



F20230516-Silo #8-CIP

CERTIFICATE NUMBER

May 16, 2023

DATE

# Laboratory Test Certification

Class F Coal Ash

Source: Qinhuangdao, China

Chemical Analysis: (QUAL-XRF) - %

ASTM C 618-23 Limits\*  
Class F

Silicon Oxide (SiO <sub>2</sub> )	42.78	
Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> )	45.21	
Iron Oxide (Fe <sub>2</sub> O <sub>3</sub> )	2.85	
Sum (SiO <sub>2</sub> +Al <sub>2</sub> O <sub>3</sub> +Fe <sub>2</sub> O <sub>3</sub> )	90.84	50 Min.
Calcium Oxide (CaO)	3.93	18.0 Max
Magnesium Oxide (MgO)	0.58	
Sulfur Trioxide (SO <sub>3</sub> )	0.71	5.0 Max.
Sodium Oxide (Na <sub>2</sub> O)	0.49	
Potassium Oxide (K <sub>2</sub> O)	0.95	
NaEq (Na <sub>2</sub> O + 0.658 K <sub>2</sub> O)	1.13	
Moisture Content	0.04	3.0 Max.
Loss on Ignition (LOI)	1.90	6.0 Max.

Physical Analysis:

Specific Gravity	2.22	CTL#3923002
Variation, % from Average	0.45	5% Max
Fineness - Retained on No. 325, %	10.6	34% Max
Variation, Points from Average	1.4	5 Max
Fineness-Retained No. 150, %*	1.2	10 Max
Water Requirement, % of Control	105	105% Max
Strength Activity Index :		
% of Control at 7 Days	85 %	75% Min.
% of Control at 28 Days	86 %	75% Min.

We certify that the above described composite sample of Coal Ash\*, complies with the standard chemical and physical requirements of ASTM C618-23\*, Class F.

Cement Division

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