
Glaucosite Pellets: Similar X-Ray Patterns from Individual Pellets of Lobate and Vermiform Morphology*

M. Tapper and D. S. Fanning[†]

Department of Agronomy, University of Maryland, College Park, Maryland

* Contribution No. 3967 and Scientific Article No. A-1378 of the Maryland Agricultural Experiment Station.

[†] Graduate Assistant and Assistant Professor, respectively. Senior author is presently with the Research Staff, Thiele Kaolin Co., Sandersville, Georgia.

Abstract: Glaucosite pellets of vermiform and lobate morphology occur together in Eocene geologic formations in Maryland. Morphologically, the vermiform pellets appear to be identical to those that have previously been called "altered biotite". In thin sections these pellets do show a well-defined micaceous morphology with the layers running across the worm-like pellets. Some zones in these pellets appear to be "crystals" that are up to $30 \times 70 \mu$ and nearly rectangular in cross section. However, there are tiny cracks along cleavage planes within these "crystals". Externally, the lobate pellets have many rounded lobes and are similar to one of the shapes that Burst has called free-form. In thin section under crossed nicols these pellets have a grainy appearance, indicating that the lobate pellets are composed of many small zones, each about 5–20 μ across. Within these zones the mineral glaucosite has a single orientation, but the zones are not lined up with each other to give the gross micaceous appearance that is associated with the vermiform pellets.

Random powder X-ray diffraction patterns (prepared with a large 114·59 mm Norelco powder camera) of individual vermiform and lobate pellets are nearly identical. Eight vermiform and 9 lobate pellets gave the same mean 001 ($10 \cdot 2 \text{ \AA}$) and 060 ($1 \cdot 518 \text{ \AA}$) spacings. The patterns from both kinds of pellets are similar, except for the absence of some weak lines, to Warshaw's (ASTM) pattern for glaucosite. The patterns have lines indicating a 1 M polytype, however, *hkl* lines with $k \neq 3n$ are broad indicating some disorder. In addition to X-ray diffraction patterns, the K_2O content (6·7 per cent) and CEC (29 me/100 g as Ca replaced by Mg) of the pellets indicate that interstratified expanded layers may be the main source of the disorder.

If the vermiform pellets are altered mica, the alteration has been sufficient to give a product that is definitely identified as glaucosite by X-ray methods. The possibility of mica alteration is suggested by the geographic nearness of the Piedmont (a mica source area) and the occurrence of Piedmont-type quartz with the glaucosite pellets. Alternatively, the vermiform pellets may form during glaucosite crystallization or recrystallization processes. The probability that both kinds of pellets obtained their morphology before or during, rather than after, the time they became glaucosite (mineralogically) suggests that the proper environment may form glaucosite from a variety of starting materials.

Clays and Clay Minerals; 1968 v. 16; no. 4; p. 275-284; DOI: [10.1346/CCMN.1968.0160404](https://doi.org/10.1346/CCMN.1968.0160404)

© 1968, The Clay Minerals Society

Clay Minerals Society (www.clays.org)
