

Laboratory Operating Procedures Manual
LABOP-237
Table of Lab Procedures

Revision Number: 13
 Written By: S. P. Doublet
 Revised By: Amanda DeSeamus

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 Date: August 29, 1997
 Date: May 23, 2013

* Revised entire procedure.

Test	Method Reference and/or Description
Real Density by Helium	ASTM D2638 using helium pycnometer
Kaiser Vibrated Bulk Density	Kaiser method - 8x14 mesh
ASTM Vibrated Bulk Density	ASTM D4292 method - 28x48 mesh
Alcan Vibrated Bulk Density	ASTM D7454 method - 20x35 mesh
Moisture	ASTM D4931 (100-150 grams as-received sample, heated for 2 hr.)
Ash by platinum crucible	ASTM D4422
Ash by TGA	ASTM D7582
Volatile Matter (VM) by quartz crucible	ASTM D6374
Volatile Matter (VM) by TGA	ASTM D7582
Sulfur by X-ray fluorescence	ASTM D6376 X-ray fluorescence
Silicon by X-ray fluorescence	ASTM D6376 X-ray fluorescence
Iron by X-ray fluorescence	ASTM D6376 X-ray fluorescence
Vanadium by X-ray fluorescence	ASTM D6376 X-ray fluorescence
Nickel by X-ray fluorescence	ASTM D6376 X-ray fluorescence
Calcium by X-ray fluorescence	ASTM D6376 X-ray fluorescence
Phosphorus by X-ray fluorescence	ASTM D6376 X-ray fluorescence
Sodium by X-ray	ASTM D6376 X-ray fluorescence

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Test	Method Reference and/or Description
fluorescence	
Fixed Carbon	ASTM D7582
Carbon Content	ASTM D5373
Hydrogen Content	ASTM D5373
Nitrogen Content	ASTM D5373
Specific Electrical Resistivity	C-12A GLC method
Hardgrove Grindability Index (HGI)	ASTM D5003
Particle Size	ASTM D5709 & ISO 2325
Air Reactivity	ISO 12982 (600°C @ 10°C/min)
CO ₂ Reactivity	ISO 12981
Crystallite Size (L _c)	ASTM D5187
Dedust Oil Content	ISO 6997 (75 gram -4 mesh sample, heated to 500°C for 30 min)
Dedust Oil Removal (Heat-Treat)	As-received sample, heated @ 850°C for 40 min in a covered crucible.
Shot Content	Visual count of shot particles in 500 gram sample, separated into +4, 4x8, and 8x14 mesh sizes.
Total Carbon	% Total Carbon = 100 - (% H ₂ O + % Ash + % Dedust + % Sulfur + % Hydrogen + % Nitrogen)

Note: Laboratory procedures are adapted from the referenced method.