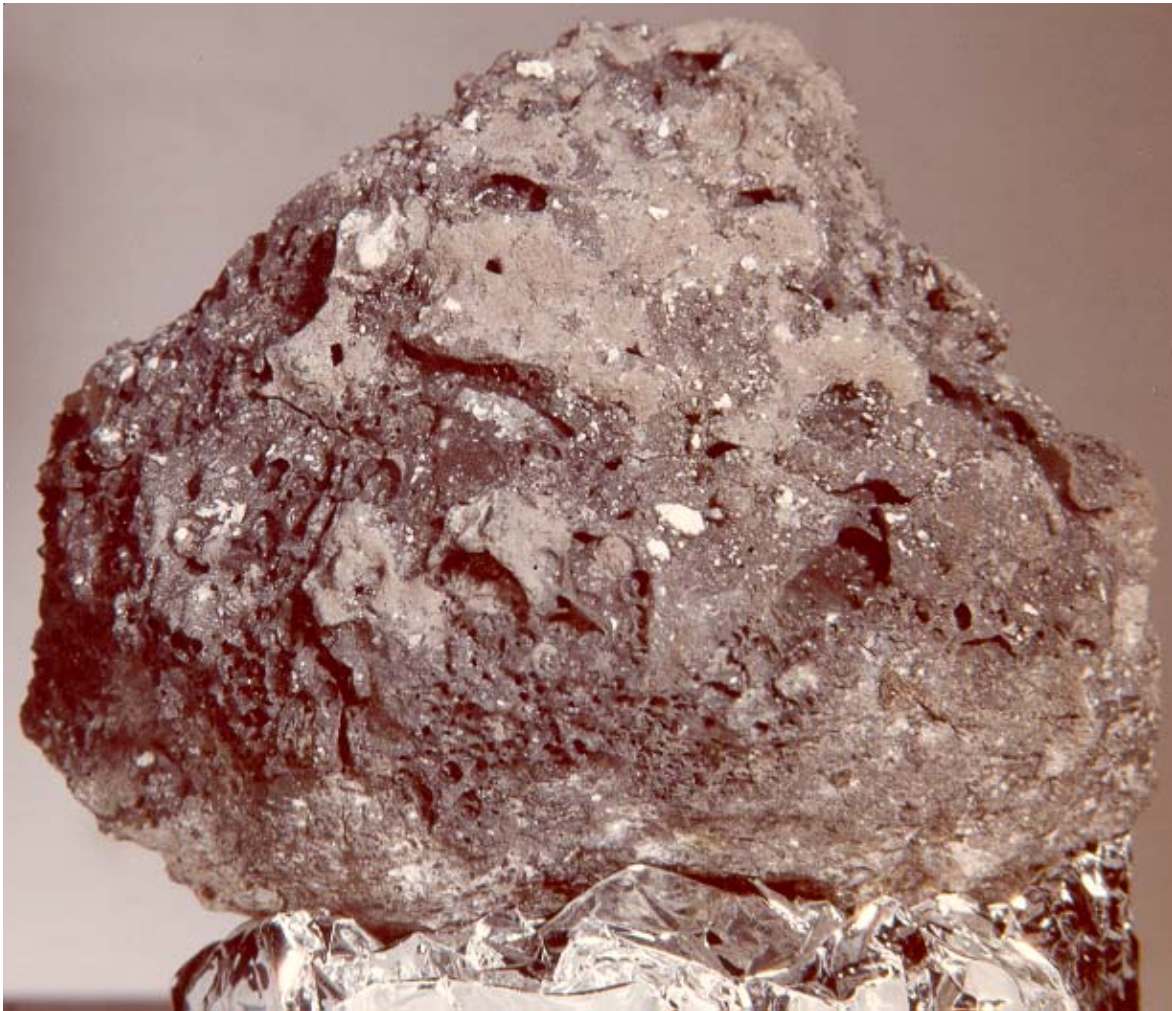


60275  
Regolith Breccia  
255 grams



*Figure 1: Photo of 602275. NASA S72-43230.*

**Introduction**

Lunar sample 60275 is a glass coated regolith breccia (figure 1). One side has had the glass coating chipped off by micrometeorite bombardment. (figure 2).

**Petrography**

Fruland (1983) identified 60275 a glass matrix soil breccia, and, according to Simon et al. (1988), 60275 is a “young” regolith breccia. However, it has a low maturity index ( $Is/FeO = 4$ , McKay et al. 1986). It is clast rich, with numerous white clasts set in dark matrix.

**Mineralogical Mode for 60275**

(from Simon et al. 1988)

	20-90 micron	90-1000 micron
Matrix < 20 micron	51.2 %	
Mare basalt	0	0.2
KREEP basalt	0	0.6
Feldspathic basalt	0	0
Plutonic rock frag.	0.2	3
Granulite	0	0
Poik. rocks	0.7	7.5
Impact melts	1	6.2
Regolith brec.	0	0
Agglutinate	0	2.6
Plagioclase	6.3	8.5
Olivine	0.8	0.2
Pyroxene	1.7	0.4
Opaques	0	0.2
Glass	2.8	4.6



Figure 2: 60275 showing numerous micrometeorite pits. NASA S72-43222.

