10072

Sample 10072 is an angular medium light grey vesicular Basalt. This sample originally weighed 447 gms, and measured 10 x 8 x 4 cm. It was originally returned in ALSRC # 1004 (Documented Sample container).

BINOCULAR DESCRIPTIONS BY: Twedell DATE: 2-26-76

ROCK TYPE: Vesicular Basalt SAMPLE 10072,80 WEIGHT: 173 gm

COLOR: Medium light grey DIMENSIONS: 6.2 x 5.9 x 4.0cm

SHAPE: Angular

COHERENCE: Intergranular - friable
Fracturing - absent

FABRIC/TEXTURE: Isotropic/Equigranular, fine-grained

VARIABILITY: Homogeneous

SURFACE: Surface areas are well covered with vesicles which range in size up to 1 cm in diameter.

ZAP PITS: Few on N_1, none on all others.

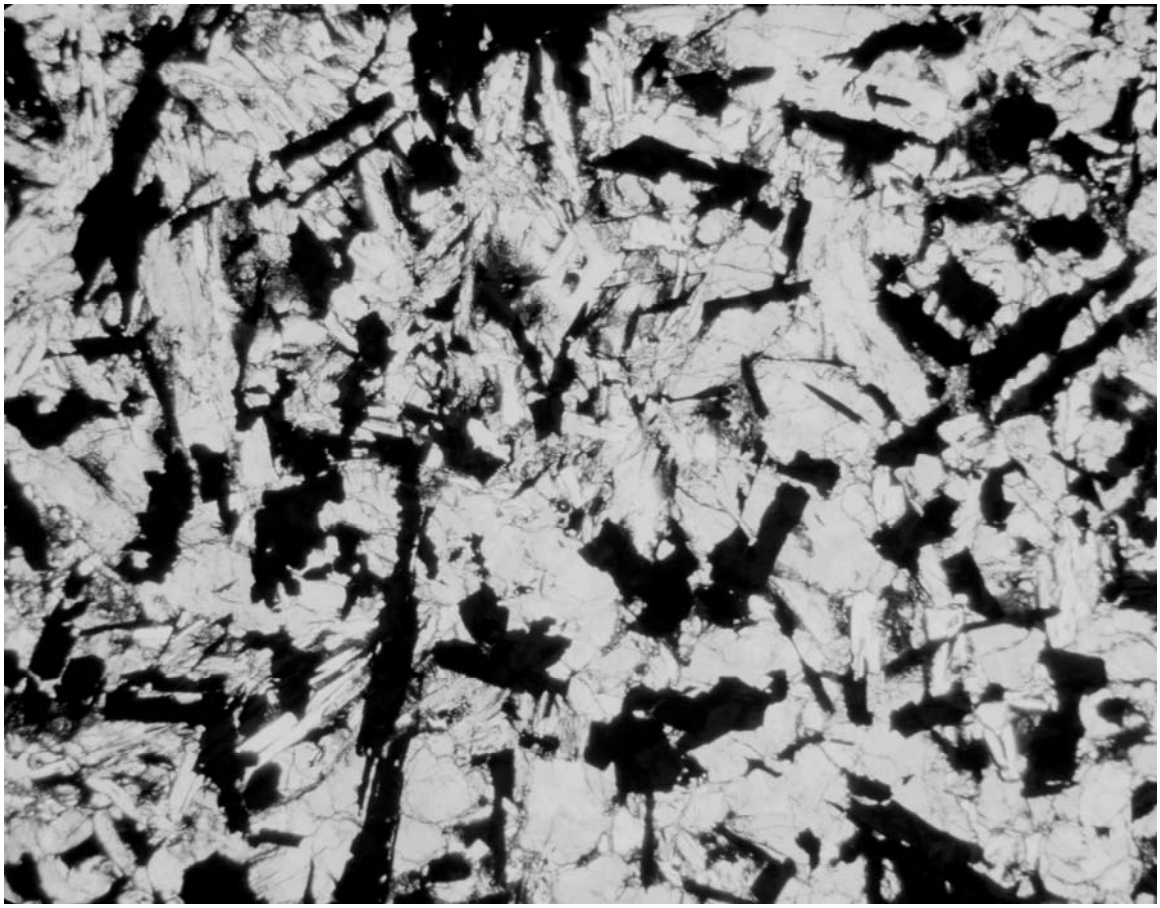
CAVITIES: 40% surface coverage. Inside walls of vesicles are smooth, with very few well defined crystals.

