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CANADA

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DRY WORKING OF A SAMPLE OF GRANITE FROM B.C.

SUBMITTED BY

D.A.SLOAN TO DEVELOP A VARIETY OF PRODUCTS

by

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Industrial Minerals Division

Milling Section

Note: This report applied essentially to the sample received.
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March 10, 1958.

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D.A.SLOAN TO DEVELOP A VARIETY OF PRODUCTS

In June of 1957 some 200 pounds of pegmatite from a dyke near Armstrong, B.C., was sent to us by Mr. David A. Sloan, B.Sc., a Mining Engineer. In a letter accompanying the material Mr. Sloan made the following requests:

"I am particularly interested in a dry process to separate mica, feldspar and quartz into the following products:

- (a) Natural mix of quartz and feldspar with most of the mica removed for stucco dash.
- (b) Fines from (a) for use as chicken grit.
- (c) Natural quartz-feldspar mix with all mica removed for use, if suitable, in ceramics, glass, etc.
- (d) Pure feldspar for use in ceramics, etc.
- (e) Pure quartz.
- (f) Pure mica for wet or dry grinding".

A later letter mentioned a number of other possible products such as: "roofing stone, sand blast sand, plaster sand, roofing sand, etc. ... the whole mica rich fraction can be ground to 606 minus 200 mesh and sold as

micaceous filler to the roofing industry the micaceous
filler would be ^{our} big volume business".

It appeared that a comparatively simple and inexpensive process was called for which would be basically sorting. With this in mind the steps described below were taken.

Mineralogy

The sample was found to consist of white albite, quartz, and muscovite, with minor red garnets and some green stain of malachite. The two latter were in small enough quantity to be discounted entirely.

Test Work

Lumps of pure quartz were first removed from the sample by hand cobbing, and this fraction comprised 9% of the whole.

The remainder was jaw crushed and rolls crushed to pass a 10 mesh screen. During this operation two nice fractions were obtained, +6 mesh and +10 mesh.

The -10 mesh bulk was further screened to obtain -10+14, -14+20, -20+28, -28+35 and -35 mesh fractions. These fractions, with the exception of -35 mesh, were in turn passed over the air table which produced for each a nice product, a mixed quartz-feldspar middling and a feldspar concentrate

containing some mica books. The middlings from each lot was repassed over the table as a cleaning step and the additional mica and feldspar products so obtained were added to the similar products from the first pass.

The -35 mesh was passed over a 48 mesh screen above which a suction take off was suspended. Material drawn off by suction was recovered in a small dust collector. Collected dust was found to contain a high proportion of mica while both the +48 mesh fraction and -48 mesh fraction were quite low in mica content.

As a result of the described treatment a variety of products was obtained, and possibly many or all of these could be applied to the uses listed earlier. A summary is given in the table below:

Products Obtained

<u>Product</u>		<u>t. of lot</u>
Quartz (hand cobbed)		0.8
Mica (all sizes)		3.3
High Feldspar -10+14 m fraction		15.2
" " -14+20 m fraction		12.6
" " -20+28 m fraction		6.5
" " -28+35 m fraction		6.8
Mixed feldspar & quartz	-10+14 m fraction	5.4
" " "	-14+20 m "	3.8
" " "	-20+28 m "	2.6
" " "	-28+35 m "	1.5
" " "	-35+43 m "	3.1
" " "	-48 m "	27.3
Air lift high mica discard		0.9

		100.0

CONCLUSIONS

The treatment described has the advantage of sorting the material into a considerable range of sized and partially concentrated products by comparatively simple means. Whether these products are entirely suitable for consumption in local markets or will require further treatment is not presently known.

March 10, 1958.

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