

ESA03-A


Source: Cyprus

Supplier: Macromin Kentish Minerals (UK)

Initial mass: 160kg

Sample Description:

Beige slightly gravelly silty rounded to very-rounded, well graded sand. Silt, sand and fine gravel is bentonite clay.

MATERIAL AVAILABLE FOR LOAN

Polished Blocks: 5 X 25mm

Primary Granules: up to 100g

Milled powder (<1µm): 50g

European Space Agency Exploration Sample Analogue Collection [ESA²C]

KM Bentonite Granules

Chemical and Mineralogical Properties

Analysis	Results
Minerals Present	smectite-group mineral. Accessory (<10wt.%): quartz, calcite, mica, chlorite/kaolinite d-spacing: 13.2 Å (air) 17.2 Å (EG solvation)
Chemical bonding fingerprint	Main peaks (wavenumber cm ⁻¹): 3699.5, 3546, 1590, 1316, 1118, 932, 887, 820, 732, 655, 492
Bulk Trace Chemistry	Results outstanding
Additional Analyses	ICP-MS* ICP-AES *

Physical and Mechanical Properties

Analysis	Results
Particle Size Distribution	D ₁₀ : 1.23mm; D ₅₀ : 2.24mm; D ₉₀ : 3.86mm Mean fines passing 63µm sieve: 0.64%
Grain Morphology	Rounded to very rounded. Smooth. Ranges from low to high sphericity
Bulk Density	1130 kg/m ³ (loose) 1250 kg/m ³ (compacted)
Porosity	56.2% (loose) 51.4 % (compacted)
Shear Strength	Cohesion: 10.4 kPa Angle of internal friction: 27.9°
Additional Analyses	Micro-CT*

***NHM:** Analyses performed at/for the NHM, results available on request

****EXT:** Analyses performed by other researchers. Unverified results available on request