

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

CTL Ticket: 24219	Plant of Origin: Bridger	Sample Date Range: 10/14/2024
CTL Project: CT17328	Sample Type: Fly Ash	to: 11/15/2024
Report Date: 01/22/2025	Sample ID: BSL-011-24	Date Received: 11/21/2024
	Supplier: Bridgesource	

<u>Chemical Composition (%)</u> (by Wyoming Analytical Laboratories, Inc.)		ASTM C618-23		
		<u>Class N</u>	<u>Class F</u>	<u>Class C</u>
Silicon Dioxide:	62.9			
Aluminum Oxide:	15.6			
Iron Oxide:	5.1			
Total Silica, Aluminum, Iron:	83.6	≥70.0%	≥50.0%	≥50.0
Sulfur Trioxide:	1.3	≤4.0%	≤5.0%	≤5.0%
Calcium Oxide:	5.8	N/A	≤18.0%	>18.0%
Magnesium Oxide:	2.18	N/A	N/A	N/A
Total Alkalis, as Na <sub>2</sub> O:	4.60			
Sodium:	3.65	Product Class: Class F		
Potassium:	1.45	Conforms to Class: Yes		

<u>Volatile Composition (Mass%)</u>				
Moisture Content:	0.1	≤3.0%	≤3.0%	≤3.0%
Loss on Ignition:	0.4	≤10.0%	≤6.0%	≤6.0%


<u>Physical Test Results</u>				
Fineness, Retained on #325 Sieve (%):	24.6	≤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:	115	≥75%	≥75%	≥75%
Percent of Control @ 28 Days:	104	≥75%	≥75%	≥75%
Water Requirement, % of Control:	96	≤115%	≤105%	≤105%
Soundness, Autoclave Expansion (%):	-0.02	≤0.8%	≤0.8%	≤0.8%
Density (g/cm <sup>3</sup> ) :	2.37	N/A	N/A	N/A

<u>Uniformity</u> Established from 10 previous tests				
Average Fineness:	21.1	Difference 3.5(%)	±5(%)	±5(%)
Average Density:	2.35	Difference 0.86%	±5%	±5%


<u>Supplementary Requirements</u>				
Available Alkalis, as Na <sub>2</sub> O	1.5%			
Sodium Oxide:	1.26%	Drying Shrinkage %: 0.00	≤0.03	≤0.03
Potassium Oxide:	0.37%			

Comments: *Meets ASTM and AASHTO.*

CTL | Thompson Materials Engineers, Inc.



Damon B. Thomas, P.E.



December 02, 2024

Dan Barrett  
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Request #: 44761 Date Received: 11/25/2024  
WAL Sample #: T7956 Sample Matrix: fly ash  
Customer Sample ID: Bridgesource BSL-001-24 10-14-24--11-15-24 CT 17328.000 CTL 24219

PO#:  
Project#:

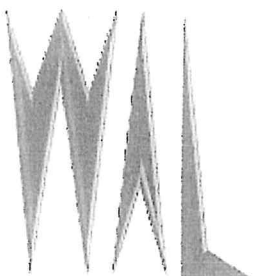
CHEMICAL ANALYSIS  
WT%, DRY BASIS

Silicon Dioxide, SiO <sub>2</sub>	62.94
Aluminum Oxide, Al <sub>2</sub> O <sub>3</sub>	15.56
Iron Oxide, Fe <sub>2</sub> O <sub>3</sub>	5.14
Total (SiO <sub>2</sub> + Al <sub>2</sub> O <sub>3</sub> + Fe <sub>2</sub> O <sub>3</sub> )	83.64
Calcium Oxide, CaO	5.76
Magnesium Oxide, MgO	2.18
Sodium Oxide, Na <sub>2</sub> O	3.65
Potassium Oxide, K <sub>2</sub> O	1.45
Total Alkalies as Na <sub>2</sub> O	4.60
Titanium Dioxide, TiO <sub>2</sub>	0.86
Manganese Dioxide, MnO <sub>2</sub>	0.05
Phosphorus Pentoxide, P <sub>2</sub> O <sub>5</sub>	0.10
Strontium Oxide, SrO	0.17
Barium Oxide, BaO	0.48
Sulfur Trioxide, SO <sub>3</sub>	1.28
Loss on Ignition (750°C)	0.39
Total	100.00
Moisture (105°C), as Received	0.07

Analysis per ASTM C 311/XRF  
Analyst CRW/ 11/27/2024

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