



**Boral Construction Materials  
Materials Technical Services**

Unit 4, 3-5 Gibbon Road  
Baulkham Hills NSW 2153 Australia  
PO Box 400, Winston Hills NSW 2153

T: +61 (02) 9624 9900

F: +61 (02) 9624 9999

www.boral.com.au

**TEST REPORT**

CLIENT: XYPEX AUSTRALIA  
190, Toongabbie Road Girraween NSW 2145.

FILE No.: 256/15

PROJECT: Testing of Silica fume sample for month of September' 2015.

REQUEST No.: 63833

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

Laboratory Sample No.: 169686  
Date Sampled: September '2015.  
Date Received: 01/09/15  
Sample Description: Ecotec Silica  
Fume September  
2015.  
Field No.: 1

**TEST RESULTS**

Silicon as SiO<sub>2</sub> (%) 88.2

Sample submitted by the Client.

A handwritten signature in black ink, appearing to read "N.S." or "Nanthini S".

Nanthini S  
Analytical Chemist  
21<sup>st</sup> September 2015.  
M.Hanlon, Mat. File, File.



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**TEST REPORT**

**CLIENT:** XYPEX AUSTRALIA

**FILE NO:** 256/15

**ADDRESS:** 190 Toongabbie road, Girraween, NSW 2145

**REQUEST NO:** 63833

**LAB SAMPLE NO:** 169686

**SOURCE OF SAMPLE:** Unknown

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume – Monthly Sample for September 2015.

**IDENTIFICATION OF CEMENT USED:** Boral Cement SL Berrima – Ref. 2015

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

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

**Date Cast:** 08-09-15

**Date Crushed:** 15-09-15 @ 7 Days

<b>Results:</b>	<b>Accelerated Pozzolanic Strength Activity Index:</b>	110 % @ 7 Days
	<b>Control Mix Strength:</b>	33.8 MPa
	<b>Test Mix Strength:</b>	37.1 MPa

**Note:**

Test mix used 242 mls of water and 2.3 grams of Dry Water Reducer (Rheobuild 1000 from BASF) to obtain a flow of 108 %.

Mark Hanlon, Mat. File, File

Muans Abdulnebe



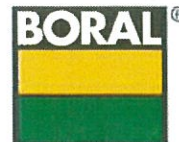
Approved Signatory \_\_\_\_\_

Date 21-09-15 Serial No. 140431

Accredited for compliance with ISO/IEC 17025

NATA Accredited Laboratory

Number: 547



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**TEST REPORT**

**CLIENT: XYPEX AUSTRALIA**  
Address: 190 Toongabbie Road Girraween, NSW 2145

**FILE NO: 256/15**

**REQUEST NO: 63833**

**LAB. SAMPLE NO: 169686**

**SOURCE OF SAMPLE: Unkown**

**SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for September 2015.**

**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	18-09-15	0.9 %	AS3583.2	Max. 3.0%
Loss on ignition	18-09-15	0.8 %	AS3583.3	Max. 6.0%
Relative Density	18-09-15	2.12	AS3583.5	

Sample submitted by the client.

Mark Hanlon, Mat. File, File

Muans Abdulnebe



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

Date 21-09-15 Serial No. 140432

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**TEST REPORT**

CLIENT: XYPEX AUSTRALIA  
190 Toongabbie Road Girraween NSW 2145.

FILE No.:256/15

PROJECT: Testing of Silica Fume sample for month of September' 2015.

REQUEST No.: 63833

**TEST PROCEDURE:** AS 3583.13 – Determination of Chloride Ion content  
AS 3583.8 – Determination of Sulfuric Anhydride content

Laboratory Sample No.: 169686  
Date Sampled: September' 2015  
Date Received: 01/09/2015  
Sample Description: Ecotec Silica Fume  
Testing monthly sample  
for September 2015.  
Field No.: 1

**TEST RESULTS**

Chloride as Cl<sup>-</sup> (%) 0.213  
Sulphate as SO<sub>3</sub> (%) 0.7

Samples submitted by the Client.

M.Hanlon, M.File, File.



Approved Signatory

Nanthini Selvadurai

Date 13-10-15

Serial No. 140434

Accredited for compliance with ISO/IEC 17025

NATA Accredited Laboratory

Number: 9968



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**Test Report**

CLIENT: XYPEX AUSTRALIA  
190 Toongabbie Road, Girraween, NSW 2145.

FILE No.:256/15

PROJECT: Testing of Silica Fume Sample for month of September 2015.

