



**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

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

**FILE NO:** 256/18

**LAB SAMPLE NO:** 201097

**REQUEST No:** 77011

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume – Monthly Sample for February 2018

**IDENTIFICATION OF CEMENT USED:** Boral Cement SL Berrima Ref. No. 203-608-001-Aug 2016

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

PROPERTY	DATE TESTED	RESULT	TEST METHOD
Relative density	24/02/2018	2.24	AS 3583.5
Relative water requirement	01/03/2018	113 %	AS 3583.6
Relative strength 7days (accelerated)	08/03/2018	124 %	AS 3583.6
Relative strength 28days (standard)	29/03/2018	101 %	AS 3583.6

Shaun Guthridge, Mat. File, File



Approved Signatory

**Sharjeel Mahmood**

Date 04-04-2018 Serial No.

166498

NATA Accredited Laboratory

Accredited for compliance with ISO/IEC 17025

Number: 547



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**FILE NO:** 256/18

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

**REQUEST NO:** 77011

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**SOURCE OF SAMPLE:** Unknown

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume – Monthly Sample for February 2018

**IDENTIFICATION OF CEMENT USED:** Boral Cement SL Berrima – Ref. 2016

**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:** 06-03-2018

**Date Crushed:** 13-03-2018 @ 7 Days

<b>Results:</b>	<b>Accelerated Pozzolanic Strength Activity Index:</b>	<b>108 % @ 7 Days</b>
	<b>Control Mix Strength:</b>	<b>33.8 MPa</b>
	<b>Test Mix Strength:</b>	<b>36.6 MPa</b>

**Note:**

Test mix used 242 mls of water and 1.6 grams of Dry Water Reducer (1000 NT from BASF) to obtain a flow of 108 %.

Shaun Guthridge, Mat. File, File



Approved Signatory

**Sharjeel Mahmood**

Date 04-04-2018 Serial No. 166499

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**TEST REPORT**

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Address: 190 Toongabbie Road Girraween, NSW 2145

**FILE NO: 256/18**

**REQUEST NO: 77011**

**LAB. SAMPLE NO: 201097**

**SOURCE OF SAMPLE: Unknown**

**SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for February 2018**

**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	16/03/2018	0.5%	AS 3583.2	Max. 3.0%
Loss on ignition	16/03/2018	1.8%	AS 3583.3	Max. 6.0%
Relative Density	24/02/2018	2.24	AS 3583.5	

Sample submitted by the client.

Shaun Guthridge, Mat. File, File



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

**Sharjeel Mahmood**

Date 04-04-2018 Serial No. \_\_\_\_\_

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**TEST REPORT**

**CLIENT:** XYPEX AUSTRALIA

**FILE NO:** 256/18

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

**REQUEST NO:** 77011

**LAB. SAMPLE NO:** 201097

**SOURCE OF SAMPLE:** Unknown

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume – Monthly Sample for February 2018

**Bulk Density - AS3582.3 – Clause 7.1.7**

**Result:** 629 Kg/m<sup>3</sup>

Shaun Guthridge, Mat. File, File

A handwritten signature in black ink that reads "Julius Alvaro".  
Julius Alvaro  
04/04/2018



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**TEST REPORT**

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

FILE No.:256/18

PROJECT: Testing of Silica Fume sample for month of February' 2018

REQUEST No.: 77011

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

Laboratory Sample No.: 201097  
Date Sampled: February '2018  
Date Received: 16/02/18  
Sample Description: Ecotec Silca Fume  
monthly sample for  
February' 2018.  
Field No.: 1

**TEST RESULTS:**

Chloride as Cl<sup>-</sup> (%) 0.008  
Sulphate as SO<sub>3</sub> (%) 1.4

Samples submitted by the Client.

S.Guthridge, Mat. File, File.



Approved Signatory N.S. Nanthini Selvadurai  
Date 28-03-18 Serial No. 166501



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**TEST REPORT**

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

FILE No.: 256/18

PROJECT: Testing of Silica Fume sample for February .2018.

