Boral Construction Materials

Materials Technical Services
Unit 4, 3-5 Gibbon Road
Baulkham Hills NSW 2153
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T: +61 2 9624 9900
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www.boral.com.au

Test Report

CLIENT: XYPEX AUSTRALIA
9/177 Arthur Street, Homebush west, NSW 2140.

FILE No.:256/11

PROJECT: Testing of Silica Fume Sample.

REQUEST No.: 43022

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

Laboratory Sample No.:	115842
Date Sampled:	Unknown
Date Received:	06/05/11
Sample Description:	Ecotec Silica Fume - Monthly May'11.
Field No.:	1

TEST RESULTS

Silicon as SiO_2 (%)	86.5

Sample submitted by the client.

Nanthini Selvadurai
Analytical Chemist
8th June 2011
D. Rowley,M.Hanlon, File

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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: 115842

REQUEST NO.: 43022

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for May. 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: 12-05-11

Date Crushed: 19-05-11 @ 7 Days

Results:

Accelerated Pozzolanic Strength Activity Index:	106% @ 7 Days
Control Mix Strength:	39.5 MPa
Test Mix Strength:	41.7 MPa

Note:
Test mix used 242 mls of water and 5.5 grams of Water Reducer (Rheobuild 1000 from BASF) to obtain a flow of 109%.

Daniel Rowley, Mark Hanlon, Mat. File, File

Muans Abdulnebe

Approved Signatory _____

Date 15.06.11 *Serial No.* 96336

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NATA Accredited Laboratory Number: 547

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TEST REPORT

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

FILE NO: 256/11

REQUEST NO.: 43022

LAB. SAMPLE NO: 115842

SOURCE OF SAMPLE: Unknown

SAMPLE IDENTIFICATION: Ecotec Silica Fume –Monthly Sample for May 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	12-05-11	0.8%	AS3583.2	Max. 3.0%
Loss on ignition	12-05-11	2.5 %	AS3583.3	Max. 6.0%
Relative Density	12-05-11	2.31	AS3583.5	

Sample submitted by the client.

Daniel Rowley, Mark Hanlon, Mat. File, File

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ACCREDITED FOR TECHNICAL COMPETENCE

Approved Signatory _____

Muans Abdulnebe

Date 15-06-11 *Serial No.* 96335

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NATA Accredited Laboratory
Number: **547**

Australian Construction Materials

BORAL

MATERIALS TECHNICAL SERVICES
BORAL RESOURCES (NSW) PTY LTD
ABN 51 000 756 507
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Test Report

CLIENT: XYPEX AUSTRALIA
9/177 Arthur Street, Homebush west, NSW 2140.

FILE No.:256/11

PROJECT: Testing of Silica Fume Sample.

REQUEST No.: 43021

TEST PROCEDURE:
AS3583.12 – 1991 – Determination of Available Alkali

Laboratory Sample No.:	115842
Date Sampled:	Unknown
Date Received:	06/05/11
Sample Description:	Ecotec Silica Fume - Monthly May'11.
Field No.:	1

TEST RESULTS

Sodium as Na_2O (%)	0.18
Potassium as K_2O (%)	0.17
Available Alkali (%)	0.3

Available Alkali (%) = Na_2O (%) + (0.658 x K_2O %)

Samples submitted by the Client.

D. Rowley, M. Hanlon, File

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Approved Signatory Nal S Nanthini Selvadurai

Date 08-06-11 Serial No. 96338

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NATA Accredited Laboratory Number: **9968**

Australian Construction Materials

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Test Report

CLIENT: XYPEX AUSTRALIA
9/177 Arthur Street, Homebush west, NSW 2140.

FILE No.:256/11

PROJECT: Testing of Silica Fume Sample.

REQUEST No.: 43022

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

Laboratory Sample No.:	115842
Date Sampled:	Unknown
Date Received:	06/05/11
Sample Description:	Ecotec Silica Fume - Monthly May '11
Field No.:	1

TEST RESULTS

Chloride as Cl^- (%)	0.220
Sulphate as SO_3 (%)	0.6

Samples submitted by the Client.

