



**Cement**

**FLY ASH TEST REPORT**

Analysis by: Lafarge Seattle Concrete Lab  
Sample from : Centralia Power Plant  
Average Analysis: November 2023  
Test Report Number 12-23 Class F

**Chemical Analysis**

|   | <b>Results</b> | <b>Limits</b>  |
|---|----------------|----------------|
| Silicon Dioxide (SiO <sub>2</sub> )   | <b>47.8 %</b>  |                |
| Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> )  | <b>17.9 %</b>  |                |
| Iron Oxide (Fe <sub>2</sub> O <sub>3</sub> )  | <b>5.8 %</b>   |                |
| Total (SiO <sub>2</sub> ) + (Al <sub>2</sub> O <sub>3</sub> ) + (Fe <sub>2</sub> O <sub>3</sub> ) | <b>72 %</b>    | 50% Min - ASTM |
| Sulphur Trioxide (SO <sub>3</sub> )   | <b>1.1 %</b>   | 5% Max - ASTM  |
| Calcium Oxide (CaO)   | <b>15.9 %</b>  | 18% Max - ASTM |
| Magnesium Oxide   | <b>4.0 %</b>   |                |
| Moisture Content  | <b>0.20 %</b>  | 3% Max - ASTM  |
| Loss on Ignition  | <b>0.76 %</b>  | 5% Max         |
| Available Alkali as Equiv. Na <sub>2</sub> O ( <i>previous month's result</i> )                   | <b>0.49 %</b>  | 1.5% Max       |

**Physical Analysis**

|  |                              |                |
|--|------------------------------|----------------|
| Fineness Retained on 45 um (No. 325 Sieve)                 | <b>12.6 %</b>                | 34% Max - ASTM |
| Strength Activity Index with Portland Cement               |                              |                |
| % of Control at 7 Days                                     | <b>101 %</b>                 | 75% Min - ASTM |
| % of Control at 28 Days ( <i>previous month's result</i> ) | <b>105 %</b>                 | 75% Min - ASTM |
| Water Requirement, Percent of Control                      | <b>91 %</b>                  | 105% Max- ASTM |
| Density  | <b>2.69 Mg/m<sup>3</sup></b> |                |

**Uniformity Requirements**

|   |               |               |
|---|---------------|---------------|
| Density, Variation from Average             | <b>0.30 %</b> | 5% Max - ASTM |
| Fineness 45um Sieve, Variation from Average | <b>3.30 %</b> | 5% Max - ASTM |

We hereby certify that the composite fly ash sample above meets the chemical and physical requirements of ASTM C618 and AASHTO M295 for class F fly ash.

Certified : \_\_\_\_\_

Rob Shogren  
Technical Director

**WESTERN REGION**

5400 West Marginal Way SW, Seattle, Washington 98106-1517  
Office: 206.923.0098 or 800.477.0100 Fax: 206.923.0388