### **Chemistry**

Christian et al. (1976), McKay et al. (1986), Simon et al. (1988) and Clark and Keith (1973) all analyzed portions of 60275 (table 1). 60275 is aluminous with abundant feldspar. It has a composition similar to Apollo 16 soil (figure 4). Meteoritic siderophiles are high.

### **Cosmogenic isotopes and exposure ages**

Clark and Keith (1973) determined the cosmic-ray-induced activity of  $^{26}\text{Al} = 129$  dpm/kg.,  $^{22}\text{Na} = 48$  dpm/kg. and  $^{54}\text{Mn} = 6$  dpm/kg.

McKay et al. (1986) and Bernatowitz et al. (1978) determined the rare gas content and isotopic ratios. There is excess  $^{129}\text{Xe}$  as well as unsupported fission Xe.

### **Processing**

A slab was cut from 60275 (figure 6). There are 19 thin sections.



Figure 3: Sawn surface of 60275 showing abundant white clasts in dark matrix. NASA S75-20277.



**Table 1. Chemical composition of 60275.**

reference weight	McKay 86	Simon 88	Clark 73	Christian76	
SiO <sub>2</sub> %				44.87	(b)
TiO <sub>2</sub>	0.68	(a) 0.49	(a)	0.62	(b)
Al <sub>2</sub> O <sub>3</sub>	25.3	(a) 28.4	(a)	25.42	(b)
FeO	5.17	(a) 5.4	(a)	5.78	(b)
MnO	0.063	(a) 0.065	(a)	0.06	(b)
MgO	6.7	(a) 7.1	(a)	7.64	(b)
CaO	15.3	(a) 15.2	(a)	14.57	(b)
Na <sub>2</sub> O	0.48	(a) 0.49	(a)	0.46	(b)
K <sub>2</sub> O		0.123	(a) 0.14	(c) 0.22	(b)
P <sub>2</sub> O <sub>5</sub>				0.26	(b)
S %					
sum					
Sc ppm	8.57	(a) 8.2	(a)	9.8	(b)
V	18	(a) 23	(a)	16	(b)
Cr	713	(a) 650	(a)	670	(b)
Co	30.2	(a) 31.4	(a)	18	(b)
Ni	447	(a) 440	(a)	250	(b)
Cu				5.4	(b)
Zn				10	(b)
Ga				3.6	(b)
Ge ppb					
As					
Se					
Rb		6.2	(a)	3.2	(b)
Sr	193	(a) 50	(a)	150	(b)
Y				71	(b)
Zr	240	(a) 230	(a)	240	(b)
Nb					
Mo					
Ru					
Rh					
Pd ppb					
Ag ppb					
Cd ppb					
In ppb					
Sn ppb					
Sb ppb					
Te ppb					
Cs ppm	0.22	(a) 0.26	(a)		
Ba	197	(a) 185	(a)	220	(b)
La	19.7	(a) 17.5	(a)		
Ce	51	(a) 43.7	(a)		
Pr					
Nd	31	(a) 28.9	(a)		
Sm	9.08	(a) 7.68	(a)		
Eu	1.285	(a) 1.28	(a)		
Gd		9.2	(a)		
Tb	1.66	(a) 1.54	(a)		
Dy		11	(a)		
Ho		2.2	(a)		
Er					
Tm					
Yb	6.1	(a) 5.4	(a)	6.8	(b)
Lu	0.86	(a) 0.74	(a)		
Hf	6.93	(a) 5.9	(a)		
Ta	0.77	(a) 0.66	(a)		
W ppb					
Re ppb					
Os ppb					
Ir ppb	9.6	(a) 8.6	(a)		
Pt ppb					
Au ppb	7.9	(a) 2.1	(a)		
Th ppm	3.2	(a) 2.4	(a) 2.99	(c)	
U ppm	0.95	(a) 0.83	(a) 0.88	(c)	

