

MATERIALS TECHNICAL SERVICES
BORAL RESOURCES (NSW) PTY LTD
ABN 51 000 756 507
Unit 4, 3-5 Gibbon Road
Baulkham Hills NSW 2153 Australia
PO Box 400, Winston Hills NSW 2153
Telephone 61 2 9624 9900
Facsimile 61 2 9624 9999

TEST REPORT

CLIENT: XYPEX AUSTRALIA
Address: 9/177 Arthur Street Homebush West NSW 2140

FILE NO: 256/11

SOURCE OF SAMPLE: Unknown

LAB SAMPLE NO: 111778

REQUEST NO.: 41505

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for January 2011

IDENTIFICATION OF CEMENT USED: BCSC GP Cement – ID # 64514

TEST METHOD: ASTM C-1240-04 Use of Silica Fume as a Mineral Admixture in Hydraulic-Cement Concrete, Mortar & Grout

Accelerated Pozzolanic Strength Activity Index With Portland Cement - ASTM C1240-04

Date Cast: 18-01-11

Date Crushed: 25-01-11 @ 7 Days

Results:	Accelerated Pozzolanic Strength Activity Index:	105% @ 7 Days
	Control Mix Strength:	39.8 MPa
	Test Mix Strength:	41.6 MPa

Note:
Test mix used 242 mls of water and 6.5 grams of Water Reducer (Rheobuild 1000 from BASF) to obtain a flow of 106%.

Daniel Rowley, Mat. File, File

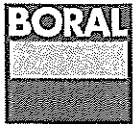
Muans Abdulnebe



Approved Signatory _____
Date 01-02-11 Serial No. 93301

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SAMPLE IDENTIFICATION: Ecotec Silica Fume -Monthly Sample for January 2011

TEST METHOD: AS3583: Methods of test for supplementary cementitious materials for use with Portland Cement

PROPERTY	DATE TESTED	RESULT	TEST METHOD	AS3582 SPEC.
Moisture content	18-01-11	1.0 %	AS3583.2	Max. 3.0%
Loss on ignition	18-01-11	2.8 %	AS3583.3	Max. 6.0%
Relative Density	18-01-11	2.27	AS3583.5	

- Sample submitted by the client and tested as received

Daniel Rowley, Mat. File, File

Muans Abduinebel



Approved Signatory _____

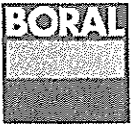
Date 21-02-11

Serial No. _____

93302

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LAB. SAMPLE NO: 111778

SOURCE OF SAMPLE: Unknown

SAMPLE IDENTIFICATION: Ecotec Silica Fume -Monthly Sample for January 2011

Bulk Density - AS3582.3.6.5

Result: 597 Kg/m³

BORAL

A handwritten signature in black ink, appearing to read "Oscar Perez", is written over a horizontal line.

Oscar Perez
25-01-2011

Daniel Rowley, Mat. File, File

Sample ID: 111778
Setup ID: None
Converted from:: L:/GEMINI/DATA/L192/3962/111778.MGD
File: L:\...\3962\111778.DMT

Started: 3/02/2011 1:00:55PM	Analysis Adsorptive: N2
Completed: 3/02/2011 2:23:50PM	Analysis Bath Temp.: 77.150 K
Report Time: 4/02/2011 10:03:24AM	Thermal Correction: No
Sample Mass: 0.1920 g	Warm Free Space: -0.5157 cm ³ Measured
Equilibration Interval: 10 s	Low Pressure Dose: None
Sample Density: 1.000 g/cm ³	Automatic Degas: No

Options Report

Analysis Conditions

Preparation

Fast evacuation: No
Evacuation rate: 5.0 mmHg/s
Unrestricted evacuation from: 5.0 mmHg
Evacuation time: 10.00 h
Leak test: No

Free Space

Free-space type: Measured
Lower dewar for evacuation: Yes
Evacuation time: 0.10 h
Outgas test: No

p° and Temperature

p° and T type: Enter p° below. Enter the Analysis Bath Temperature below.
p°: 770.470 mmHg
Temperature: 77.150 K

Dosing

Use first pressure fixed dose: No
Use maximum volume increment: No
Target tolerance: 5.0% or 5.000 mmHg
Low pressure dosing: No

Equilibration

Equilibration time (p/p° = 1.000000000): 10 s
Minimum equilibration delay at p/p° >= 0.995: 600 s

Sample Backfill

Backfill at start of analysis: Yes
Backfill at end of analysis: Yes
Backfill gas: N2

Adsorptive Properties

Adsorptive: Nitrogen
Maximum manifold pressure: 1050.00 mmHg
Non-ideality factor: 0.0000658
Density conversion factor: 0.0015468
Molecular cross-sectional area: 0.162 nm²
Inside diameter of sample tube: 9.53 mm



Sample ID: 111778

Setup ID: None

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Equilibration Interval: 10 s

Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2

Analysis Bath Temp.: 77.150 K

Thermal Correction: No

Warm Free Space: -0.5157 cm³ Measured

Low Pressure Dose: None

Automatic Degas: No

Langmuir Surface Area Report

Langmuir Surface Area: 30.6652 ± 0.5756 m²/g

Slope: 0.141959 ± 0.002665 g/cm³ STP

Y-Intercept: 3.178523 ± 0.276728 mmHg·g/cm³ STP

b: 0.044662 1/mmHg

Qm: 7.0443 cm³/g STP

Correlation Coefficient: 0.998769

Molecular Cross-Sectional Area: 0.1620 nm²

Pressure (mmHg)	Quantity Adsorbed (cm ³ /g STP)	p/Q (mmHg·g/cm ³ STP)
38.785000	4.7122	8.231
53.305000	4.9987	10.664
67.739998	5.2363	12.937
82.379997	5.4375	15.150
96.820000	5.6209	17.225
111.425003	5.7964	19.223
125.824997	5.9512	21.143
140.554993	6.1102	23.003
154.815002	6.2503	24.769