REQUEST No.: 77011

**TEST PROCEDURE:**

AS 3583.12 – 1991 – Determination of Available Alkali

Laboratory Sample No.: 201097  
Date Sampled: February' 2018  
Date Received: 16/02/18  
Sample Description: Ecotec Silca Fume –  
Monthly Sample for  
February 2018.  
Field No.: 1

**TEST RESULTS:**

Sodium as Na <sub>2</sub> O (%)	0.05
Potassium as K <sub>2</sub> O (%)	0.09
Available Alkali (%)	0.1

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

Samples submitted by the Client.

S.Guthridge, Mat. File, File.



Approved Signatory

Nanthini Selvadurai

Date 28-03-18

Serial No. 166502

NATA Accredited Laboratory



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**TEST REPORT**

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

FILE No.: 256/18

PROJECT: Testing of Silica fume sample for month of February 2018.

REQUEST No.: 77011

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

Laboratory Sample No.: 201097  
Date Sampled: February 2018.  
Date Received: 16/02/18  
Sample Description: Ecotec Silica Fume  
February 2018.  
Field No.: 1

**TEST RESULTS**

Silicon as SiO<sub>2</sub>(%) 98.1

Sample submitted by the Client.

Nanthini S  
Analytical Chemist  
21<sup>st</sup> March 2018.  
S.Guthridge, Mat. File, File.

Sample: LSN 201097  
Operator: Paul Sheean  
Submitter: Boral  
File: L:\Customers\L192 - boral quarries & co...\000-012.SMP

Started: 9/03/2018 1:53:32 PM	Analysis adsorptive: N2
Completed: 9/03/2018 4:23:35 PM	Analysis bath temp.: 77.300 K
Report time: 9/03/2018 3:40:45 PM	Thermal correction: No
Sample mass: 1.0863 g	Warm free space: 17.2393 cm <sup>3</sup> Measured
Cold free space: 48.7008 cm <sup>3</sup>	Equilibration interval: 15 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  $p/p^\circ = 0.300962264$ : 16.6863 m<sup>2</sup>/g

BET Surface Area: 17.7006 m<sup>2</sup>/g



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 Equilibration interval: 15 s  
 Sample density: 1.000 g/cm<sup>3</sup>

