

12047
Ilmenite Basalt
193 grams



Figure 1: Photo of 12047,6 and ,25 showing zap pits and large vesicle. NASA # S86-38618. Cube is 1 cm.

Introduction

12047 is a very flat rock (figure 1). According to Hörz and Hartung (1971), rock 12047 displayed various crater densities on all surfaces, indicating multiple orientations during its history on the lunar surface.

Petrography

Dungan and Brown (1977) briefly describe 12047 as medium-grained, equigranular, with lath-shaped plagioclase and equant to slightly elongate pyroxene intergrown suggestive of coetectic crystallization.

Elongate ilmenite and small segregations of “symplectoid mesostasis” are common features.

Mineralogy

Mineral compositions are not available for this rock.

Chemistry

The chemical composition was reported by Rhodes et al. (1977) and Nyquist et al. (1977).



Figure 2: Reflected light photograph of thin section 12047,9 showing random orientation of abundant ilmenite and large vesicles. NASA #S70-49365. about 3 cm

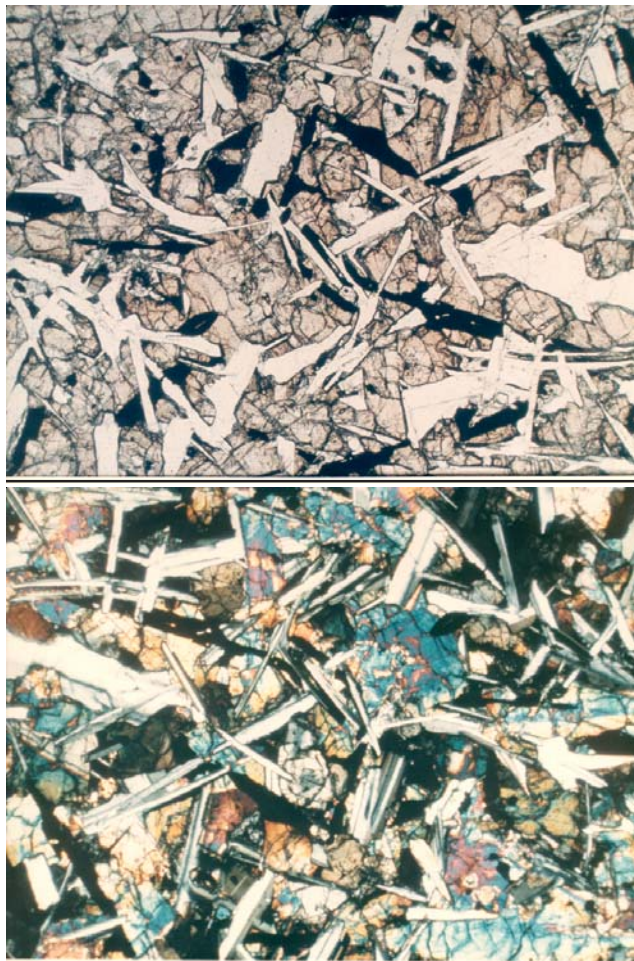


Figure 3: Photomicrographs of thin section 12047,8. NASA # S70-49260-261. 2.2 mm

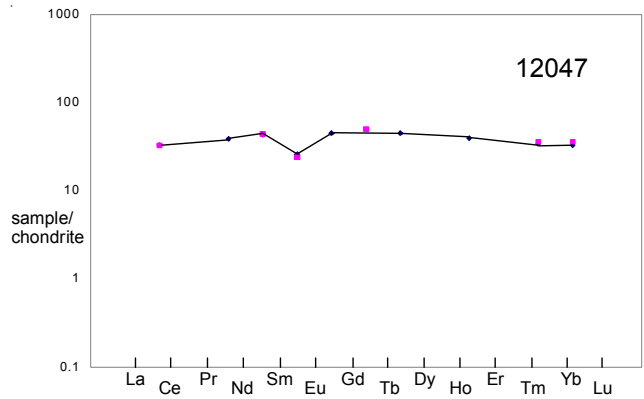


Figure 4: Normalized rare-earth-element composition of 12047 (data from Nyquist et al. 1977).

