CTL | THOMPSON MATERIALS ENGINEERS, INC.

ASTM C618-25a - Chemical and Physical Analyses - Coal Ash/Pozzolans

CTL Ticket:	26099	Plant of Origin	Bridger	Sample Date Range:	04/15/2026
CTL Project:	CT17328	Sample Type:	Fly Ash	to:	05/15/2026
Report Date:	07/28/2026	Sample ID:	BSL-005-26	Date Received:	05/21/2026
		Supplier:	Bridgesource		

Chemical Composition (%)

(by Wyoming Analytical Laboratories, Inc.)

			ASTM C618-25a Class N	Class F	Class C
Silicon Dioxide:	*64.2*				
Aluminum Oxide:	*14.5*				
Iron Oxide:	*5.4*				
Total Silica, Aluminum, Iron:	*84.1*		≥70.0%	≥50.0%	≥50.0
Sulfur Trioxide:	*1.2*		≤4.0%	≤5.0%	≤5.0%
Calcium Oxide:	*5.9*		N/A	≤18.0%	>18.0%
Magnesium Oxide:	*2.11*		N/A	N/A	N/A
Total Alkalis, as Na_2O:	4.44				
Sodium:		3.60	Product Class:	Class F	
Potassium:		1.28	Conforms to Class:	Yes	

Volatile Composition (Mass%)

Moisture Content:	*0.1*	≤3.0%	≤3.0%	≤3.0%
Loss on Ignition:	*0.3*	≤10.0%	≤6.0%	≤6.0%

Physical Test Results

Fineness, Retained on #325 Sieve (%):	*21.2*	≤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:	*82*	≥75%	≥75%	≥75%
Percent of Control @ 28 Days:	*89*	≥75%	≥75%	≥75%
Water Requirement, % of Control:	*93*	≤115%	≤105%	≤105%
Soundness, Autoclave Expansion (%):	*0.00*	≤0.8%	≤0.8%	≤0.8%
Density (g/cm3) :	2.37	N/A	N/A	N/A

Uniformity

Established from 10 previous tests

Average Fineness:	22.6	Difference	1.5(%)	±5(%)	±5(%)	±5(%)
Average Density:	2.38	Difference	-0.42%	±5%	±5%	±5%

Supplementary Requirements

Available Alkalis, as Na_2O	2.42%				
Sodium Oxide:	2.06%	Drying Shrinkage %: 0.00	≤0.03	≤0.03	≤0.03
Potassium Oxide:	0.54%				

Comments: *Meets ASTM C618-25 and AASHTO M295-25.*

CTL | Thompson, Inc.

Zachoriah J. Ballard, MCE, P.E. 07/28/2026

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June 03, 2026

Dennis Jonsrud
CTL Thompson, Materials Engineers, Inc.
22 Lipan St.
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Request #: **46215**
WAL Sample #: **U4617**
Customer Sample ID: Bridgesource BSL 4/15-5/15/26 CT 17328.000 CTL 26099
PO#: CT 17328.000
Project#: CT 17328.000

Date Received: 5/26/2026
Sample Matrix: fly ash

CHEMICAL ANALYSIS
WT%, DRY BASIS

Silicon Dioxide, SiO_2	64.17
Aluminum Oxide, Al_2O_3	14.49
Iron Oxide, Fe_2O_3	5.40
Total (SiO_2 + Al_2O_3 + Fe_2O_3)	84.06
Calcium Oxide, CaO	5.85
Magnesium Oxide, MgO	2.11
Sodium Oxide, Na_2O	3.60
Potassium Oxide, K_2O	1.28
Total Alkalies as Na_2O	4.44
Titanium Dioxide, TiO_2	0.84
Manganese Dioxide, MnO_2	0.05
Phosphorus Pentoxide, P_2O_5	0.09
Strontium Oxide, SrO	0.18
Barium Oxide, BaO	0.49
Sulfur Trioxide, SO_3	1.20
Loss on Ignition (750°C)	0.25
Total	100.00
Moisture (105°C), as Received	0.05

Analysis per ASTM C 311/XRF
Analyst NHG/ 6/3/2026 14:09

Charles R. Wilson
Mineral Manager

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Laboratory Director

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