COMPONENT	COLOR	%OF ROCK	SHAPE	SIZE(MM) DOM.	RANGE
Pyroxene[1]	Brown	50	Angular to sub-angular	<.1	<.1
Plagioclase[2]	White	30	Sub-angular to sub-rounded	<.1	<.1
Black[3]	Black	10	Sub-rounded	<.1	<.1
Semi-opaques[4]	Dark	10	Elongated	.1	<.1-.3

1) Honey brown to almost black.
2) Two types of plagioclase; one is crystalline, the other is shocked plagioclase associated with ilmenite.
3) Probably part pyroxene and part mesostasis.
4) Elongated platy crystals have the appearance of ilmenite.

10072,0 Original PET Photo S-69-47387

10072,80 S-76-22596



S-76-26286

SECTION 10072,43 Width of field 2.22 mm plane light

THIN SECTION DESCRIPTION BY: Walton DATE: 6/1/76

SECTION: 10072,43

SUMMARY: Fine grained, vesicular intersertal basalt composed of clinopyroxene, plagioclase and ilmenite. All crystals in the section show some degree of deformation with many highly fractured and broken crystals. Few of the crystals show well defined crystal faces and most are somewhat rounded at the edges. Many groups of radial, acicular pyroxene-plagioclase intergrowths are also present. These fan-shaped masses tend to be found near the voids in the section. There is glass present in some of the crystals plus a glass-rich mesostasis between the crystalline phases.

PHASE	% OF SECTION	SHAPE	SIZE (MM)
Pyrox	49	Anhedral to irregular	0.1 -0.8
Plag	25	Anhedral to acicular	0.01-0.6
Opaq	20	Anhedral to euhedral	0.001-0.8
Meso	6	- -	0.001-0.3

COMMENTS:

Pyroxene - The clinopyroxene forms large anhedral crystals which host the smaller plagioclase and ilmenite crystals. The crystals are highly *g*ranulated while giving the appearance of a monocrystal. The color of the crystals is a light pinkish tan with some crystals having a yellowish cast. Many of the vesicles are lined with very fractured pyroxene crystals.

Near many of the vesicles, radiating clusters of acicular pyroxene crystals, some associated with acicular plagioclase crystals, occur which form fan-shaped masses. These masses of crystals form discrete units within the rock.

Plagioclase - Two major types of plagioclase occur in the rock. The larger anhedral crystals are skeletal, poorly formed and form interstitial masses between the pyroxene crystals. The smaller acicular crystals are lath-like and many have hollow centers filled with a glassy phase. These crystals form intergrowths with acicular pyroxene crystals in fan-shaped masses.

Intermingled among the pyroxene and plagioclase crystals are patches of glass-rich material. This glassy mesostasis forms irregular patches and void fillings. The color varies from clear to brown. The masses are more or less evenly dispensed throughout the rock.

Opaques - The major opaque phase in the section is ilmenite. Two generations of crystals are present in the rock. The first type forms very skeletal crystals which contain inclusions of the silicate minerals. These crystals are subhedral in part, but most have lost their original form. The majority of the crystals are lath-like and appear as acicular blades in the section. A few of the larger crystals contain small rutile exsolution.

Small masses of troilite and troilite with iron-nickel inclusions are also present in the section. These form small 0.001 mm to 0.2 mm masses and are for the most part isolated in the silicate crystal assemblage.

TEXTURE: Porphyritic intersertal basalt consisting of a network of pyroxene phenocrysts that are intergrown with large, anhedral ilmenite prisms. Occurring interstitial to the pyroxene-ilmenite network are plagioclase tablets that are intergrown with the edges of the pyroxene phenocrysts, acicular pyroxene-plagioclase inter-growths, small euhedral ilmenite crystals, and anhedral masses of mesostasis and plagioclase. Contacts are sharp, for the most part, but some edges are very eroded and uneven.

Selected References: Haggerty et al. (1970),Kushiro and Nakamura (1970), Simpson and Bowie (1970), Smith, J.W. et al. (1970).

