

10002

Bulk Soil

5629 grams

DRAFT

Introduction

10002 is the number given the bulk soil returned in ALSRC 1003. 10084 and 10086 are portions of 10002. Please see section on 10084.

Petrography

The grain size distribution of 10002 was originally reported by LSPET (1969)(figure 1).

Chemistry

There are no “bulk” analyses of 10002, as such. However, 10084 was a split of 10002, and presumably the same (< 1mm). There is a partial analysis of a large split (301 g) by radiation counting in LSPET (1969) and O’Kelley et al. (1970)(table 1).

Cosmogenic isotopes and exposure ages

LSPET (1969) and O’Kelley et al. (1970) determined the cosmic-ray-induced activity of 10002 as $^{26}\text{Al} = 97$ dpm/kg, $^{22}\text{Na} = 44$ dpm/kg, $^{46}\text{Sc} = 9$ dpm/kg, $^{54}\text{Mn} = 28$ dpm/kg and $^{56}\text{Co} = 27$ dpm/kg.

Processing

There are reports that the bulk soil sample (10002) was partly in a “Teflon bag”, and partly loose in the ALSRC. The ALSRC also contained a mesh of aluminum wire called “York mesh”, and it must have been difficult to extract the soil from this mesh. Sample containers are discussed in the tool catalog by Judy Allton (1989).

The processing of 10002 was complicated and is a bit of a mystery. That’s because some of it was used in the quarantine studies, some was split off to be the primary soil samples 10084 and 10086. It is not known which parts were sieved, nor what size sieves were used and when. Apparently, a portion of ,26 was sieved in 1980 for Larry Taylor.

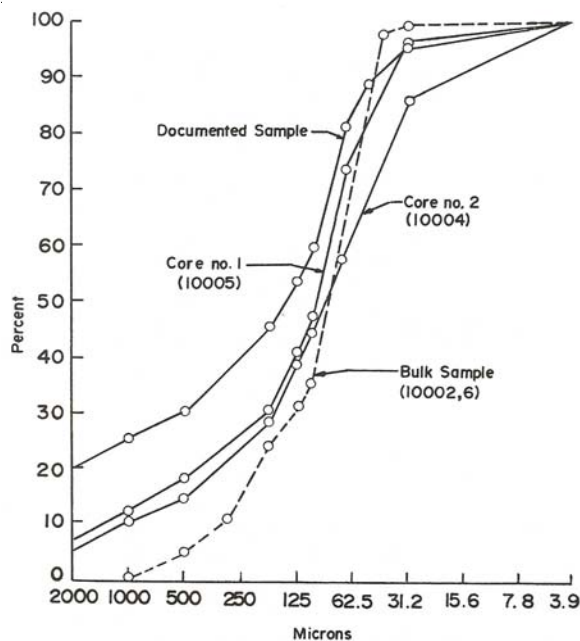
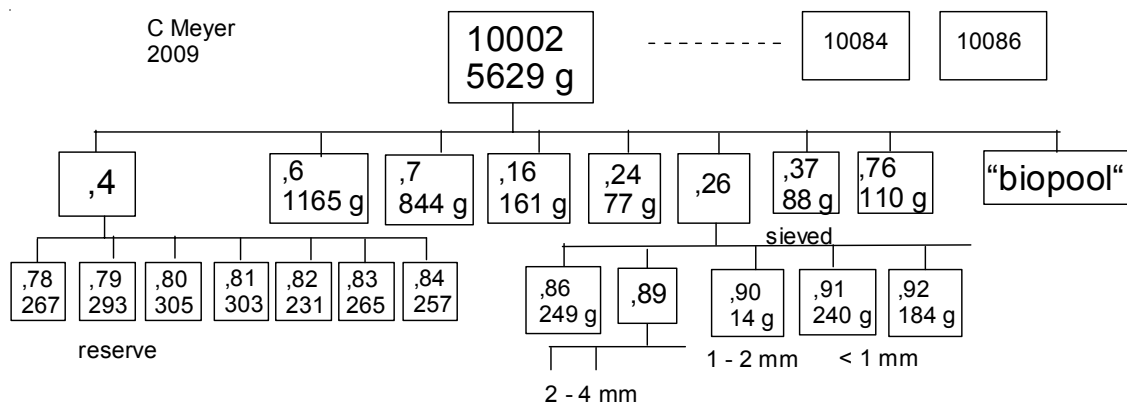


Figure 1: Grain size distribution of 10002 compared with cores (LSPET 1969).

Table 1. Chemical composition of 10002.

reference	LSPET69	O’Kelley70
weight	301 g	
K2O	0.132	(a)
Th ppm	1.6	(a)
U ppm	0.46	(a)

technique: (a) radiation counting



note: complicated

References for 10002.

Agrell S.O., Scoon J.H., Muir I.D., Long J.V.P., McConnell J.D.C. and Peckett A. (1970) Observations on the chemistry, mineralogy and petrology of some Apollo 11 lunar samples. *Proc. Apollo 11 Lunar Sci. Conf.* 93-128.

Beaty D.W., Hill S.M.R., Albee A.L., Ma M.-S., and Schmitt R.A. (1979a) The petrology and chemistry of basaltic fragments from the Apollo 11 soil, part 1. *Proc. 10th Lunar Sci. Conf.* 41-75.

Beaty D.W. and Albee A.L. (1980) The geology and petrology of the Apollo 11 landing site. *Proc. 11th Lunar Planet. Sci. Conf.* 23-35.

Carrier W.D. (1973) Lunar grain size distribution. *The Moon* **6**, 250-263.

Duke M.B., Woo C.C., Sellers G.A., Bird M.L. and Finkelman R.B. (1970) Genesis of lunar soil at Tranquillity base. *Proc. Apollo 11 Lunar Sci. Conf.* 347-362.

King E.A. *and a cast of thousands* (1969) Lunar Sample Information Catalog, Apollo 11. Lunar Receiving Laboratory, MSC 412 pp

Kramer F.E., Twedell D.B. and Walton W.J.A. (1977) Apollo 11 Lunar Sample Information Catalogue (revised). Curator's Office, JSC 12522

Laul J.C. and Papike J.J. (1980) The lunar regolith: Comparative chemistry of the Apollo sites. *Proc. 11th Lunar Planet. Sci. Conf.* 1307-1340.

LSPET (1969) Preliminary examination of lunar samples from Apollo 11. *Science* **165**, 1211-1227.

Marvin U.B., Wood J.A., Taylor G.J., Reid J.B., Powell B.N., Dickey J.S. and Bower J.F. (1971) Relative proportions and probable sources of rock fragments in the Apollo 12 soil samples. *Proc. 2nd Lunar Sci. Conf.* 679-699.

O'Kelley G.D., Eldridge J.S., Schonfeld E. and Bell P.R. (1970) Primordial radionuclide abundances, solar proton and cosmic ray effects and ages of Apollo 11 lunar samples by non-destructive gamma-ray spectrometry. *Proc. Apollo 11 Lunar Sci. Conf.* 1407-1424.

Wakita H., Schmitt R.A. and Rey P. (1970) Elemental abundances of major, minor, and trace elements in Apollo 11 lunar rocks, soil, and core samples. *Proc. Apollo 11 Lunar Sci. Conf.* 1685-1717.