REQUEST No.: 63833

**TEST PROCEDURE:**

AS3583.12 – 1991 – Determination of Available Alkali

Laboratory Sample No.: 169686  
Date Sampled: September' 2015.  
Date Received: 01/09/2015.  
Sample Description: Ecotec Silica Fume  
Testing – Monthly Sample  
for September 2015.  
Field No.: 1

**TEST RESULTS**

Sodium as Na <sub>2</sub> O (%)	0.17
Potassium as K <sub>2</sub> O (%)	0.25
Available Alkali (%)	0.3

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

Samples submitted by the Client.

M.Hanlon,Mat. File,File.



Approved Signatory

*N.S.*

Nanthini.Selvadurai

Date 13-10-15

Serial No.

140433

NATA Accredited Laboratory

Accredited for compliance with ISO/IEC 17025

Number: 9968



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**TEST REPORT**

**CLIENT:** XYPEX AUSTRALIA

**FILE NO:** 256/15

**ADDRESS:** 190 Toongabbie Road, Girraween, NSW 2145

**REQUEST NO:** 63833

**LAB. SAMPLE NO:** 169686

**SOURCE OF SAMPLE:** Unknown

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume – Monthly Sample for September 2015

**Bulk Density - AS3582.3.6.5**

**Result:** 614 Kg/m<sup>3</sup>

Mark Hanlon, Mat. File, File

Sharjeel Mahmood  
21-09-2015



# 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

MicroActive 4.00

3000  
Serial # 1586 Unit 1 Port 1

Page 1 of 9

Sample: Silica Fume Ecotec-Monthly- September2015-LSN169686  
Operator: Kayla Wells  
Submitter: Boral  
File: L:\Tristar\Data\L192\5106\000-205.SMP

Started: 23/09/2015 3:51:57 PM	Analysis adsorptive: N2
Completed: 23/09/2015 7:00:38 PM	Analysis bath temp.: 77.300 K
Report time: 24/09/2015 9:45:21 AM	Thermal correction: No
Sample mass: 0.8018 g	Warm free space: 17.2336 cm <sup>3</sup> Measured
Cold free space: 50.5330 cm <sup>3</sup>	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  $p/p^0 = 0.301072393$ : 17.8512 m<sup>2</sup>/g

BET Surface Area: 18.3008 m<sup>2</sup>/g

Langmuir Surface Area: 26.8034 m<sup>2</sup>/g

Sample: Silica Fume Ecotec-Monthly- September2015-LSN169686  
Operator: Kayla Wells  
Submitter: Boral  
File: L:\Tristar\Data\L192\5106\000-205.SMP

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Cold free space: 50.5330 cm <sup>3</sup>	Equilibration interval: 10 s
Low pressure dose: None	Sample density: 1.000 g/cm <sup>3</sup>
Automatic degas: No	

**BET Report**

BET surface area: 18.3008 ± 0.2872 m<sup>2</sup>/g  
Slope: 5.323484 ± 0.082471 g/mmol  
Y-intercept: 0.007384 ± 0.013986 g/mmol  
C: 721.923108  
Qm: 0.18759 mmol/g  
Correlation coefficient: 0.9992808  
Molecular cross-sectional area: 0.1620 nm<sup>2</sup>

Relative Pressure (p/p°)	Quantity Adsorbed (mmol/g)	1/[Q(p°/p - 1)]
0.026951822	0.16860	0.16428
0.032946777	0.17437	0.19539
0.053513037	0.18896	0.29921
0.096878808	0.20897	0.51333
0.149746489	0.22595	0.77947
0.200202606	0.23901	1.04731
0.250709668	0.25073	1.33451
0.301072393	0.26180	1.64540

Sample: Silica Fume Ecotec-Monthly- September2015-LSN169686  
Operator: Kayla Wells  
Submitter: Boral  
File: L:\Tristar\Data\L192\5106\000-205.SMP

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Sample mass: 0.8018 g	Warm free space: 17.2336 cm <sup>3</sup> Measured
Cold free space: 50.5330 cm <sup>3</sup>	Equilibration interval: 10 s
Low pressure dose: None	Sample density: 1.000 g/cm <sup>3</sup>
Automatic degas: No	

**Langmuir Report**

Langmuir surface area: 26.8034 ± 0.6953 m<sup>2</sup>/g  
Slope: 3.63980 ± 0.09442 g/mmol  
Y-intercept: 68.29 ± 12.52 mmHg·g/mmol  
b: 0.053302 1/mmHg  
Qm: 0.27474 mmol/g  
Correlation coefficient: 0.997987  
Molecular cross-sectional area: 0.1620 nm<sup>2</sup>

Pressure (mmHg)	Quantity Adsorbed (mmol/g)	p/Q
21.081600	0.16860	125.04
25.770828	0.17437	147.79
41.857670	0.18896	221.52
75.778191	0.20897	362.62
117.131065	0.22595	518.40
156.597626	0.23901	655.20
196.104034	0.25073	782.15
235.497543	0.26180	899.54