

## 10062

Sample 10062 is a sub-angular, dark grey, olivine basalt, This sample originally weighed 79gm and measured 7x6x2 cm. It was originally returned in ALSRC #1004 (Documented Sample container).

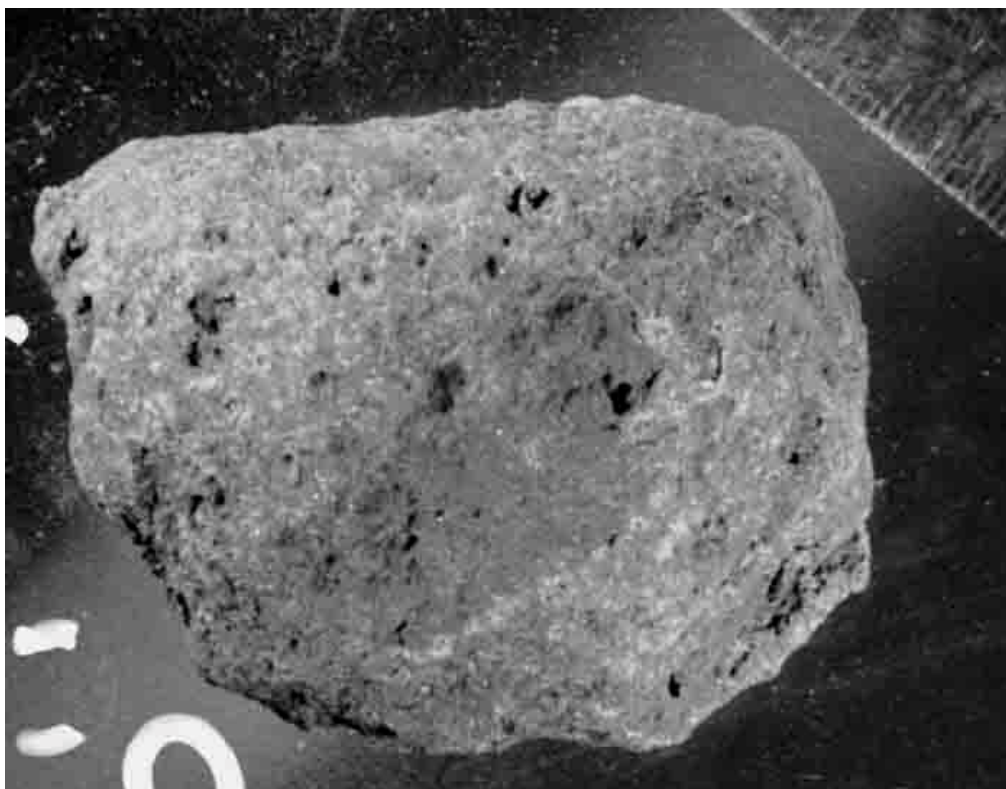
BINOCULAR DESCRIPTION BY: Kramer DATE: 1/27/76  
ROCKTYPE: Olivine basalt SAMPLE: 10062,13 WEIGHT: 25.38 gm  
COLOR: Dark grey DIMENSIONS: 4 x 2.5 x 1.7 cm  
SHAPE: Sub-angular (broken)  
COHERENCE: Intergranular - coherent  
Fracturing - absent; few (PET)  
FABRIC/TEXTURE: Isotropic/Equigranular  
VARIABILITY: Homogeneous  
SURFACE: T<sub>1</sub> irregular; rough (PET)  
B<sub>1</sub> (fresh) irregular; rough (PET)

ZAP PITS: Few on T<sub>1</sub>, none on others. Pits are glass lined, up to 1mm in diameter.

CAVITIES: Vesicles cover 10% of surface.

<u>COMPONENT</u>	<u>COLOR</u>	<u>%OF ROCK</u>	<u>SHAPE</u>	<u>SIZE(MM) DOM. RANGE</u>
Plagioclase	Milk White	30	Blocky to lathy	0.4 0.05-0.7
Pyroxene	Brown	47	Blocky	0.3 <0.5
Ilmenite	Black	20	Subhedral	0.1 0.01-0.3
Olivine	Green	3	Equant	0.6 0.2-0.8

SPECIAL FEATURES: Vesicles are lined with primarily the same relative quantities of minerals as the bulk rock.



10062,0 Original PET Photo S-69-46521



10062,13 S-76-21516



S-76-26268

SECTION: 10062,35

Width of field: 1.39mm plane light

THIN SECTION DESCRIPTION

BY: Walton

DATE: 5/27/76

**SUMMARY:** Fine-grained ophitic basalt composed of clinopyroxene, two generations of plagioclase, two generations of ilmenite with subordinate olivine, troilite, iron-nickel and mesostasis. The pyroxene forms large anhedral crystals with lath-like to anhedral crystals of ilmenite in a continuous network. Interstitial to these phases are subhedral to anhedral crystals of plagioclase with minor glass-rich mesostasis. Isolated within the network are anhedral crystals of olivine.

<u>PHASE</u>	<u>% OF SECTION</u>	<u>SHAPE</u>	<u>SIZE(MM)</u>
Pyrox	45	Anhedral	0.01-0.8
Plag	33	Tabular to anhedral	0.08-0.8
Oliv	4	Blocky, anhedral	0.001-0.3
Opaq	16	Lath-like to anhedral	0.05-1.0
Meso	2	Irregular	0.001-0.1

## COMMENTS:

Pyroxene - Pinkish tan to light brown anhedral crystals of clinopyroxene together with the ilmenite crystals form an almost continuous array hosting the other phases present. The crystals of pyroxene show little cleavage pattern and almost no suggestion of crystal faces. Occasional feathery masses occur between plagioclase crystals. Most of the extinctions are irregular to patchy.

