

BENEFICIATION OF BARYTES

BARYTES is an important industrial mineral required by the paint and pigment manufacture, paper, plastic, linoleum, oil cloth manufacture etc., and also in the oil well drillings; large deposits of barytes are being mined in Cudapah Dist. of Andhra Pradesh. Recently some more deposits are located in Madhya Pradesh.

A. BARYTE FROM M.P.

The sample was received from the Madhya Pradesh State Mining and Geology Department for beneficiation studies. The sample consisted of 25 mm to 100 mm lumps and analysed as follows :

<i>Constituent</i>	<i>Assay %</i>
BaSO ₄	67.21
SiO ₂	31.20
HF & HCl insols.	67.64
CaO, MgO, & P ₂ O ₃	Trace.
LOI	0.50
Moisture	0.14

Mineralogical examination of the sample indicated the presence of baryte in association with quartz and traces of mica, hematite, magnetite, goethite, chalcopryrite and martite. Baryte was fairly liberated from the silicates at 35 mesh size.

HMS tests conducted at sp. gr. 3.0 with 18 mm feed after removing the —6 mesh fines yielded a heavy concentrate assaying 74.23% BaSO₄ and 25.4% SiO₂ with 80.9% BaSO₄ distribution in it. The —6 mesh fines analysed 70.42% BaSO₄.

Jigging tests with —10 + 20 mesh portion produced a concentrate analysing 75.83% BaSO₄ and 22.67% SiO₂ with 65.7% BaSO₄ distribution. The —20 mesh fines analysed 72.30% BaSO₄ and had a distribution of 14.1% BaSO₄. HMS & Jigging

tests indicated that the methods were not successful for the concentration.

Tabling tests at 20 mesh size after hydrosizing yielded a combined concentrate 91.1% BaSO₄ with 70.5% BaSO₄ distribution. The slimes analysed 73.72% BaSO₄ and 24.26% SiO₂ with 12.8% BaSO₄ distribution.

Flotation tests employing a feed ground to 57.5% —200 mesh, 9.8 kg/tonne of sod. silicate and 0.8 Kg/tonne of Aeropromotor 825 yielded a concentrate analysing 93.03% BaSO₄ and 5.68% SiO₂ with 96.2% BaSO₄ distribution. This after two cleanings improved to 97.2% BaSO₄ and 2.1% SiO₂ with 84.7% distribution in it which may be used in oil well drilling, paint, paper, glass industries.

B. BARYTE FROM ANDHRA PRADESH

The sample was received from M/s. Goenka Imports-Exports Co., Madras from their Manganapetta mines in Andhra Pradesh. The sample consisted of 100 mm to 25 mm lumps and analysed as follows :

<i>Constituent</i>	<i>Assay %</i>
BaSO ₄	72.52
SiO ₂	17.78
Al ₂ O ₃	3.62
Fe ₂ O ₃	3.20
CaO	0.12
MgO	0.35
Combined water	0.43

Microscopic examination of the sample indicated the presence of barytes along with chert, clay, ferromagnesium minerals and felspar, which were liberated at 150 mesh size.

Tabling tests with 28 mesh sized feed yielded a coarse concentrate assaying 76.5% BaSO₄ and a fine concentrate assaying 94.0% BaSO₄. Flotation tests conducted under the optimum conditions of 86% —200 mesh grind 0.4 Kg/tonne of sod. silicate and 0.4 Kg/tonne of sod. oleate yielded a concentrate assaying 82.1% BaSO₄ with 94.6% recovery. After two cleanings the concentrate assayed 92.5% BaSO₄ with 80.4% BaSO₄ distribution. Regrinding of the cleaner tails followed by flotation yielded a concentrate assaying 92.1% BaSO₄ with an addi-

tional recovery of 7.7% BaSO₄. The combined concentrate analysed 92.4% BaSO₄ with 88.1% BaSO₄ distribution in it.

References

1. Beneficiation of Baryte from M. P. (NML/IR/713/73). By K Vijayaraghavan, P V Raman, S K Banerjee & G P Mathur.
2. Beneficiation studies on a Baryte sample from Manganapetta Area, Andhra Pradesh (NML/IR/798/74). By K Vijayaraghavan, C Satyanarayana, R Ganesh, P V Raman, & G P Mathur.