

Chemical and Physical Analysis of Fly Ash

Developed For: *Headwaters Resources*
 16817 - 155th PI SE
 Renton, WA 98058

Ticket: 9177 Job: 14708 Report Date: 08/27/2009	Plant of Origin: <i>Centralia US</i> Sample ID: <i>Ce-023-09</i> Docket: <i>3031194 - 3031284</i>	Sample Date Range: <i>07/12/2009</i> to: <i>07/15/2009</i> Date Received: <i>07/22/2009</i>
---	---	---

<u>Chemical Composition (%)</u> <small>(by Wyoming Analytical Laboratories, Inc.)</small>	CSA A3000-08 Specifications	
	<u>Class F</u>	<u>Class CI</u>
Total Silica, Aluminum, Iron: 71.5		
Silicon Dioxide: 48.5		
Aluminum Oxide: 17.0		
Iron Oxide: 6.0		
Sulfur Trioxide: 0.8	5.0 Max	5.0 Max
Calcium Oxide: 15.8	8 Max	8 - 20
Moisture Content: 0.0	3.0 Max	3.0 Max
Loss on Ignition: 0.2	8.0 Max	6.0 Max

<u>Physical Test Results</u>	CSA A3000-08 Specifications	
	<u>Class F</u>	<u>Class CI</u>
Fineness, Retained on #325 Sieve (%): 19.4	34 Max	34 Max
Optional Strength Activity Index (%)		
ASTM C-311 (28 Days @ 23 C): 104.6	75 Min	75 Min
Water Requirement, % of Control: 93.0		
Soundness, Autoclave Expansion (%): 0.02	0.8 Max	0.8 Max
Density Mg/m ³ : 2.59		

Comments:

CTL | Thompson Materials Engineers, Inc.

Orville R. Werner II

Orville R. Werner II, P.E.

