

ASTM C618-23E01 - Chemical and Physical Analyses - Coal Ash/Pozzolans

CTL Ticket: 24231	Plant of Origin: Ogden Terminal	Sample Date Range: 10/27/2024
CTL Project: CT17328	Sample Type: Fly Ash	to: 11/27/2024
Report Date: 01/22/2025	Sample ID: Ogden	Date Received: 12/09/2024
	Supplier: Bridgesource	

Chemical Composition (%) (by Wyoming Analytical Laboratories, Inc.)		ASTM C618-23		
		<u>Class N</u>	<u>Class F</u>	<u>Class C</u>
Silicon Dioxide:	61.1			
Aluminum Oxide:	17.0			
Iron Oxide:	6.0			
Total Silica, Aluminum, Iron:	84.1	≥70.0%	≥50.0%	≥50.0
Sulfur Trioxide:	1.2	≤4.0%	≤5.0%	≤5.0%
Calcium Oxide:	6.0	N/A	≤18.0%	>18.0%
Magnesium Oxide:	2.08	N/A	N/A	N/A
Total Alkalis, as Na ₂ O:	3.82			
Sodium:	2.85	Product Class: Class F		
Potassium:	1.47	Conforms to Class: No		

Volatile Composition (Mass%)				
Moisture Content:	0.2	≤3.0%	≤3.0%	≤3.0%
Loss on Ignition:	0.5	≤10.0%	≤6.0%	≤6.0%


Physical Test Results				
Fineness, Retained on #325 Sieve (%):	24.0	≤34%	≤34%	≤34%
Fineness, Retained on #100 Sieve (%)*:			≤10%	≤10%
*(Harvested ash / bottom ash blends only)				
Strength Activity Index (%) *		* No 7-day limit if 28-day meets		
Percent of Control @ 7 Days:	80	≥75%	≥75%	≥75%
Percent of Control @ 28 Days:	91	≥75%	≥75%	≥75%
Water Requirement, % of Control:	93	≤115%	≤105%	≤105%
Soundness, Autoclave Expansion (%):	-0.03	≤0.8%	≤0.8%	≤0.8%
Density (g/cm ³):	2.36	N/A	N/A	N/A

Uniformity Established from 7 previous tests				
Average Fineness:	17.0	Difference 6.9(%)	±5(%)	±5(%)
Average Density:	2.40	Difference -1.68%	±5%	±5%


Supplementary Requirements				
Available Alkalis, as Na ₂ O	1.49%			
Sodium Oxide:	1.18%	Drying Shrinkage %: 0.00	≤0.03	≤0.03
Potassium Oxide:	0.47%			≤0.03

Comments: Does not meet ASTM. Uniformity out of control limits.

CTL | Thompson Materials Engineers, Inc.



Damon B. Thomas, P.E.



January 06, 2025

Dan Barrett
CTL Thompson, Materials Engineers, Inc.
22 Lipan St.
Denver, CO 80223

Request #: 44805 Date Received: 12/12/2024
WAL Sample #: T8074 Sample Matrix: fly ash
Customer Sample ID: Bridgesource Ogden 10-27-24--11-27-24 CT 17328.000 CTL 24231

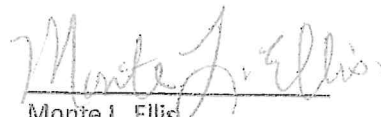
PO#:
Project#:

CHEMICAL ANALYSIS
WT%, DRY BASIS

Silicon Dioxide, SiO ₂	61.12
Aluminum Oxide, Al ₂ O ₃	17.01
Iron Oxide, Fe ₂ O ₃	5.95
Total (SiO ₂ + Al ₂ O ₃ + Fe ₂ O ₃)	84.08
Calcium Oxide, CaO	6.04
Magnesium Oxide, MgO	2.08
Sodium Oxide, Na ₂ O	2.85
Potassium Oxide, K ₂ O	1.47
Total Alkalies as Na ₂ O	3.82
Titanium Dioxide, TiO ₂	0.86
Manganese Dioxide, MnO ₂	0.05
Phosphorus Pentoxide, P ₂ O ₅	0.29
Strontium Oxide, SrO	0.19
Barium Oxide, BaO	0.45
Sulfur Trioxide, SO ₃	1.19
Loss on Ignition (750°C)	0.46
Total	100.00
Moisture (105°C), as Received	0.15

Analysis per ASTM C 311/XRF
Analyst NHG/ 12/18/24 3:33

Charles R. Wilson
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Monte L. Ellis
Laboratory Director



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