

15671 MEDIUM-GRAINED OLIVINE-NORMATIVE ST. 9A 6.10 g
MARE BASALT

INTRODUCTION: 15671 is a medium-grained, olivine-bearing mare basalt which is vesicular (Fig. 1). Olivines do not form phenocrysts. In chemistry, the sample is a primitive member of the Apollo 15 olivine-normative mare basalt group. Pyroxenes tend to be concentrated around some vesicles. One side is slightly rounded with several zap pits; others lack pits but have rare glass patches. 15671 was collected as part of the rake sample from Station 9A.



Figure 1. Pre-chip view of 15671. S-71-49721

PETROLOGY: 15671 is a medium-grained, olivine-bearing basalt (Fig. 2). The pyroxenes are dominantly zoned pigeonites about 1 mm in dimension; the larger ones contain small olivine inclusions. Most olivines are smaller than 1 mm. The plagioclases are lathy to stubby, and many are hollow. The texture is generally subophitic with some radiate patches. Chromite, ulvospinel, ilmenite, sulfide, cristobalite, and sparse metal are present.

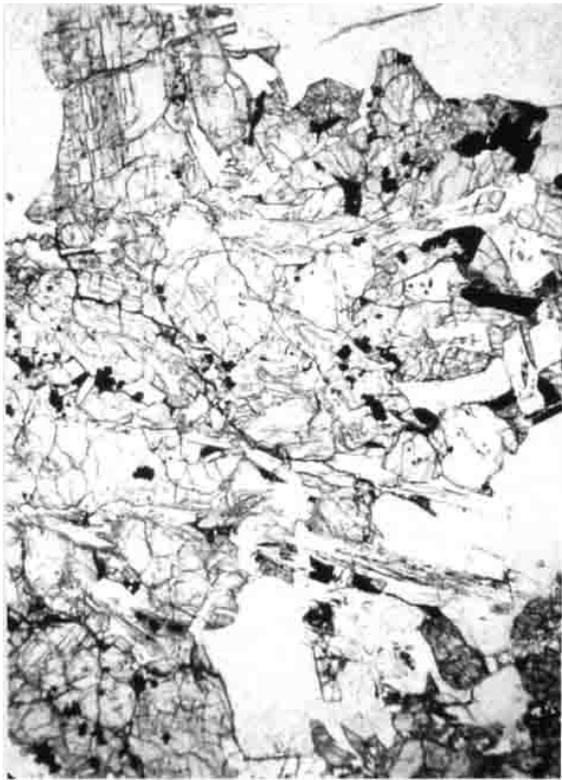


Fig. 2a

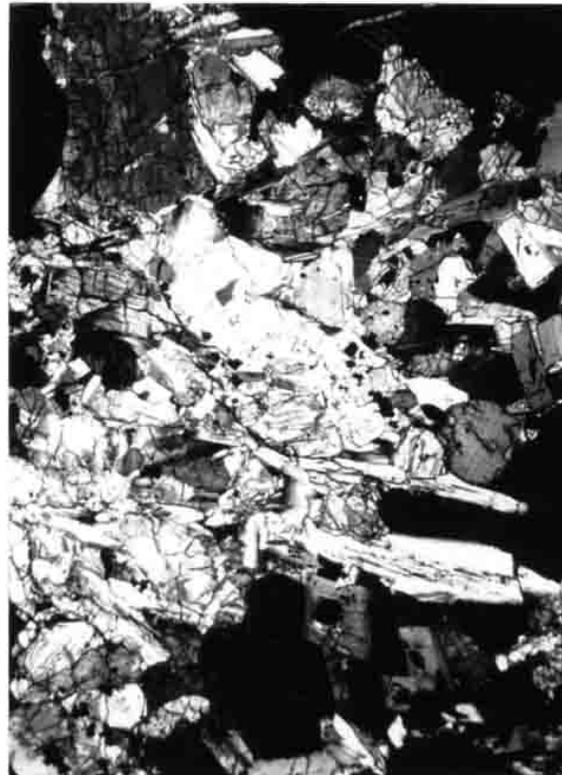


Fig. 2b

Figure 2. Photomicrographs of 15671,6. Widths about 3 mm. a) transmitted light; b) crossed polarizers.

CHEMISTRY: A bulk analysis by Ma et al. (1978) shows that 15671 is a member of the Apollo 15 olivine-normative mare basalt suite (Table 1). The low rare earths and Ti, and high (though imprecisely measured) MgO suggest that it is a primitive or cumulate member (Figure 3).

