



Simulant Name: MGS-1 Mars Global Simulant

Simulant Type: General Purpose

Reference Material: Rocknest soil

Publication: Cannon et al. 2018

Bulk Density: 1.29 g/cm³

Default Particle Size: 0-1 mm



Mineralogy

Weight percent, as mixed.

Plagioclase	27.1	Magnetite	1.9
Basaltic glass	22.9	Ferrihydrite	1.7
Pyroxene	20.3	Siderite	1.4
Olivine	13.7	Hematite	1.1
Hydrated silica	5.0	Anhydrite	0.9
Epsomite	4.0		

Bulk Chemistry

Weight percent, as measured by XRF.

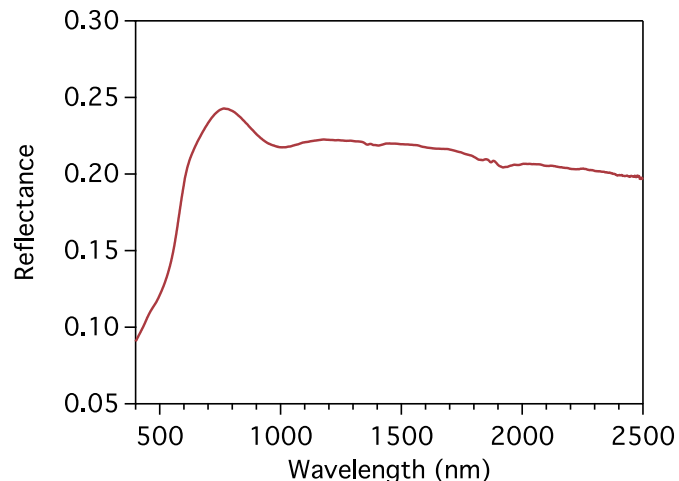
SiO ₂	50.8	CaO	3.7
TiO ₂	0.3	Na ₂ O	3.4
Al ₂ O ₃	8.9	K ₂ O	0.3
Cr ₂ O ₃	0.1	P ₂ O ₅	0.4
FeO _T	13.3	SO ₃	2.1
MgO	16.7	Total	99.9

Safety Information

MGS-1 contains no known carcinogens or toxic chemicals. Primary hazards are dust inhalation and skin irritation: always wear a mask and gloves when handling simulants.

Reflectance Spectrum

As measured on an ASD Fieldspec at 30° incidence and 0° emergence angles.



Volatile Release Pattern

As measured on a SAM-analog TG/EGA instrument at JSC. Total evolved water <500° C is 3.2 wt.%.

