

Simulant Name: Engineering Grade Lunar Highlands Simulant

Simulant Type: Engineering Grade

Reference Material: Average lunar highlands

Uncompressed Bulk Density: 1.30 g/cm³

Mean Particle Size: 90 μm

Median Particle Size: 60 μm

Particle Size Range: <0.04 μm – 1000 μm



Geotechnical Properties

Grain Density: 2.75 g/cm³

Void Ratio: 1.11

Porosity: 52.7%

¹Max Angle of Repose: 47.5°

²Cohesion: 0.311 kPa

²Angle of Internal Friction: 31.49°

Mineralogy

As mixed.

Component	Wt.%
Anorthosite	75.0
Glass-rich basalt	25.0

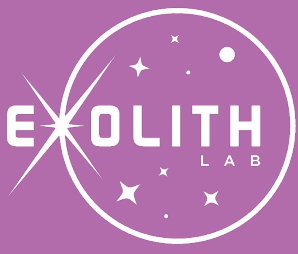
Safety

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

Geotechnical Property Sources

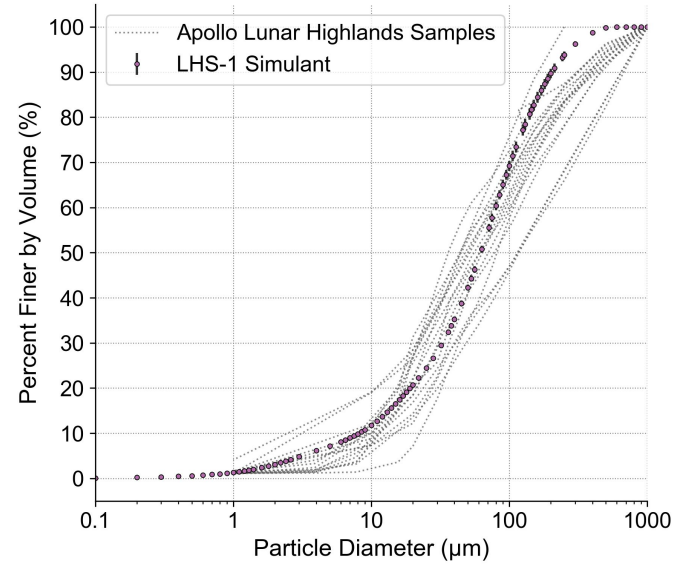
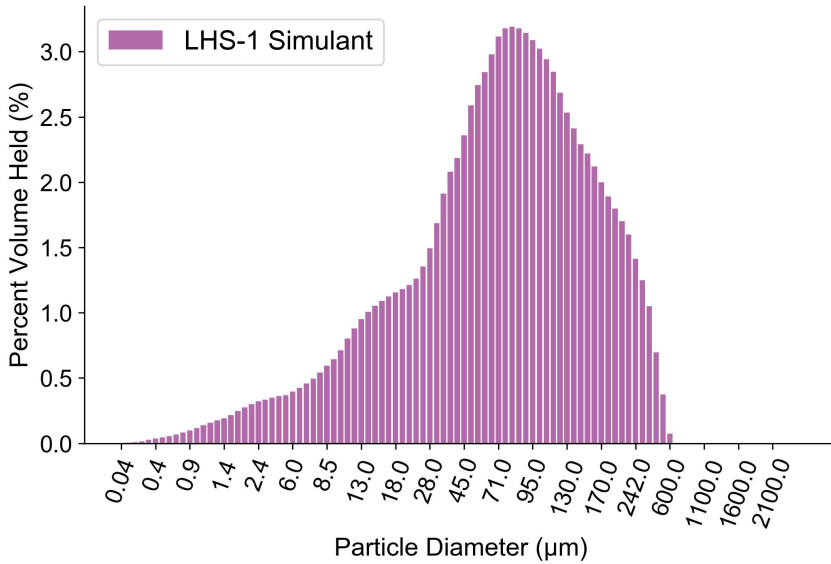
[¹\(PDF\) Comparing the Effects of Mineralogy and Particle Size Distribution on the Angle of Repose for Lunar Regolith Simulants \(researchgate.net\)](#)

[²\(PDF\) Quantitative Analysis of the Shear Strength of Lunar Regolith Simulant for Large-Scale Testing Applications \(researchgate.net\)](#)



Volumetric Particle Size Distribution

From CILAS 1190 laser diffraction particle size analyzer



Sieve Analysis

Following ASTM Standard E11 using RO-TAP RX-30 sieve shaker

Sieve Number	Diameter (µm)	Mass of Soil Retained on Each Sieve (g)	Percent Retained by Mass (%)	Cumulative Retained by Mass (%)	Percent Finer by Mass (%)
18	1000	0.0	0.0%	0.0%	100.0%
25	710	35.3	3.6%	3.6%	96.4%
35	500	35.3	3.6%	7.1%	92.9%
45	355	36.7	3.7%	10.8%	89.2%
70	212	73.3	7.4%	18.2%	81.8%
140	106	288.7	29.1%	47.3%	52.7%
200	75	176.0	17.7%	65.0%	35.0%
270	53	210.0	21.2%	86.2%	13.8%
Pan		137.3	13.8%	100.0%	0.0%

Sieve analysis skews particle size larger, as many of the fines cling to the larger pieces of regolith. This is measured by mass percent rather than volume