PROCESSING AND SUBDIVISIONS: Chipping produced several chips, three of which were labeled ,1 and another ,2. ,2 was mainly used to make thin sections ,3 and ,6. In 1976, ,1 was divided and two chips allocated for chemistry and a further thin section ,11. ,0 is now 4.90 g.

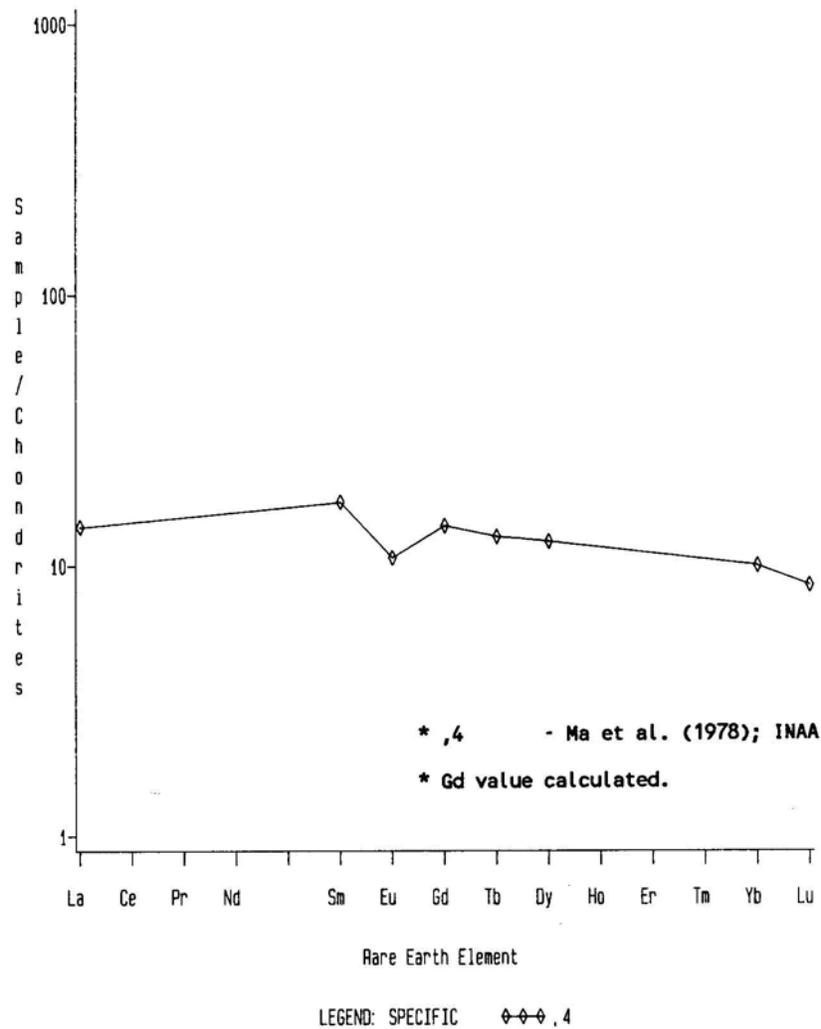


Figure 3. Rare earths in 15671.

TABLE 15671-1. Bulk rock chemical analysis

		.4
wt %	SiO ₂	
	TiO ₂	2.0
	Al ₂ O ₃	8.7
	FeO	21.6
	MgO	12
	CaO	8.5
	Na ₂ O	0.251
	K ₂ O	0.038
	P ₂ O ₅	
	(ppm)	Sc
V		201
Cr		4480
Mn		2045
Co		49
Ni		35(a)
Rb		
Sr		
Y		
Zr		
Nb		
Hf		2.2
Ba		60(b)
Th		
U		
Pb		
La		4.6
Ce		
Pr		
Nd		
Sm		3.1
Eu		0.74
Gd		
Tb		0.6
Dy		3.9
Ho		
Er		
Tm		
Yb	2.0	
Lu	0.29	
Li		
Be		
B		
C		
N		
S		
F		
Cl		
Br		
Cu		
Zn		
(ppb)	I	
	At	
	Ga	
	Ge	
	As	
	Se	
	Mo	
	Tc	
	Ru	
	Rh	
	Pd	
	Ag	
	Cd	
	In	
	Sn	
	Sb	
	Te	
	Cs	
	Ta	390
	W	
	Re	
	Os	
	Ir	
	Pt	
	Au	
	Hg	
	Tl	
	Pb	

References and methods:

(1) Ma *et al.* (1978): INAA

Notes:

(a) + 20 ppm

(b) \pm 30 ppm