

XRC(M) ANALYTICAL SERVICES REQUEST

Project/Activity Number: 2203007

Client: Favored Client

Order Processing Date: 3/1/22

Sample Description(s): Whole Grain Sand

T/A Time Requested: XRC(M) - Next Reasonable Queue

Special Instructions: See Below

Physical Analysis

Analytical Tool	Service Description	Processing Notes
Sample Prep	As-Presented Material Splitting (Solids)	Split As-Presented Sample Material using Cone & Quarter techniques to obtain Sub-Sample(s) as outlined in the Special Instructions below.
Particle Characterization	Digital Microscopic Sizing and Physicochemical Examination of Sample Particulate	Process the appropriate sized aliquot of sample material and prepare for Microscopic evaluation as outlined in the Special Instructions below.
VFF Starting Weight Study	Abbreviated Vacuum Filtered Fractionation (VFF) of 3-5 Starting Weights	Process assigned sample aliquots through 30µm Wet Sieve and 10µm Fractionation to obtain sample residues in the size fractions >38µm and between 38µm/10µm as outlined in the Special Instructions below.
Digital Microscopy	Microscopically Examine Pore Availability Across Starting Weights	Prepare microscopic sample slides of 10µm filters to determine pore availability as outlined in the Special Instructions below.
VFF Processing	10µm Vacuum Filter Fractionation	Utilize internal GHS-XRC(M) protocols and fractionation techniques to obtain sample residues in the size fractions >38µm , between 38µm/10µm and 10µm/0.4µm.
XRD - Air	Crystalline Silica Quantitation to 5.0µg/filter (<10µm Vacuum Filter Fraction)	Determine total Crystalline Silica in <10µm Vacuum Filter Fraction residues using standard XRD protocols (NIOSH 7500 mod) with an LOD of 5.0µg/filter.

Special Instructions:

Note: Initial scope of work includes processing of “Whole Grain Sand” Sample Material. These instructions refer to the characterization of only one sample material unless instructed differently.

Perform As-Presented Sample Material splitting to obtain 200g - 250g of client material. Utilize standard cone, quarter and aliquot techniques with transfer into an appropriately sized plastic container with sealed lid.

In consultation with characterization team, prepare microscopic sample using 0.1% PBS buffer by first, mixing 5mg-10mg of sample material with 5ml-10ml of buffer in a centrifuge tube and second, after vortex mixing, place a drop of the suspension containing sample particulate onto a small section of 10µm filter situated on microscope slide and add cover slip. (Note: Use caution to avoid capture of large grain particulate in microscope sample.) Examine and record duplicate fields across 10x and 40x magnifications using Digital Microscopy methods and internal GHS-XRC(M) protocols.

In consultation with characterization team, conduct Starting Weight Analysis. Unless specified differently herein, wet-sieve fractionation and filtration are to be performed in accordance with GHS.001 Fractionation & Weight Processing 100421 (forms package Updated 051321). 0.1% PBS solution should be used as wetting agent for sieving and filtration. Regardless the amount of residue generated, filter fractionation liquid across a single 10µm filter and dispose of filtrate to drain (see protocol for additional detail). Note, the sample filter collected during this process is to be retained for Microscopic examination of pore availability.

Prepare Starting Weight sample filters for Microscopic examination and conduct analysis in accordance with GHS.002 Microscopic Examination of Pore Availability 101521. Document Pore Availability in comments section of VFF Forms.

After consultation with characterization team, conduct Vacuum Filter Fractionation on designated Starting Weight in accordance with GHS.001 Fractionation & Weight Processing 100421 (forms package Updated 051321). 0.1% PBS solution should be used as wetting agent for sieving and filtration. Process the sieved fractionation liquid equally across 1-2 filters, depending on sieve volume, for subsequent analysis (see protocol for additional detail). Document the <10µm residue weight on filter case(s) and forward one representative filter, with appropriate packaging and paperwork, to Coordinator for subsequent XRD-Air analysis.

Return sample materials to temporary GHS-XRC(M) archive storage upon completion.

For additional information, contact Project Lead.