technique: (a) INAA, (b) microchemical, (c) radiation counting

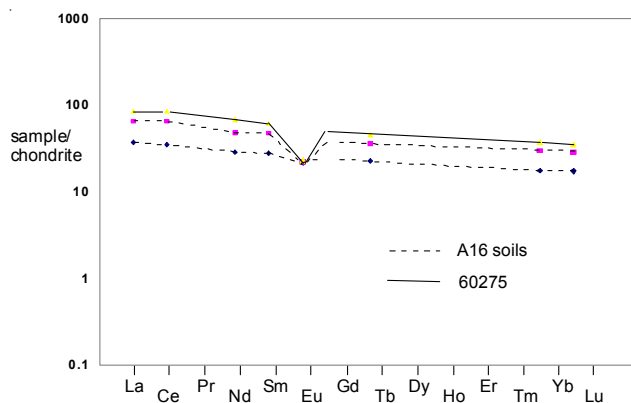
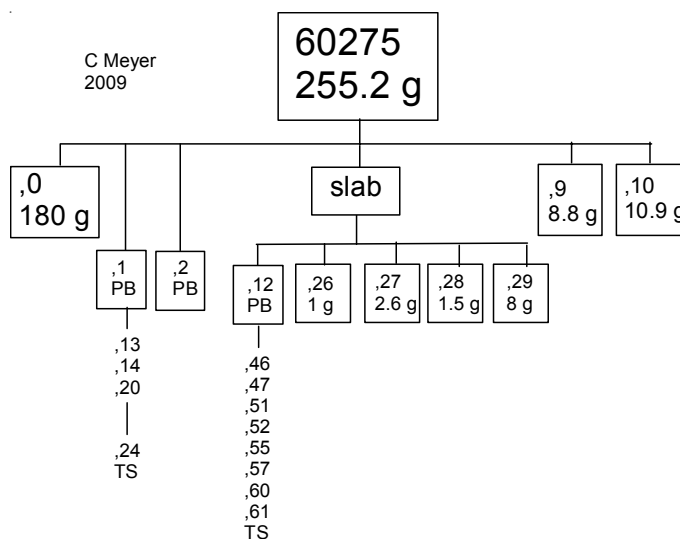


Figure 4: Noramlized rare-earth-element diagram for 60275 and Apollo 16 soil.



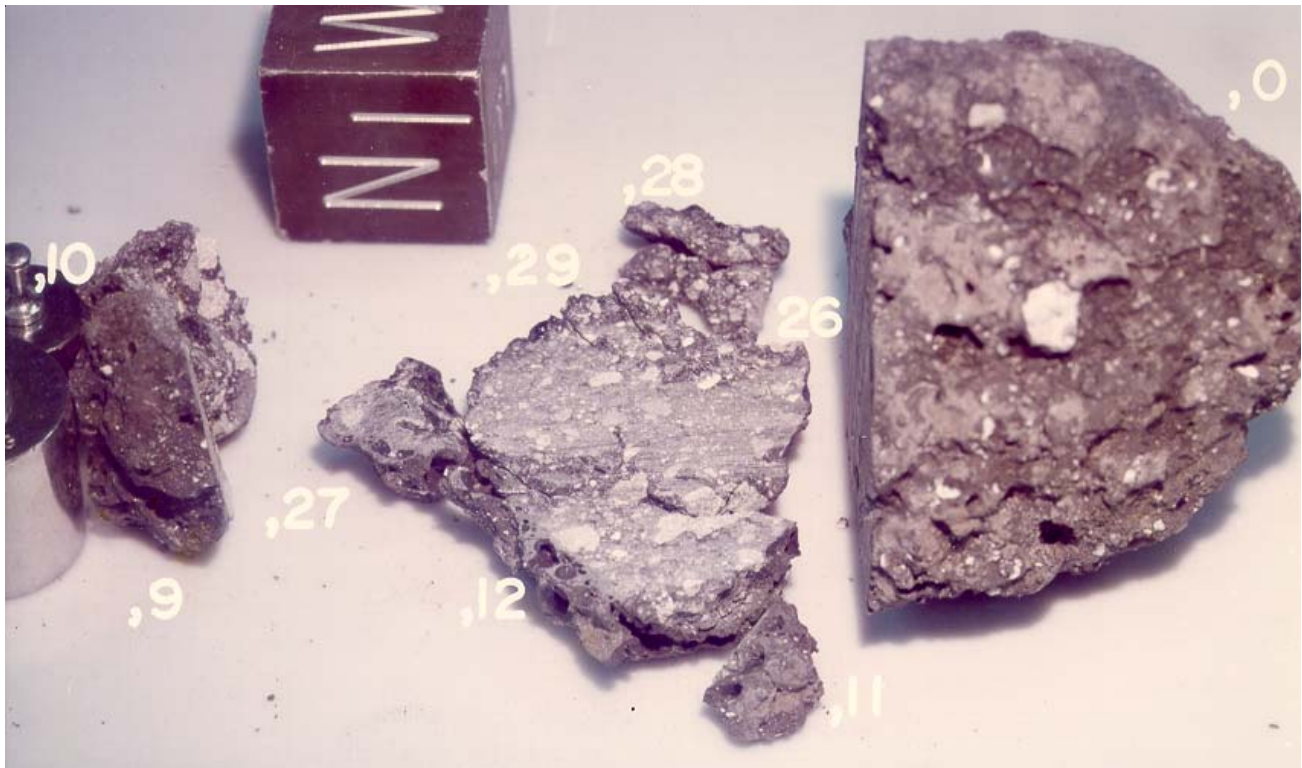


Figure 5: Slab cut from 60275. Note the “truly white clast” on the exterior surface of ,0. NASA S75-20527. Cube is 1 inch.



Figure 6: Close-up of slab. NASA S75-20277. Cube is 1 inch.

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