Sample ID: 111778
 Setup ID: None
 Converted from:: L:/GEMINI/DATA/L192/3962/111778.MGD
 File: L:\...\3962\111778.DMT

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Completed: 3/02/2011 2:23:50PM	Analysis Bath Temp.: 77.150 K
Report Time: 4/02/2011 10:03:23AM	Thermal Correction: No
Sample Mass: 0.1920 g	Warm Free Space: -0.5157 cm ³ Measured
Equilibration Interval: 10 s	Low Pressure Dose: None
Sample Density: 1.000 g/cm ³	Automatic Degas: No

BET Surface Area Report

BET Surface Area: 22.5198 ± 0.0696 m²/g
 Slope: 0.191762 ± 0.000592 g/cm³ STP
 Y-Intercept: 0.001543 ± 0.000080 g/cm³ STP
 C: 125.282373
 Qm: 5.1732 cm³/g STP
 Correlation Coefficient: 0.9999666
 Molecular Cross-Sectional Area: 0.1620 nm²

Relative Pressure (p/p ^o)	Quantity Adsorbed (cm ³ /g STP)	1/[Q(p ^o p - 1)]
0.050339405	4.7122	0.011249
0.069185046	4.9987	0.014869
0.087920361	5.2363	0.018409
0.106921750	5.4375	0.022018
0.125663560	5.6209	0.025570
0.144619527	5.7964	0.029168
0.163309411	5.9512	0.032798
0.182427607	6.1102	0.036518
0.200935803	6.2503	0.040232

Sample ID: 111778

Setup ID: None

Converted from:: L:/GEMINI/DATA/L192/3962/111778.MGD

File: L:\...\3962\111778.DMT

Started: 3/02/2011 1:00:55PM

Completed: 3/02/2011 2:23:50PM

Report Time: 4/02/2011 10:03:23AM

Sample Mass: 0.1920 g

Equilibration Interval: 10 s

Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2

Analysis Bath Temp.: 77.150 K

Thermal Correction: No

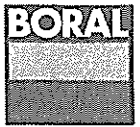
Warm Free Space: -0.5157 cm³ Measured

Low Pressure Dose: None

Automatic Degas: No

Isotherm Tabular Report

Relative Pressure (p/p ^o)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm ³ /g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
				770.469971
0.050339405	38.785000	4.7122	00:46	
0.069185046	53.305000	4.9987	00:51	
0.087920361	67.739998	5.2363	00:56	
0.106921750	82.379997	5.4375	01:00	
0.125663560	96.820000	5.6209	01:05	
0.144619527	111.425003	5.7964	01:09	
0.163309411	125.824997	5.9512	01:13	
0.182427607	140.554993	6.1102	01:18	
0.200935803	154.815002	6.2503	01:22	



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Test Report

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9/177 Arthur Street, Homebush west, NSW 2140.

FILE No.:256/11

PROJECT: Testing of Silica Fume Sample.

REQUEST No.: 41505

TEST PROCEDURE: Boral Chemical Method 2 – Determination of metal oxides by Lithium Meta Borate Fusion and analysed using ICP

Laboratory Sample No.: 111778
Date Sampled: Unknown
Date Received: 07/01/11
Sample Description: Ecotec Silica
Fume - Monthly
Jan'11.

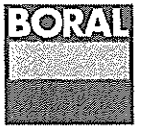
Field No.: 1

TEST RESULTS

Silicon as SiO₂ (%) 93.7

Sample submitted by the client.

Nall S
Nanthini. Selvadurai
Analytical Chemist
28th January 2011.
D.Rowley, G.Kao, File.



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FILE No.:256/11

PROJECT: Testing of Silica Fume Sample.

REQUEST No.: 41505

TEST PROCEDURE:

AS3583.12 – 1991 – Determination of Available Alkali

Laboratory Sample No.: 111778
Date Sampled: Unknown
Date Received: 07/01/11
Sample Description: Ecotec Silica Fume -
Monthly Jan'11.
Field No.: 1

TEST RESULTS

Sodium as Na₂O (%) 0.26
Potassium as K₂O (%) 0.20
Available Alkali (%) 0.4

Available Alkali (%) = Na₂O (%) + (0.658 x K₂O %)

Samples submitted by the Client.

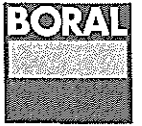
D.Rowley, G.Kao, File



Approved Signatory Nall.S Nanthini.Selvadurai
Date 18-02-11 Serial No. 93304

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FILE No.:256/11

PROJECT: Testing of Silica Fume Sample.

REQUEST No.: 41505

TEST PROCEDURE: AS3583.13 – Determination of Chloride Ion Content
AS3583.8 – Determination of Sulfuric Anhydride content

Laboratory Sample No.: 111778
Date Sampled: Unknown
Date Received: 07/01/11
Sample Description: Ecotec Silica Fume
Monthly Jan'11

Field No.: 1

TEST RESULTS

Chloride as Cl⁻ (%) 0.209
Sulphate as SO₃ (%) 0.5

Samples submitted by the Client.

D.Rowley, G.Kao, File.



Approved Signatory Nanthini. Selvadurai
Date 21-02-11 Serial No. 93303

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