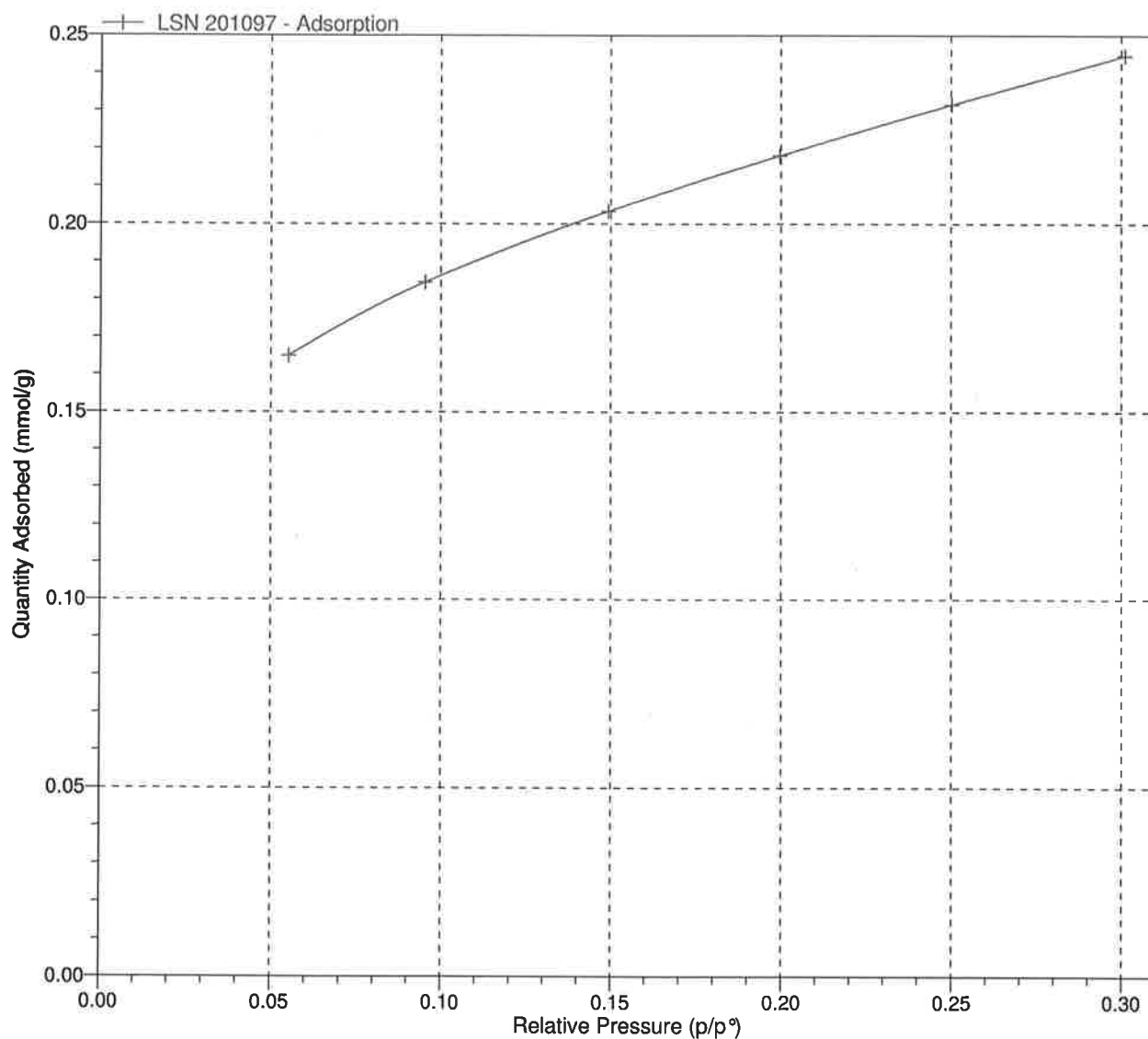
**Isotherm Tabular Report**

Relative Pressure (p/p <sup>o</sup> )	Absolute Pressure (kPa)	Quantity Adsorbed (mmol/g)	Elapsed Time (h:min)	Saturation Pressure (kPa)
			01:42	103.4365615
0.055189517	5.7086139	0.16489	02:02	
0.095317251	9.8592887	0.18434	02:08	
0.149191101	15.4318145	0.20328	02:13	
0.199681827	20.6544016	0.21808	02:18	
0.250223796	25.8822891	0.23165	02:22	
0.300962264	31.1305017	0.24468	02:26	

Sample: LSN 201097  
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 Submitter: Boral  
 File: L:\Customers\L192 - boral quarries & co...\000-012.SMP

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Low pressure dose: None	Sample density: 1.000 g/cm <sup>3</sup>
Automatic degas: No	