D. Rowley, M. Hanlon, File

NATA ACCREDITED FOR TECHNICAL COMPETENCE

Approved Signatory N.S Nanthini Selvadurai

Date 08-06-11 Serial No. 96337

NATA Accredited Laboratory Number: 9968

Australian Construction Materials

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TEST REPORT

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

FILE NO: 256/11

REQUEST NO.: 43022

LAB. SAMPLE NO: 115842

SOURCE OF SAMPLE: Unknown

SAMPLE IDENTIFICATION: Ecotec Silica Fume –Monthly Sample for May.2011

Bulk Density - AS3582.3.6.5

Result: 617 Kg/m^3

Oscar Perez
15-05-2011

Daniel Rowley, Mark Hanlon, Mat. File, File

Particle & Surface Sciences Pty. Limited

PO Box 1926, Gosford, NSW, Australia 2250. Tel: (61) 02 43 237822 Fax: (61) 02 43 237629 Email: info@pss.aus.net

Sample ID: 115842
Setup ID: None
Converted from:: L:/GEMINI/DATA/L192/4062/1158Y2A.MGD
File: L:\...\4062\1158Y2A.DMT

Started:	30/05/2011 3:30:32PM	Analysis Adsorptive:	N2
Completed:	30/05/2011 4:52:36PM	Analysis Bath Temp.:	77.150 K
Report Time:	31/05/2011 3:17:18PM	Thermal Correction:	No
Sample Mass:	0.3345 g	Warm Free Space:	-0.7561 cm³ Measured
Equilibration Interval:	10 s	Low Pressure Dose:	None
Sample Density:	1.000 g/cm³	Automatic Degas:	No

Summary Report

Surface Area

Single point surface area at p/p° = 0.200608637: 20.5251 m²/g

BET Surface Area: 21.3093 m²/g

Langmuir Surface Area: 29.0598 m²/g

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Sample Mass: 0.3345 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: -0.7561 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

BET Surface Area Report

BET Surface Area: 21.3093 ± 0.0378 m²/g
Slope: 0.202454 ± 0.000359 g/cm³ STP
Y-Intercept: 0.001832 ± 0.000048 g/cm³ STP
C: 111.492373
Qm: 4.8951 cm³/g STP
Correlation Coefficient: 0.9999890
Molecular Cross-Sectional Area: 0.1620 nm²

Relative Pressure (p/p°)	Quantity Adsorbed (cm³/g STP)	1/[Q(p°/p - 1)]
0.050136308	4.4045	0.011984
0.069181512	4.6796	0.015882
0.087903373	4.9064	0.019643
0.106790083	5.1008	0.023439
0.125486582	5.2718	0.027219
0.144360610	5.4383	0.031024
0.163221964	5.6033	0.034812
0.182026232	5.7567	0.038656
0.200608637	5.8982	0.042547

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Completed: 30/05/2011 4:52:36PM
Report Time: 31/05/2011 3:17:18PM
Sample Mass: 0.3345 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: -0.7561 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Langmuir Surface Area Report

Langmuir Surface Area: 29.0598 ± 0.5982 m²/g
Slope: 0.149801 ± 0.003084 g/cm³ STP
Y-Intercept: 3.583633 ± 0.327330 mmHg·g/cm³ STP
b: 0.041802 1/mmHg
Qm: 6.6755 cm³/g STP
Correlation Coefficient: 0.998520
Molecular Cross-Sectional Area: 0.1620 nm²

Pressure (mmHg)	Quantity Adsorbed (cm³/g STP)	p/Q (mmHg·g/cm³ STP)
39.540001	4.4045	8.977
54.560001	4.6796	11.659
69.324997	4.9064	14.130
84.220001	5.1008	16.511
98.964996	5.2718	18.773
113.849998	5.4383	20.935
128.725006	5.6033	22.973
143.554993	5.7567	24.937
158.210007	5.8982	26.824