Plagioclase - Small subhedral crystals of plagioclase occur in the section associated with larger anhedral masses of plagioclase. The anhedral crystals form interstitial void fillings in the pyroxene-ilmenite network. Many of the larger crystals are somewhat skeletal in development. The smaller crystals show sharp to moderate twin planes while the larger crystals show little to none.

Olivine - Small to large blocky anhedral crystal masses of olivine are scattered throughout the section. All are fresh crystals with small pyroxene rims. Several of the crystals occur as small cores in some of the pyroxene crystals.

Mesostasis - Small amounts of an almost colorless to slightly brownish glass-rich mesostasis phase occurs usually between the plagioclase crystals and the adjacent pyroxene crystals. No phases were determined and the amounts were small.

Opagues - The opaque phases represented in the section are ilmenite and troilite-iron nickel. Carter, J.L. and MacGregor, I.D. (1970) have reported armalcolite and chromian ulvospinel from this rock. Neither of these phases were seen in this investigation.

Two generations of ilmenite are present in the section. The crystals occur as small lath-like crystal sections and also as large somewhat skeletal anhedral crystals. Both types occur in nearly equal amounts. Rutile and chromite exsolution are present in the larger crystals.

Small masses of troilite-iron nickel are present, but are rather sparse. A few masses of just troilite are also present.

TEXTURE: Interlocking anhedral crystals of pyroxene intergrown with two generations of ilmenite and two generations of plagioclase crystals in an ophitic texture. Interstitial to this network are masses of plagioclase and mesostasis.

Selected References: Carter and MacGregor (1970)

HISTORY AND PRESENT STATUS OF SAMPLES - 5/27/76

10062 was removed from the Documented Sample container (ALSRC #1004) and split in the Vac Lab. A 10gm chip was sent to PCTL for PET analysis. Remaining pristine samples were re-examined in SSPL.

PRISTINE SAMPLES: (All VAC-SSPL)

14	1.67 gm	Chips and fines. Largest chip has 1 pitted surface. Remainder of chips have 1 or no pitted surfaces. No sawed surfaces on any chips.
13	25.33 gm	Largest chip is described in binocular description. Next largest chip has 2 pitted surfaces. Remainder of chips have no pitted surfaces.

RETURNED SAMPLES:

33	8.13 gm	Chip. Two pitted surfaces. Some chisel marks. Other surfaces are fresh.
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CHEMICAL ANALYSES

Element	Number of Analyses	Mean	Units	Range
SiO <sub>2</sub>	3	39.04	PCT	1.29
Al <sub>2</sub> O <sub>3</sub>	4	10.44	PCT	2.09
TiO <sub>2</sub>	5	10.10	PCT	4.75
FeO	5	18.05	PCT	3.86
MnO	5	.251	PCT	.105
MgO	2	7.14	PCT	.13
CaO	4	12.02	PCT	1.54
Na <sub>2</sub> O	6	.416	PCT	.042
K <sub>2</sub> O	6	.070	PCT	.062
P <sub>2</sub> O <sub>5</sub>	1	.12	PCT	0
Rb	3	.844	PPM	.08
Cs	1	.032	PPM	0
Sr	3	193.4	PPM	6.5
Ba	3	168.0	PPM	96.0
Sc	3	78.9	PPM	11.3
V	1	75.0	PPM	0
Cr <sub>2</sub> O <sub>3</sub>	4	.227	PCT	.059
Co	3	13.27	PPM	.8
Ni	1	15.01	PPM	0
Cu	1	4.0	PPM	0
Y	1	103.0	PPM	0

Number of

<u>Element</u>	<u>Analyses</u>	<u>Mean</u>	<u>Units</u>	<u>Range</u>
Zr	2	304.5	PPM	29
Mo	1	.16	PPM	0
Ag	1	.071	PPM	0
Ta	3	1.5	PPM	.8
Hf	3	11.23	PPM	1.9
Au	1	.006	PPM	0
La	4	12.9	PPM	3.0
Ce	5	41.72	PPM	10.4
Nd	2	38.7	PPM	2.4
Sm	5	11.75	PPM	6.0
Eu	5	2.04	PPM	.4
Gd	2	18.15	PPM	.1
Tb	1	3.3	PPM	0
Dy	4	21.9	PPM	4.2
Ho	1	4.4	PPM	0
Er	2	12.3	PPM	1.0
Yb	5	10.24	PPM	7.2
Lu	5	1.6	PPM	1.07
Th	1	.9	PPM	0
U	3	.267	PPM	.03
Ga	1	3.0	PPM	0
As	1	.05	PPM	0
O	1	38.0	PCT	0
S	1	.16	PCT	0
Se	1	.23	PPM	0

Analysts: Compston et al., (1970); Ehmann & Morgan, (1970); Rose et al., (1970); Goles et al., (1970); Turekian & Kharkar, (1970); Kharkar & Turekian, (1971); Gast et al., (1970); Philpotts & Schnetzler, (1970).

Age References: Turner (1970); Eberhardt (1971b).