09 | 1.12 | 84.92 | 0.12 | 0.19 | 38.74 |
| H21BY28 | 7.48 | <0.01 | 9.41 | 10.3 | 29 | \* |

注：\*表示在检出限以下