**Isotherm Linear Plot**

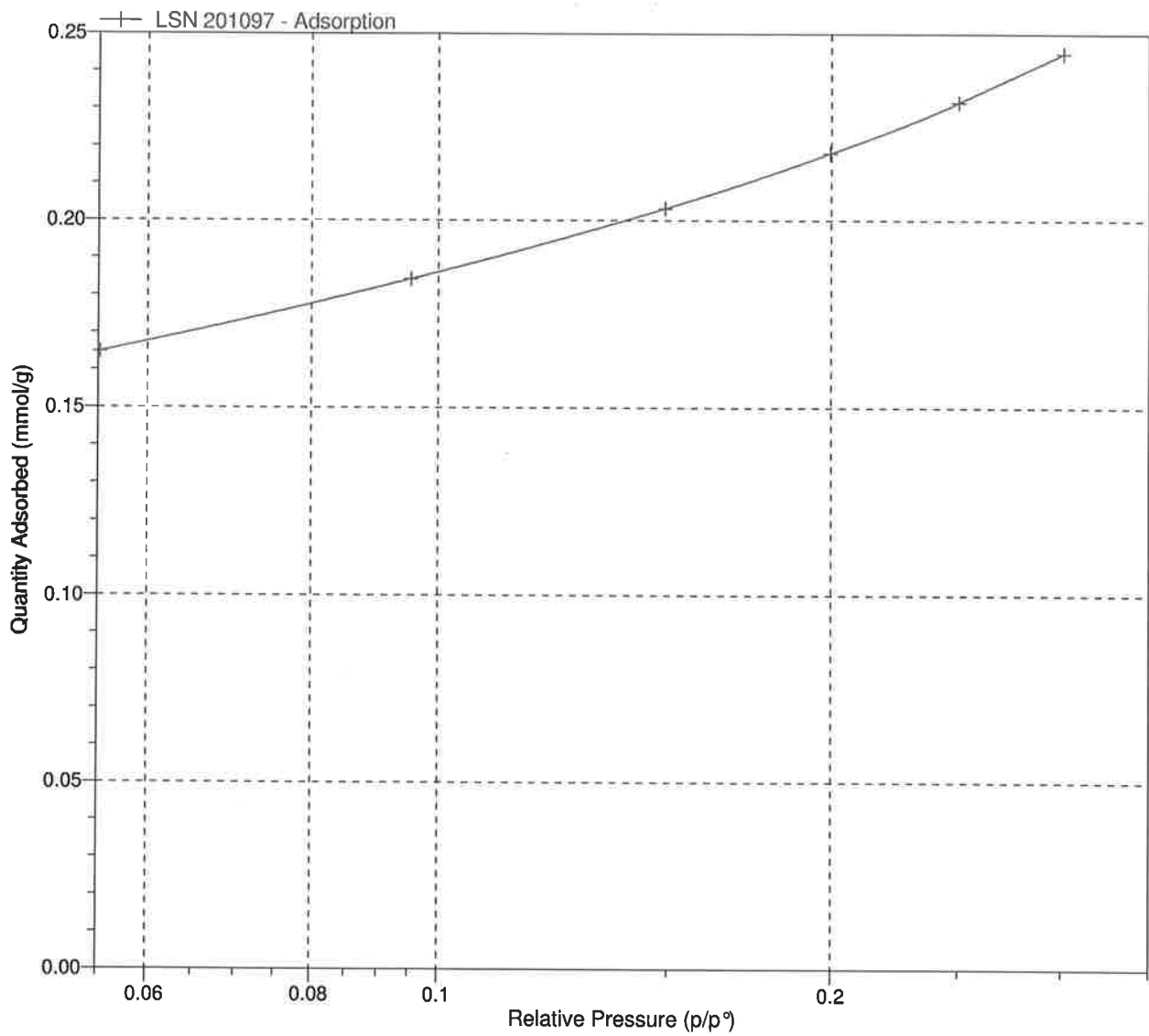


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Thermal correction: No  
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Equilibration interval: 15 s  
Sample density: 1.000 g/cm<sup>3</sup>

Isotherm Log Plot



Sample: LSN 201097  
Operator: Paul Sheean  
Submitter: Boral  
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Low pressure dose: None  
Automatic degas: No

Analysis adsorptive: N2  
Analysis bath temp.: 77.300 K  
Thermal correction: No  
Warm free space: 17.2393 cm<sup>3</sup> Measured  
Equilibration interval: 15 s  
Sample density: 1.000 g/cm<sup>3</sup>

### BET Report

BET surface area: 17.7006 ± 0.0926 m<sup>2</sup>/g  
Slope: 5.460183 ± 0.028556 g/mmol  
Y-intercept: 0.051452 ± 0.003891 g/mmol  
C: 107.122398  
Qm: 0.18143 mmol/g  
Correlation coefficient: 0.9999726  
Molecular cross-sectional area: 0.1620 nm<sup>2</sup>

Relative Pressure (p/p <sup>o</sup> )	Quantity Adsorbed (mmol/g)	1/[Q(p <sup>o</sup> /p - 1)]
0.055189517	0.16489	0.35425
0.095317251	0.18434	0.57154
0.149191101	0.20328	0.86263
0.199681827	0.21808	1.14408

Sample: LSN 201097  
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 Analysis bath temp.: 77.300 K  
 Thermal correction: No  
 Warm free space: 17.2393 cm<sup>3</sup> Measured  
 Equilibration interval: 15 s  
 Sample density: 1.000 g/cm<sup>3</sup>

BET Surface Area Plot