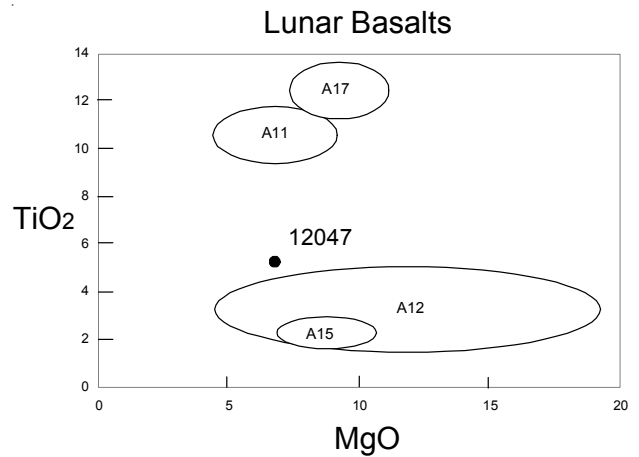


Figure 5: Composition of 12047 compared with other lunar basalts.

Radiogenic age dating

Note dated.

Processing

12047,6 is on public display at the Museum of Flight, Seattle. There are 8 thin sections.

List of Photo #s for 12047

S69-63110 – 133	color mug
S69-62711 – 734	B & W mug
S69-61764 – 787	B & W
S70-19039 – 048	B & W
S70-49817 – 822	TS color
S70-48856 – 865	color mug
S70-49260 – 261	TS
S74-27040	display
S86-38613	
S86-38618	nice color
S92-44063 – 44066	display

Mineralogical Mode for 12047

	Neal et al. 1994	Dungan and Brown 1977
Olivine	--	
Pyroxene	48.4	48.4
Plagioclase	38	38
Ilmenite	5.3	5.3
Chromite +Usp	1	1
mesostasis	2	2
“silica”	5.3	5.3

Table 1. Chemical composition of 12047.

reference weight	Rhodes77	Nyquist77	
SiO2 %	45.13	(c)	
TiO2	5.2	(c)	
Al2O3	10.1	(c)	
FeO	20.5	(c)	
MnO	0.29	(c)	
MgO	6.59	(c)	
CaO	11.32	(c)	
Na2O	0.31	(a)	
K2O	0.08	(c)	0.0725 (b)
P2O5	0.08	(c)	
S %	0.12	(c)	
sum			
Sc ppm	61	(a)	
V			
Cr	2190	(a)	
Co	32	(a)	
Ni			
Cu			
Zn			
Ga			
Ge ppb			
As			
Se			
Rb			0.99 (b)
Sr	171	(c)	164 (b)
Y	57	(c)	
Zr	141	(c)	
Nb	7	(c)	
Mo			
Ru			
Rh			
Pd ppb			
Ag ppb			
Cd ppb			
In ppb			
Sn ppb			
Sb ppb			
Te ppb			
Cs ppm			
Ba	69	(b)	69.2 (b)
La			
Ce	20.1	(a)	20.1 (b)
Pr			
Nd			17.5 (b)
Sm	6.5	(a)	6.39 (b)
Eu	1.36	(a)	1.45 (b)
Gd			8.95 (b)
Tb	1.8	(a)	
Dy			10.9 (b)
Ho			
Er			6.4 (b)
Tm			
Yb	5.9	(a)	5.54 (b)
Lu	0.89	(a)	0.798 (b)
Hf	5.1	(a)	
Ta			
W ppb			
Re ppb			
Os ppb			
Ir ppb			
Pt ppb			
Au ppb			
Th ppm			
U ppm			

technique (a) INAA, (b) IDMS, (c) XRF



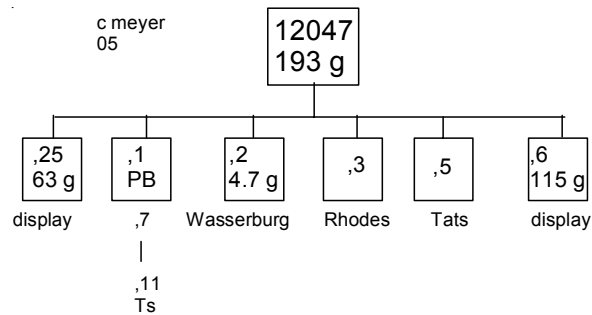
Figure 6: Display sample 12047,6. NASA S92-44066.



Figure 7: Early display case.



Figure 8: 12047 is a flat rock only 3 - 4 cm thick. NASA # S69-61784.



References for 12047

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