10048
Regolith Breccia
579 grams

Figure 1: Photo of 10048 before breaking. Sample is 13 cm, end-to-end. NASA S69-45678.

**Introduction**
McKay et al. (1970), McKay and Morrison (1971), Fruland (1983) and Simon et al. (1984) reported that 10048 is very similar to the Apollo 11 soil in its character. It is a glass matrix breccia derived from the soil by impact, containing a lot of solar wind elements.

**Petrography**
Schmitt et al. (1970) reported the bulk density as 2.45 g/cm³. Phinney et al. (1976) describe 10048 as a coherent, vitric microbreccia with about 50% glass in the matrix. Simon et al. (1984) included breccia 10048 in their comprehensive study of Apollo 11 regolith breccias – their mode is given in the table. They calculated that it had about 25% highland component, but couldn’t directly identify that many clasts of highland rock.

There are small clasts of mare basalt in the matrix along with dark orange to red glass beads (~100 microns) in 10048.

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Figure 2: Transmitted light photomicrograph of thin section 10048,33 showing orange glass bead and basalt fragments in ultrafine matrix. Scale is 2.5 mm. NASA S70-49472.

**Chemistry**

Thiemens and Clayton (1980) determined 119 ppm nitrogen (with a very negative delta $^{15}$N).

Simon et al. (1984) calculate that 10048 is made up of about 75% local mare basalt and about 25% highland component.

**Radiogenic age dating**
none

**Cosmogenic isotopes and exposure ages**
None

**Other Studies**
The total organic carbon content of 10048 was determined by hydrogen flame ionization pyrolysis (Ponnamperuma et al. 1970). Filleux et al. (1978) studied the carbon on the surface and the interior of 10048 (figure 7).

Funkhauser et al. (1970) and Hintenberger et al. (1975) determined rare gas abundance and isotopic ratios (figure 5).

Dunn and Fuller (1972) and Nagata et al. (1971, 1972) determined magnetic properties. Schwerer et al. (1972) determined the Mossbauer spectra and magnetic susceptibility.

**Processing**
Apollo 11 samples were originally described and cataloged in 1969 and “re-cataloged” by Kramer et al. (1977). Pieces of 10048 were used for public displays.
in 1969-71, until more favorable samples were available (figure ). Portions of 10048 were added to the “biopool” sample used to check for pathogens and life forms during Apollo 11 quarantine.

Saw cuts (wire saw) can be seen in some of the photos of 10048.
Table 1. Chemical composition of 10048.

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Technique: (a) XRF, (b) IDMS, (c) INAA, (d) RNAA, (e) semi-micro. chem.
Lunar Sample Compendium
C Meyer 2009

10048
579 g

0.1
171.6 g

15 g

0.85
PB

50 g

0.9
TS

65 g

0.51

41 g

0.54

46 g

0.69

38 g

0.70

31 g

Figure 8: Display sample 10048,51 (no longer used). S74-24907

References for 10048


Funkhauser J.G., Jessberger E., Muller O. and Zahringer J. (1971) Active and inert gasses in Apollo 12 and 11 samples
Figure 9: Photo of 10048.9. Scale is in mm and cm, at top.


