

14267

PHYSICAL CHARACTERISTICS

| Mass | Dimensions |
|---------|--------------------|
| 54.77 g | 5.0 x 3.0 x 2.0 cm |

Sample 14267 is a blocky, angular, dark gray, tough, vitric [matrix] breccia.

SURFACE FEATURES

Glass-lined zap pits up to 1.2 mm are present on all surfaces. The surface is irregular except for a discontinuous glass coating over 40% of the surface. The only cavities are in the glass coating. There are few non-penetrative fractures.

PETROGRAPHIC DESCRIPTION

The sample is homogeneous except for the frothy glass coating present on one surface. Fifty percent of the breccia appears to be dark gray aphanitic glassy material. Three types of lithic and 3 types of mineral fragments can be identified. White lithic fragments up to 10 mm in size compose 20% of the sample. They average 0.5 mm in size and are mostly angular, but some are subrounded. These have a sugary texture with grain sizes from 0.1 - 0.2 mm; usually more than one mineral is present. A second type of lithic fragment is gray, with grain sizes up to 30 mm (dominantly 0.5 mm). The third type of lithic clast is also gray, but is a 50:50 mixture of plagioclase and a pinkish brown mineral (spinel?). This clast is represented by only one sub-angular grain 2.0 mm in size.

Mineral fragments make up less than 5% of the sample, the most abundant of which is white plagioclase in various degrees of crushing. Some contain small zones of vitreous gray material. Grains are subangular to subrounded and range from 0.1 to 0.3 mm in diameter. A second type of mineral fragment is light green olivine (?) up to 0.5 mm in size. These are subangular in shape. A light brown mineral fragment, also as large as 0.5 mm in size, occurs as subrounded fragments and is probably pyroxene.

DISCUSSION

Sample 14267 was classified as a coherent rock with light clasts (F2) by Wilshire and Jackson (1972).

The European Consortium investigated this sample and determined its history on the basis of their studies on the bulk chemistry, mineralogy, petrology, cosmic ray tracks, noble gases, carbon chemistry, and optical polarization (Eglinton et al. 1974). They determined the age of formation to be 3.9 b.y. ago. It was produced by shock-induced lithification of soil grains. They found the temperature reached during compaction to be not in excess of 800°C. The metamorphic grade of the rock is described as Warner's grade 2. After formation, they determined that the rock was buried at a depth of at least two meters until it was ejected, probably by the Cone Crater event, approximately 30 m.y. ago.



Width of image is approximately 6 cm, S-71-29249