Use and Analysis of Magnetic Processing of Mineral Resources

Pulatova Shahlo Barnoevna
Researcher, Navoi State Mining Institute

Abstract:
In this analysis, we consider it applicable for hematite, brown iron ores and other minerals, which include minerals with weak magnetic properties.

Key words: analysis, magnetic properties, minerals, minerals

Magnetic analysis of crushed piece magnetised up to -50 mm (but> 1 mm) is performed to determine the expediency of dry magnet enrichment, as well as to determine the minimum dry concentrate yield of possible metals in the waste.

Sampling for analysis is performed during the preparation of a technological sample for testing. The mass of the sample is determined by the size of the material. For example, the minimum weight for the -50 mm class is 300 kg; for a material with a particle size of -3 mm, a sample weighing 0.9 kg is sufficient (0.1x3v2 = 0.9 kg according to the Chechotga formula). The analysis is performed in two stages. In the first stage, dry magnetic enrichment is carried out in a drum separator, for example, PBSL-UM-1234, with separation of residue and magnetic product.

The original ore with a particle size of -50 + 1 mm (this corresponds to the material obtained after medium grinding) is divided into narrow grades. Each class PBSL separator enriches the material with a high-density, single-layer film-like nutrient. In this case, the rotational frequency of the drum is 34 min-1, the position of the split door is vertical, the magnetic field strength on the drum surface is 103.5 kA / m. 171-SE high-power electromagnetic separator is also used for magnetic analysis. When the rotation speed of the drum is 25 min-1 c, the material is fed in one layer, the position of the split door is vertical, the field strength on the drum surface is 110 kA / m.

In the second stage, the magnetic analysis of the dry magnetic wear residues of each ore class is performed using a hand-held magnet assembled from standard ceramic plates or a hand-held PDM magnet with a field strength of 114 kA / m.

Magnetically enriched products are weighed with an error of ± 0.100 g, the particle size is broken down to -0.1 mm and subjected to elemental analysis to determine the total iron content.

The forms of iron in non-magnetic products are also determined using phase analysis. The error of the experiment according to the indicated magnetic analysis method should not exceed 5%. Fine, highly magnetic ores (size <1 mm) are subjected to dry or wet analysis.

This analysis is performed to evaluate the enrichment of the test sample and to determine the separation accuracy of the enrichment. The essence of the method lies in the fractional analysis of raw materials and enrichment products to obtain the maximum possible technological parameters. Fractional magnetic analysis allows to obtain a quantitative characteristic of the distribution of the material on different specific magnetic susceptibility fractions.

By the square method, two divisions are obtained from each crushed product. One is for magnetic analysis and the other is for iron determination. The rest of the products are preserved when re-

detected. Sample for magnetic analysis

weight depends on the magnetite and total iron content of the sample: Magnetic analysis is performed on unclassified material with a particle size <1 mm. Samples that are heterogeneous in terms of particle size distribution (+0.045 mm <40% class composition) are pre-classified with a size of 0.045 mm. Under these conditions, magnetic analysis is carried out in grades of -1 + 0.045 and -0.045 mm.

For analysis, the sample is placed in a beaker of 100 cm3 with a solid and liquid ratio of 1: 4 and mixed with a mechanical separator for 5 minutes. For this purpose, UZDN-1 ultrasonic dispersants are also used at an ultrasound frequency of 22 kHz and an intensity of 23 W / cm2. Duration of exposure at S: V = 1: 3 for 1 min. Water temperature in the range of 20-25 ° C, hardness not higher than 5.0 mol.

List of instruments used for magnetic analysis. Magnetic analysis is carried out by moving the fractions in different magnetic fields.

The analyzer tube is filled with a liquid with a hardness of 5 mol / l. Set the analyzer to electromagnetic current and 88 kA / m gamoscale current. The prepared sample is loaded on top of the tube, the analyzer drive is turned on. The magnetic fraction is determined by the magnetic field at the poles of the magnetic system. The non-magnetic fraction is constantly removed from the waste water by water. The water level in the pipe is constantly maintained (above the magnetic poles). Duration of washing is 5 minutes, for non-ultrasonic products - 25 minutes. Turn off the current and turn on the receiver.

Separation products are dehydrated by desiccation and dried in a drying oven at a temperature of (100 ± 5) ° C until constant weight. The magnetic fraction is analyzed in a magnetofugalan analyzer.

REFERENCES

1. Normurotov RI, Strijko LS, Kholikulov DB Research on the chlorination of gold from the magnetic fraction in gold // Universities-Color Metallurgy. 2009, No. 4, pp. 35-38.
2. Normurotov R.I., Strijko L.S. Xoliqulov D.B. Study of the process of hydrogen sulfide chlorination in the reduction of the magnetic fraction in gold // Universities-Nonferrous Metallurgy. 2009, No. 5, pp. 17-19.
3. Normurotov R.I., Kholikulov D.B. Current state of development of gold production in Uzbekistan // Proceedings of the international conference "Strategy for the development of mineral resources in the XXI century", Moscow. RUDN, 2004, pp. 70-71.
4. Normurotov R.I., Strijko L.S. Research of gold extraction processes from magnetic fractions // Proceedings of the international scientific-practical conference "Non-ferrous metallurgy". Problems and Prospects ", Moscow. MISIS, 2009, pp. 182-183.