



**Boral Construction Materials**

**Materials Technical Services**

Unit 4, 3-5 Gibbon Road  
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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.: 42401

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


Laboratory Sample No.: 114130  
Date Sampled: Unknown  
Date Received: 18/03/11  
Sample Description: Ecotec Silica  
Fume - Monthly  
March'11.

Field No.: 1

**TEST RESULTS**

Silicon as SiO<sub>2</sub> (%) 87.1

Sample submitted by the client.

  
Nanthini Selvadurai  
Analytical Chemist  
11<sup>th</sup> May 2011  
D. Rowley, File



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:** 114130

**REQUEST NO.:** 42401

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume – Monthly Sample for March, 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:** 28-03-11

**Date Crushed:** 04-04-11 @ 7 Days

<b>Results:</b>	<b>Accelerated Pozzolanic Strength Activity Index:</b>	124% @ 7 Days
	<b>Control Mix Strength:</b>	36.5 MPa
	<b>Test Mix Strength:</b>	45.4 MPa

**Note:**

Test mix used 242 mls of water and 6.2 grams of Water Reducer (Rheobuild 1000 from BASF) to obtain a flow of 112%.

Daniel Rowley, Mat. File, File

Muans Abdulnebe



Approved Signatory \_\_\_\_\_

Date 12.05.11 Serial No. 95332

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NATA Accredited Laboratory  
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**TEST REPORT**

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

**FILE NO:** 256/11

**REQUEST NO.:** 42401

**LAB. SAMPLE NO:** 114130

**SOURCE OF SAMPLE:** Unknown

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume –Monthly Sample for March 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	28-03-11	0.9%	AS3583.2	Max. 3.0%
Loss on ignition	28-03-11	3.5 %	AS3583.3	Max. 6.0%
Relative Density	28-03-11	2.27	AS3583.5	

Sample submitted by the client.

Daniel Rowley, Mat. File, File



Approved Signatory   
Date 12.05.11 Serial No. 95331

Muans Abdulnebe

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Number: 547



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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.: 42401

**TEST PROCEDURE:**

AS3583.12 – 1991 – Determination of Available Alkali

Laboratory Sample No.: 114130  
Date Sampled: Unknown  
Date Received: 18/03/11  
Sample Description: Ecotec Silica Fume -  
Monthly March'11.

Field No.: 1

TEST RESULTS

Sodium as Na<sub>2</sub>O (%) 0.36  
Potassium as K<sub>2</sub>O (%) 0.38  
Available Alkali (%) 0.6

Available Alkali (%) = Na<sub>2</sub>O (%) + (0.658 x K<sub>2</sub>O %)

Samples submitted by the Client.

D. Rowley, File



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COMPETENCE

Approved Signatory Nanthini Selvadurai Nanthini Selvadurai  
Date 11-05-11 Serial No. 95333

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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.: 42401

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

Laboratory Sample No.: 114130  
Date Sampled: Unknown  
Date Received: 18/03/11  
Sample Description: Ecotec Silica Fume -  
Monthly March'11  
Field No.: 1

**TEST RESULTS**

Chloride as Cl<sup>-</sup> (%) 0.201  
Sulphate as SO<sub>3</sub> (%) 0.6

Samples submitted by the Client.

D. Rowley, File



Approved Signatory Nanthini S Nanthini Selvadurai  
Date 11-05-11 Serial No. 95334

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**TEST REPORT**

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

**FILE NO: 256/11**

**REQUEST NO.: 42401**

**LAB. SAMPLE NO: 114130**

**SOURCE OF SAMPLE:** Unknown

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume -Monthly Sample for March.2011

**Bulk Density - AS3582.3.6.5**

**Result:** 613 Kg/m<sup>3</sup>

**BORAL**

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

Oscar Perez  
05-04-2011

Daniel Rowley, 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

DataMaster V4.03 U

Unit 0

Serial #: 909

Page 1

Sample ID: 114130  
Setup ID: None  
Converted from:: L:/GEMINI/DATA/L192/4016/114130.MGD  
File: L:\...4016\114130.DMT

Started: 29/03/2011 8:52:31AM	Analysis Adsorptive: N2
Completed: 29/03/2011 10:18:04AM	Analysis Bath Temp.: 77.150 K
Report Time: 29/03/2011 10:32:46AM	Thermal Correction: No
Sample Mass: 0.1809 g	Warm Free Space: -0.4580 cm <sup>3</sup> Measured
Equilibration Interval: 10 s	Low Pressure Dose: None
Sample Density: 1.000 g/cm <sup>3</sup>	Automatic Degas: No

## Summary Report

### Surface Area

Single point surface area at  $p/p^{\circ} = 0.200888955$ : 23.6875 m<sup>2</sup>/g

BET Surface Area: 24.7082 m<sup>2</sup>/g

Langmuir Surface Area: 33.7983 m<sup>2</sup>/g



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Unit 0

Serial #: 909

Page 6

Sample ID: 114130  
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Equilibration Interval: 10 s	Low Pressure Dose: None
Sample Density: 1.000 g/cm <sup>3</sup>	Automatic Degas: No

### Langmuir Surface Area Report

Langmuir Surface Area: 33.7983 ± 0.7131 m<sup>2</sup>/g  
 Slope: 0.128799 ± 0.002717 g/cm<sup>3</sup> STP  
 Y-Intercept: 3.261044 ± 0.288920 mmHg·g/cm<sup>3</sup> STP  
 b: 0.039496 1/mmHg  
 Qm: 7.7640 cm<sup>3</sup>/g STP  
 Correlation Coefficient: 0.998446  
 Molecular Cross-Sectional Area: 0.1620 nm<sup>2</sup>

Pressure (mmHg)	Quantity Adsorbed (cm <sup>3</sup> /g STP)	p/Q (mmHg·g/cm <sup>3</sup> STP)
39.605000	5.0273	7.878
54.514999	5.3448	10.200
69.394997	5.6076	12.375
84.239998	5.8552	14.387
99.154999	6.0666	16.344
114.040001	6.2719	18.183
128.875000	6.4559	19.962
143.800003	6.6434	21.646
158.639999	6.8093	23.298



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Unit 0

Serial #: 909

Page 4

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Report Time: 29/03/2011 10:32:46AM	Thermal Correction: No
Sample Mass: 0.1809 g	Warm Free Space: -0.4580 cm <sup>3</sup> Measured
Equilibration Interval: 10 s	Low Pressure Dose: None
Sample Density: 1.000 g/cm <sup>3</sup>	Automatic Degas: No

### BET Surface Area Report

BET Surface Area: 24.7082 ± 0.0563 m<sup>2</sup>/g  
Slope: 0.174392 ± 0.000398 g/cm<sup>3</sup> STP  
Y-Intercept: 0.001792 ± 0.000054 g/cm<sup>3</sup> STP  
C: 98.318678  
Qm: 5.6759 cm<sup>3</sup>/g STP  
Correlation Coefficient: 0.9999818  
Molecular Cross-Sectional Area: 0.1620 nm<sup>2</sup>

Relative Pressure (p/p <sup>0</sup> )	Quantity Adsorbed (cm <sup>3</sup> /g STP)	1/[Q(p <sup>0</sup> /p - 1)]
0.050152591	5.0273	0.010503
0.069033417	5.3448	0.013874
0.087876251	5.6076	0.017181
0.106674768	5.8552	0.020394
0.125561927	6.0666	0.023669
0.144411099	6.2719	0.026911
0.163196950	6.4559	0.030209
0.182096775	6.6434	0.033513
0.200888955	6.8093	0.036919