

15615 MEDIUM-GRAINED OLIVINE-NORMATIVE ST. 9A 1.70g  
MARE BASALT

**INTRODUCTION:** 15615 is a medium-grained olivine-bearing mare basalt which is very vesicular (Fig. 1). A few olivines form phenocrysts. It is tough with the porphyritic olivines macroscopically visible. 15615 was collected as part of the rake sample at Station 9A.

**PETROLOGY:** 15615 is a vesicular, olivine-bearing mare basalt (Fig. 2). It has a generally gabbroic texture, but some olivines form phenocrysts. The plagioclases are stubby to lathy. The dominant phase, pyroxene, is almost invariably smaller than 1 mm; larger areas contain small olivine inclusions. Dowty et al. (1973a,b) reported a mode of 59% pyroxene, 22% plagioclase, 13% olivine, 4% opaques, 0.5% silica (actually cristobalite), and 1.5% miscellaneous. They noted that the later growth stages were dominated by variolitic-fasciculate pyroxene and plagioclase. Microprobe analyses of pyroxene, olivine, plagioclase, Si-K glass, and Fe-metal were tabulated in Dowty et al. (1973c), and spinel group and ilmenite analyses were tabulated in Nehru et al. (1973). Nehru et al. (1974) included 15615 in their general discussion but gave no specific data or discussion. The metal grains contain 1.4 to 2.1% Co and 6.2 to 8.8% Ni generally, but some grains have 2.5 to 2.7% Co and 14 to 18% Ni. Ilmenite contains 0.08 to 2.2% MgO. The mineral compositions (Fig. 3) are typical for Apollo 15 olivine-normative mare basalts.

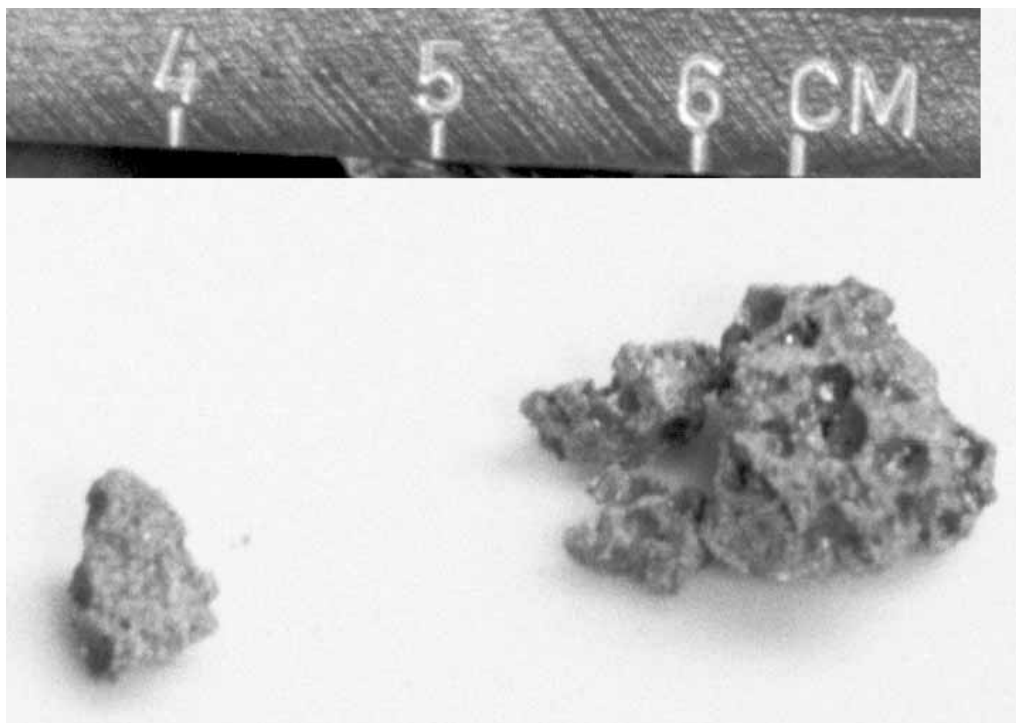
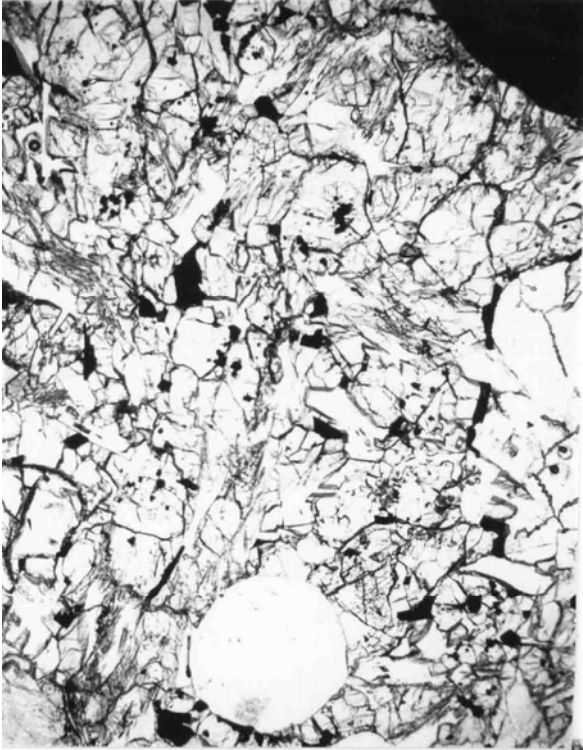


Figure 1. Post-chip view of 15615. S-71-56171



**Fig. 2a**



**Fig. 2b**

Figure 2. Photomicrographs of 15615,2.  
Widths about 3 mm. a) transmitted light; b) crossed polarizers.

