Data documentation for size and shape characteristics of amphibole cleavage fragments from milled riebeckite

Title
Size and shape characteristics of amphibole cleavage fragments from milled riebeckite

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Contributors
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Data Files

The csv version contains the same data as the corresponding xlsx file, but its structure has been modified to make a well-formed csv. The csv file is provided as a software-independent alternative to the xlsx format.

1. wylie_milled_riebeckite_ca.xlsx
2. wylie_milled_riebeckite_ca.csv

Temporal Extent

Sample obtained and measured ca. 1978-1979.

Spatial Extent

Riebeckite sample was obtained from Long Valley Creek Quarry, California.

Abstract

A sample, composed primarily of the amphibole mineral riebeckite, was milled and the width and length of the corresponding cleavage fragments were measured using a scanning electron microscope (SEM) equipped with energy-dispersive X-ray spectroscopy (EDXA).

The sample came from Long Valley Creek Quarry, California. It was obtained from the U.S. National Museum as sample No. R119931 and was ground to a powder in the laboratory.

Sample preparation included dispersal in water and deposition on 0.1µm Nucleopore filters. A portion of the filters was copper coated and examined by SEM equipped with EDXA. The particles counted had straight parallel sides and a chemical composition determined by EDXA consistent with riebeckite. Measurements of width were made at 20,000X and lengths at 10,000 to 15,000. 1.099 latex spheres co-mounted on the SEM stubs were used to calibrate measurements. All measurements are in micrometers. Precision is estimated as ± 0.05 µm.

The material was characterized as part of a collaboration between the Department of Geology of the University of Maryland and the US Bureau of Mines that began in 1975 and lasted until 1995 when Congress closed the Bureau of Mines. The measurements in this dataset were made between 1978 and 1979.

Instruments

Scanning Electron Microscopy (SEM) with Energy-Dispersive X-Ray Analysis (EDXA) capability.

Variables/Parameters	
Particle aspect ratio	length:width
Length	particle length in micrometers - µm
Width	particle width in micrometers - µm

Keywords/Topics

Amphibole group
Riebeckite
Granulometry

Associated Publications

Analyses of these data can be found in the following publications:

Siegrist, H.G., and Wylie, A.G., 1980, Characterizing and Discriminating the Shape of Asbestos Particles: Environmental Research, v. 23, p. 348-361, http://dx.doi.org/doi:10.1016/0013-9351(80)90070-5

Wylie, A.G., and Schweitzer, P. 1982. The effects of sample preparation and measuring techniques on the shape and shape characterization of mineral particles: The case of wollastonite: Environmental Research, v. 27, p. 52-73, http://dx.doi.org/10.1016/0013-9351(82)90057-3

Wylie, A.G., 1988, Relationship between the growth habit of asbestos and the dimensions of asbestos fibers: Mining Engineering, Nov., p. 1036-1040.

Wylie, A.G., 1993, Modeling asbestos populations: A fractal approach: Canadian Mineralogist, v. 30, p. 437-446, http://www.canmin.org/content/31/2/437.full.pdf+html

Data Citation

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Data Repository
Digital Repository at the University of Maryland (DRUM) http://drum.lib.umd.edu drum-help@umd.edu

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Availability
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