HISTORY AND PRESENT STATUS OF SAMPLES- 6-28-76

10072 was removed from the Documented Samples container (ALSRC #1004) and split in the Vac Lab. A 29 gm chip was sent to PCTL for PET analysis. The remainder was sent to RCL for gamma ray counting. Upon its return, this piece was split further in the Vac Lab. Remaining pristine samples were re-examined in SSPL.

PRISTINE SAMPLES: (All VAC-RCL-VAC-SSPL)

19	40.26 gm	Eight chips. No pitted surfaces.
80	143.92 gm	Piece. One surface is pitted
139	28.28 gm	Eleven chips from ,80. No pits on any pieces.

RETURNED SAMPLES:

15	15.30 gm	Chip. One pitted surface.
41	21.65 gm	Piece. Previously listed as 10018,24.
109	6.78 gm	Two pieces. All surfaces are fresh.

CHEMICAL ANALYSES

Element	Number of Analyses	Mean	Units	Range
$Si0_2$	3	40.64	PCT	.70
Al_20_3	4	8.01	PCT	1.04
$Ti0_2$	4	12.17	PCT	2.33
FeO	3	19.65	PCT	.43
MnO	4	.244	PCT	.068
MgO	3	7.48	PCT	.741
CaO	4	11.49	PCT	4.06
Na_20	4	.504	PCT	.121
K_20	6	.284	PCT	.149
P_20_5	3	.170	PCT	.030
H	1	.76	CC/G	0
Li	3	15.0	PPM	2
Rb	6	5.58	PPM	.98
Cs	2	.230	PPM	.141
Be	3	3.133	PPM	1.3
Sr	5	154.76	PPM	38.6
Ba	3	343	PPM	130.0
Sc	3	86.3	PPM	19.0
V	4	60.5	PPM	60
Cr_20_3	4	.364	PCT	.085
Co	6	28.7	PPM	22.8
Ni	5	15.42	PPM	24.99
Cu	5	14.44	PPM	17.06
Zn	5	13.71	PPM	32.28
Y	4	185.5	PPM	95
Zr	4	551.75	PPM	260
Nb	3	31.0	PPM	22
Mo	1	.4	PPM	0

Number of

Element	Analyses	Mean	Units	Range
Pd	2	.052	PPM	.097
Cd	3	.340	PPM	.994
Ta	2	3.4	PPM	3.2
W	1	.42	PPM	0
Hf	2	15.0	PPM	6.0
Os	1	.004	PPM	0
Lr	2	.200	PPB	.400
Au	3	.100	PPB	.060
Hg	1	5.50	PPB	0
La	4	31.42	PPM	20.3
Ce	3	86.33	PPM	27
Pr	2	18.0	PPM	4
Nd	3	62.67	PPM	39
Sm	3	22.3	PPM	l0.1
Eu	3	2.09	PPM	.2
Gd	2	28.5	PPM	5
Tb	3	4.7	PPM	3.8
Dy	2	38.1	PPM	13.8
Ho	2	8.4	PPM	3.2
Er	2	25.5	PPM	19
Tm	1	2.8	PPM	0
Yb	4	16.4	PPM	26
Lu	3	3.28	PPM	2.76
Th	7	3.51	PPM	2.0
U	4	.699	PPM	.357
B	1	4.0	PPM	0
Ga	5	4.49	PPM	.9
In	1	.052	PPM	0
Tl	1	.920	PPB	0
Ge	2	.58	PPM	1.04
Sn	1	.4	PPM	0
Pb	2	2.30	PPM	1.40
W	1	110	PPM	
As	1	.05	PPM	0
Sb	1	.01	PPM	0
Bi	1	.730	PPB	0
S	2	.235	PCT	.01
Se	1	.188	PPM	0
F	1	271.0	PPM	0
Cl	1	14	PPM	0
Br	3	.102	PPM	.164
I	1	.37	PPM	0

Analysts: Compston et al., (1970); Maxwell et al., (1970); Morrison et al., (1970); Ganapathy et al., (1970); Annell & Helz, (1970); Gopalon et al., (1970); O'Kelly et al.,

(1970); Hurley & Pinson, (1970); Anders et al., (1971); Reed & Jovanovic, (1970); Wasson & Baedecker, (1970); Haskin et al., (1970); Herzog & Herman, (1970); Silver, (1970); Wrigley & Quaide, (19170).

Age References: D'Amico et al., (1970); Turner (1970); O'Kelly et al., (1970); Eberhardt (1970); Silver (1970).