**CHEMISTRY:** The only bulk analysis is the microprobe defocussed-beam analysis of Dowty et al. (1973a,b) (Table 1). The analysis shows an average or MgO-enriched olivine-normative mare basalt.

**PROCESSING AND SUBDIVISIONS:** A single chip was removed (Fig. 1), and was partly used to make thin sections ,2 and ,3. ,0 is now 1.50 g.

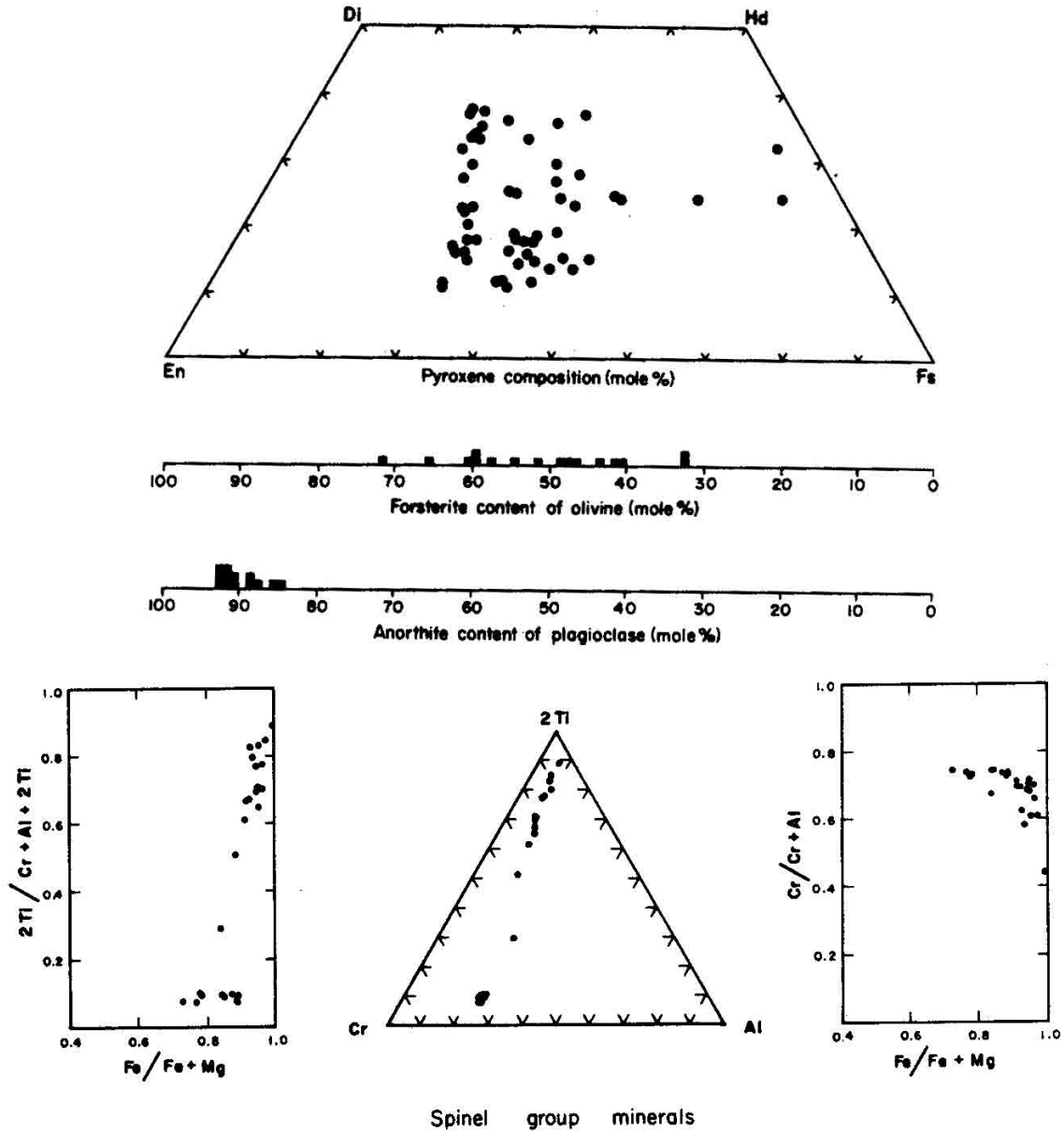


Figure 3. Chemistry of minerals in 15615 (Dowty et al., 1973b).

TABLE 15615-1. Defocussed beam bulk analysis  
(Dowty et al., 1973a,b)

Wt %	SiO <sub>2</sub>	43.8
	TiO <sub>2</sub>	2.37
	Al <sub>2</sub> O <sub>3</sub>	9.2
	FeO	23.4
	MgO	11.3
	CaO	9.0
	Na <sub>2</sub> O	0.32
	K <sub>2</sub> O	0.03
	P <sub>2</sub> O <sub>5</sub>	0.05
ppm	Cr	3425
	Mn	2015