

**Simulant Name:** MGS-1C Clay ISRU  
**Simulant Type:** Water extraction applications  
**Reference Material:** M-WIP Reference Case C  
**Publication:** Cannon et al. 2019. Icarus 317, 470-478

## Mineralogy

As mixed.

Component	Wt.%
Smectite	40.0
Anorthosite	16.4
Glass-rich basalt	13.7
Pyroxene	12.2
Olivine	8.2
Mg-sulfate	2.4
Ferrihydrite	2.1
Hydrated silica	1.8
Magnetite	1.1
Anhydrite	1.0
Fe-carbonate	0.8
Hematite	0.3

## Safety

See SDS for details. Primary hazard is dust inhalation; wear a respirator in dusty conditions.

## Bulk Chemistry

Relative abundances. Measured by XRF.

Oxide	Wt.%
SiO <sub>2</sub>	44.8
Al <sub>2</sub> O <sub>3</sub>	9.8
CaO	15.3
Fe <sub>2</sub> O <sub>3</sub>	12
K <sub>2</sub> O	3.4
MgO	9.9
MnO	0.1
P <sub>2</sub> O <sub>5</sub>	1.0
TiO <sub>2</sub>	0.4
SO <sub>3</sub>	2.3
Cl	0.5
Cr <sub>2</sub> O <sub>3</sub>	0.1
NiO	0.1
SrO	0.2
<b>Total</b>	<b>100.0</b>



## Reflectance Spectrum

Incidence angle 30°, emission angle 0°

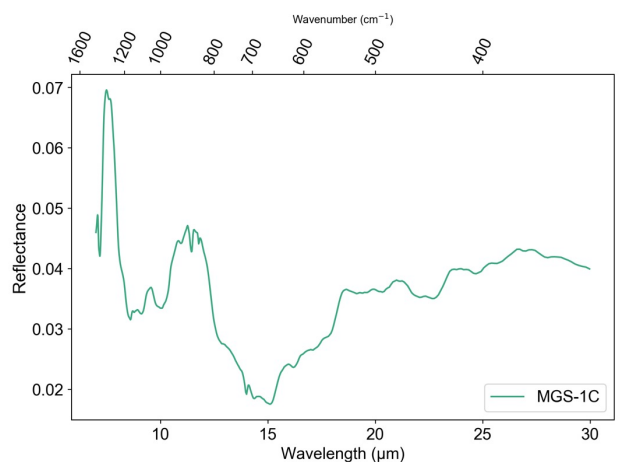
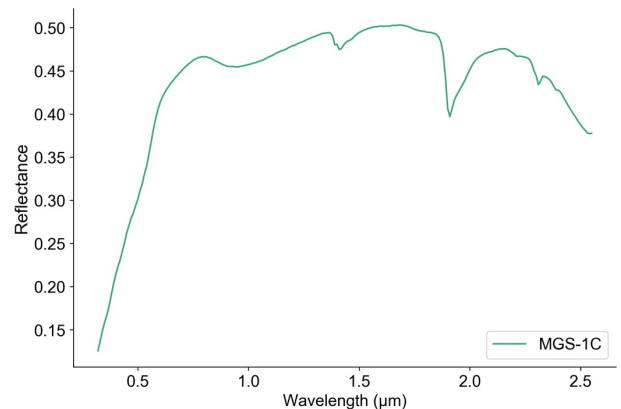


Photo credit Matthew Villegas. XRF data obtained at UCF using powdered samples. Reflectance spectra courtesy of Dr. Takahiro Hiroi, NASA RELAB, Brown University.