

10049

Sample 10049 is an angular, dark grey, fine grained basalt. This sample originally weighed 193gm and measured 6.5x3.5x10cm. It was originally returned in ALSRC #1003 (Bulk Sample Container).

BINOCULAR DESCRIPTION BY: Twedell DATE: 5/19/76

ROCK TYPE: Fine Grained Basalt SAMPLE: 10049,0 WEIGHT: 141gm

COLOR: Dark Grey DIMENSIONS: 4.8 x 4 x 3.5 cm

SHAPE: Angular

COHERENCE: Intergranular - tough
Fracturing - few, non-penetrative

FABRIC/TEXTURE: Isotropic/Equigranular, very fine grained.

VARIABILITY: Homogeneous

SURFACE: Irregular on all surfaces. A white aphanitic coating surrounds the pitted areas only.

ZAP PITS: Many on B₁, few on T₁, N₁, W₁. None on E₁, S₁. Pits are glass lined up to 0.8mm in diameter.

CAVITIES: 10% total surface average <.6mm in diameter, some crystal lined, some smooth.

<u>COMPONENT</u>	<u>COLOR</u>	<u>% OF ROCK</u>	<u>SHAPE</u>	<u>SIZE(MM) DOM. RANGE</u>	
Plagioclase	White	20	Subangular - subrounded	<.1	<.1
Ilmenite ₁	Black	20	Angular - subangular	<.1	<.1
Pyroxene	Black	60	Subrounded	<.1	<.1

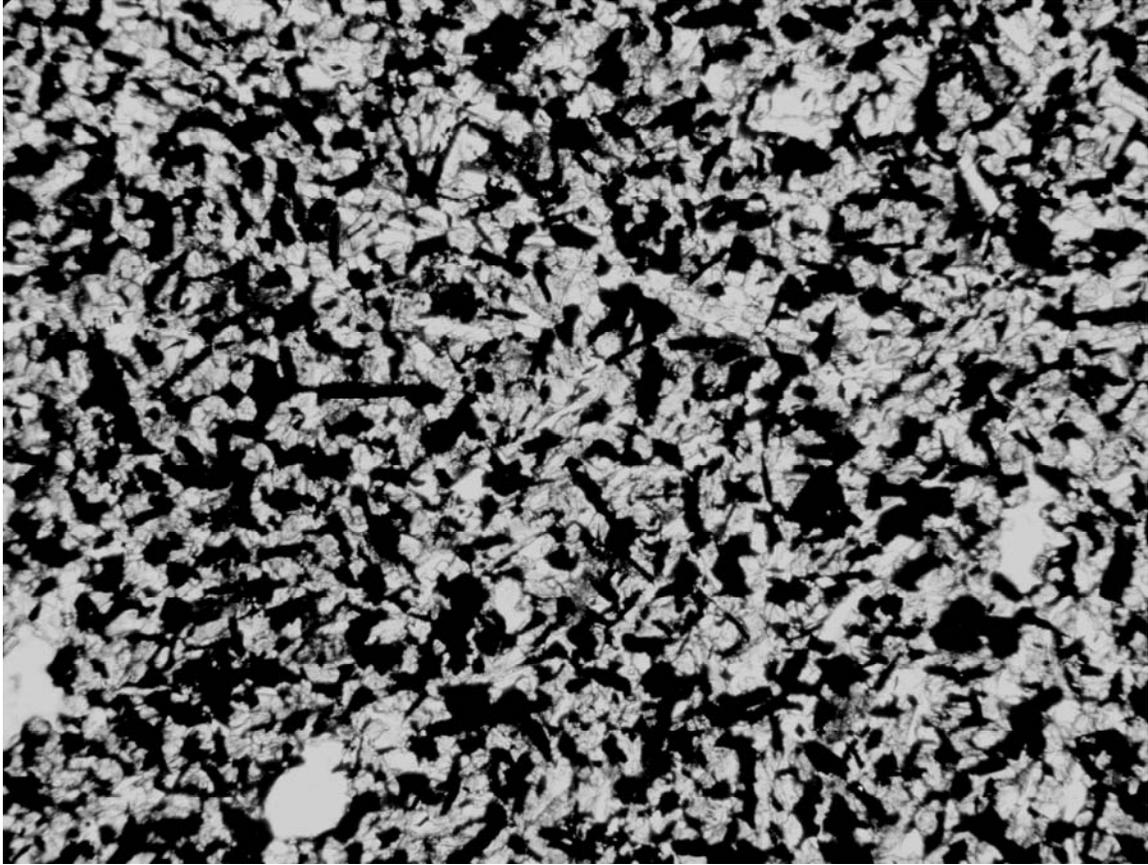
1) Appears to be semi-opaque platy crystals.



10049,0 Original PET Photo S-69-45702



10049, 0 S-76-25446



S-76-26330

SECTION:10049,39

Width of field: 2.22mm plane light

SECTION DESCRIPTION

BY: Walton

DATE: 11/15/75

SECTION: 10049, 39

SUMMARY: Fine-grained vesicular intersertal basalt with a pyroxene-ilmenite network hosting smaller plagioclase crystals and abundant mesostasis. Most of the silicate crystals are poorly formed and optical characteristics are poor. A few euhedral pyroxene crystals are present, but are scattered. The ilmenite occurs in crystals of two generations. One generation is composed of small euhedral laths and the other as large subhedral laths with irregular boundaries. Many of the larger ilmenite crystals contain silicate or glassy inclusions and have a somewhat sieve texture.

Throughout the section are masses and stringers of a glass-rich mesostasis. It is brownish in color and is very turbid. Many of the ilmenite crystals are surrounded by the mesostasis. Some minor devitrification has taken place.

