



Simulant Name: LMS-1D Mare Dust Simulant

Simulant Type: Extra-fine Lunar mare simulant for dust studies

Reference Material: Average lunar maria

Uncompressed Bulk Density: 0.70g/cm³

Mean Particle Size: 7 μm

Median Particle Size: 4 μm

Particle Size Range: <0.04 - 32 μm



Geotechnical Properties

Grain Density: 2.92 g/cm³

Void Ratio: 3.17

Porosity: 76.03%

¹Max Angle of Repose: 49.8°

²Cohesion: 0.172 kPa

²Angle of Internal Friction: 21.77°

Geotechnical Property Sources

¹[\(PDF\) Comparing the Effects of Mineralogy and Particle Size Distribution on the Angle of Repose for Lunar Regolith Simulants \(researchgate.net\)](#)

²[2038.PDF \(usra.edu\)](#)

Mineralogy

As mixed.

Component	Wt.%
Pyroxene	32.8
Glass-rich basalt	32.0
Anorthosite	19.8
Olivine	11.1
Ilmenite	4.3

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 ₂	46.9
TiO ₂	3.6
Al ₂ O ₃	12.4
FeO	8.6
MnO	0.2
MgO	16.8
CaO	7.0
Na ₂ O	1.7
K ₂ O	0.7
P ₂ O ₅	0.2
LOI*	0.9
Total**	99.0

* Loss on ignition

** Excluding volatiles and trace elements



Particle Size Distribution

From CILAS 1190 laser diffraction particle size analyzer