<u>PHASE</u>	<u>% SECTION</u>	<u>SHAPE</u>	<u>SIZE (MM)</u>
Pyrox	47	Subhedral to euhedral	0.05-0.2
Plag	18	Tabular to anhedral	0.01-0.2

Opaq	17	Subhedral to euhedral	0.001-0.2
Meso	18	Irregular	-----
Mafic	--	Rods	0.01 -0.2

COMMENTS:

Pyroxene -Pale brown to colorless subhedral to euhedral crystals of pyroxene enclose the smaller plagioclase and ilmenite crystals. Some euhedral crystals, hexagonal in outline, are scattered randomly in the section. They show poor optical characteristics, but do have sharper grain boundaries. The larger subhedral crystals show some zoning, and all the crystals are highly fractured. Most of the grain boundaries are poorly defined. Due to the poor optical characteristics of the pyroxene crystals, no exact determination of the type of pyroxene could be made.

Plagioclase - Small tabular crystals of plagioclase occur inter-dispersed with blocky anhedral crystals forming interstitial fillings within the pyroxene-ilmenite network. The optical characteristics are, for the most part, poor. Some of the smaller tabular crystals have retained sharp twin planes. The plagioclase grains tend to have sharper and more well defined grain boundaries than do the pyroxenes. The crystals are randomly scattered throughout the section.

Opaques and Mesostasis - The major opaque phase in the rock is ilmenite. Two generations of crystals are present. The smaller euhedral laths are widely scattered throughout the section while the larger subhedral laths are somewhat more grouped. The larger crystals contain glass and silicate inclusions and the boundaries are very irregular. Many of the crystals are bent and some are broken. Many of the crystals are surrounded by the glass-rich mesostasis. Much of the mesostasis is present as stringers or as isolated masses filling interstices in the silicate-ilmenite network. There appears to be a preference for the mesostasis to form near or around the larger ilmenite crystals. Isolated patches of troilite and troilite with iron-nickel are also present, but only in moderate amounts. Also present are numerous spherical to irregular vesicles which are up to 0.3 mm in diameter.

TEXTURE: The rock consists of a random network of intergrown pyroxene and ilmenite crystals. Plagioclase and mesostasis occurs interstitial to this network. The pyroxene forms subhedral to euhedral crystals but they lack well defined optical characteristics. The numerous vesicles are rimmed, for the most part, by finely divided pyroxene crystals. The texture is intersertal. Boundaries are sharp to diffuse.

Selected References: Cameron (1970)

HISTORY AND PRESENT STATUS OF SAMPLES - 10/29/76

10049 was removed from ALSRC #1003, split and organically contaminated (due to a large amount of handling) in the Bio-Prep Lab. A 2gm chip was sent to PCTL for PET analysis. Remaining pristine samples were re-examined in SSPL.

PRISTINE SAMPLES:

35	1.18 gm	Medium size chips. All chips range from 3-7mm, 35 chips total. BP-SSPL
36	.19 gm	Small chips. All <3mm in size but greater than 1mm. BP-SSPL
37	.43 gm	Fines. Homogeneous. BP-SSPL
38	.42 gm	Fines. Homogeneous. BP-SSPL

NO RETURNED SAMPLES

CHEMICAL ANALYSES

Element	Number of Analyses	Mean	Units	Range
SiO ₂	3	41.69	PCT	1.78
Al ₂ O ₃	2	9.00	PCT	.997
TiO ₂	4	9.42	PCT	4.13
FeO	3	17.0	PCT	4.03
MnO	4	.228	PCT	.043
MgO	2	7.16	PCT	.265
CaO	3	10.19	PCI	2.185
Na ₂ O	5	.511	PCI	.054
K ₂ O	4	.317	PCI	.085
Rb	1	6.2	PPM	0
Cs	1	.177	PPM	0
Sr	2	170.4	PPM	19.2
Ba	2	266.0	PPM	128.
Sc	2	83.45	PPM	5.1
Cr ₂ O ₃	3	.304	PCI	.034
Co	2	23.5	PPM	1.0
Mo	1	.055	PPM	0
Ag	1	.064	PPM	0
Ta	2	1.95	PPM	.1
Hf	1	17.3	PPM	0
Au	1	4.70	PPB	3.60
La	4	26.45	PPM	4.2
Ce	3	90.63	PPM	46.9

<u>Element</u>	<u>Number of Analyses</u>	<u>Mean</u>	<u>Units</u>	<u>Range</u>
Nd	2	60.95	PPM	3.7
Sm	4	16.82	PPM	9.5
Eu	4	2.15	PPM	.19
Gd	1	29.3	PPM	0
Tb	1	5.46	PPM	0
Dy	3	31.67	PPM	2.8
Er	1	20.9	PPM	0
Yb	3	16.93	PPM	6.
Lu	2	2.52	PPM	.13
Th	1	4.03	PPM	0
U	2	.777	PPM	.074
Ga	1	4.3	PPM	0
In	1	.016	PPM	0
C	2	70	PPM	0
Ge	1	.001	PPM	0
N	1	116	PPM	0
As	1	.05	PPM	0
O	1	41.0	PCT	0
S	1	.22	PCT	0
Se	1	.2	PPM	0

Analysts: Rose et al., (1970); Wanke et al., (1971); Turekian & Kharkar, (1970); Kharkar & Turekian, (1971); Gast et al., (1970); Kaplan et al., (1970); Moore et al., (1970).

Age References: Hintenberger et al., (1971); Burnett et al., (1975); Eberhardt (1971).