



**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:** 199905

**REQUEST No:** 76518

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume – Monthly Sample for January 2017

**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	20/01/2018	2.26	AS 3583.5
Relative water requirement	25/01/2018	113 %	AS 3583.6
Relative strength 7days (accelerated)	01/02/2018	116 %	AS 3583.6
Relative strength 28days (standard)	22/02/2018	105 %	AS 3583.6

Shaun Guthridge, Mat. File, File



Approved Signatory

**Sharjeel Mahmood**

Date 23-02-2018 Serial No.

16 5 3 3 2

NATA Accredited Laboratory

Accredited for compliance with ISO/IEC 17025

Number: 547



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**SOURCE OF SAMPLE:** Unknown

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume – Monthly Sample for January 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:** 15-02-2018

**Date Crushed:** 22-02-2018 @ 7 Days

<b>Results:</b>	<b>Accelerated Pozzolanic Strength Activity Index:</b>	<b>116 % @ 7 Days</b>
	<b>Control Mix Strength:</b>	<b>29.8 MPa</b>
	<b>Test Mix Strength:</b>	<b>34.5 MPa</b>

**Note:**

Test mix used 242 mls of water and 1.7 grams of Dry Water Reducer (1000 NT from BASF) to obtain a flow of 114 %.

Shaun Guthridge, Mat. File, File



Approved Signatory

**Sharjeel Mahmood**

Date 23-02-2018 Serial No. \_\_\_\_\_

165333

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**FILE NO:** 256/18

**REQUEST NO:** 76518

**LAB. SAMPLE NO:** 199905

**SOURCE OF SAMPLE:** Unknown

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume – Monthly Sample for January 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	23/02/2018	0.4%	AS 3583.2	Max. 3.0%
Loss on ignition	23/02/2018	2.0%	AS 3583.3	Max. 6.0%
Relative Density	20/01/2018	2.26	AS 3583.5	

Sample submitted by the client.

Shaun Guthridge, Mat. File, File



Approved Signatory

**Sharjeel Mahmood**

Date

23-02-2018

Serial No.

165334

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**TEST REPORT**

**CLIENT:** XYPEX AUSTRALIA

**FILE NO:** 256/18

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

**REQUEST NO:** 76518

**LAB. SAMPLE NO:** 199905

**SOURCE OF SAMPLE:** Unknown

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

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

**Result:** 602 Kg/m<sup>3</sup>

Shaun Guthridge, Mat. File, File

A handwritten signature in black ink that reads "Julius Alvaro".  
Julius Alvaro  
23/02/2018



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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 January' 2018

REQUEST No.: 76518

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

Laboratory Sample No.: 199905  
Date Sampled: January '2018  
Date Received: 09/01/18  
Sample Description: Ecotec Silca Fume  
monthly sample for  
January' 2018.  
Field No.: 1

**TEST RESULTS:**

Chloride as Cl<sup>-</sup> (%) 0.006  
Sulphate as SO<sub>3</sub> (%) 1.8

Samples submitted by the Client.

S.Guthridge, Mat. File, File.



Approved Signatory Nanthini Selvadurai  
Date 14-02-18 Serial No. 165335

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 January.2018.

REQUEST No.: 76518

**TEST PROCEDURE:**

AS 3583.12 – 1991 – Determination of Available Alkali

Laboratory Sample No.: 199905  
Date Sampled: January' 2018  
Date Received: 09/01/18  
Sample Description: Ecotec Silca Fume –  
Monthly Sample for  
January 2018.  
Field No.: 1

**TEST RESULTS:**

Sodium as Na <sub>2</sub> O (%)	0.09
Potassium as K <sub>2</sub> O (%)	0.15
Available Alkali (%)	0.2

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 14-02-18

Serial No.

165336

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 January 2018.

REQUEST No.: 76518

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

Laboratory Sample No.: 199905  
Date Sampled: January 2018..  
Date Received: 09/01/18  
Sample Description: Ecotec Silica Fume  
January 2018.  
Field No.: 1

**TEST RESULTS**

Silicon as SiO<sub>2</sub> (%) 98.0

Sample submitted by the Client.

Nanthini S  
Analytical Chemist  
05<sup>th</sup> March 2018.  
S.Guthridge, Mat. File, File.

Sample: LSN 199905  
Operator: Paul Sheean  
Submitter: Boral  
File: L:\Customers\L192 - boral quarries & co...\000-005.SMP

Started: 24/02/2018 10:28:08 AM	Analysis adsorptive: N2
Completed: 24/02/2018 12:55:50 PM	Analysis bath temp.: 77.300 K
Report time: 24/02/2018 5:45:38 PM	Thermal correction: No
Sample mass: 0.5481 g	Warm free space: 11.9657 cm <sup>3</sup> Measured
Cold free space: 30.8050 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  $p/p^\circ = 0.300757341$ : 17.2403 m<sup>2</sup>/g

BET Surface Area: 18.3310 m<sup>2</sup>/g



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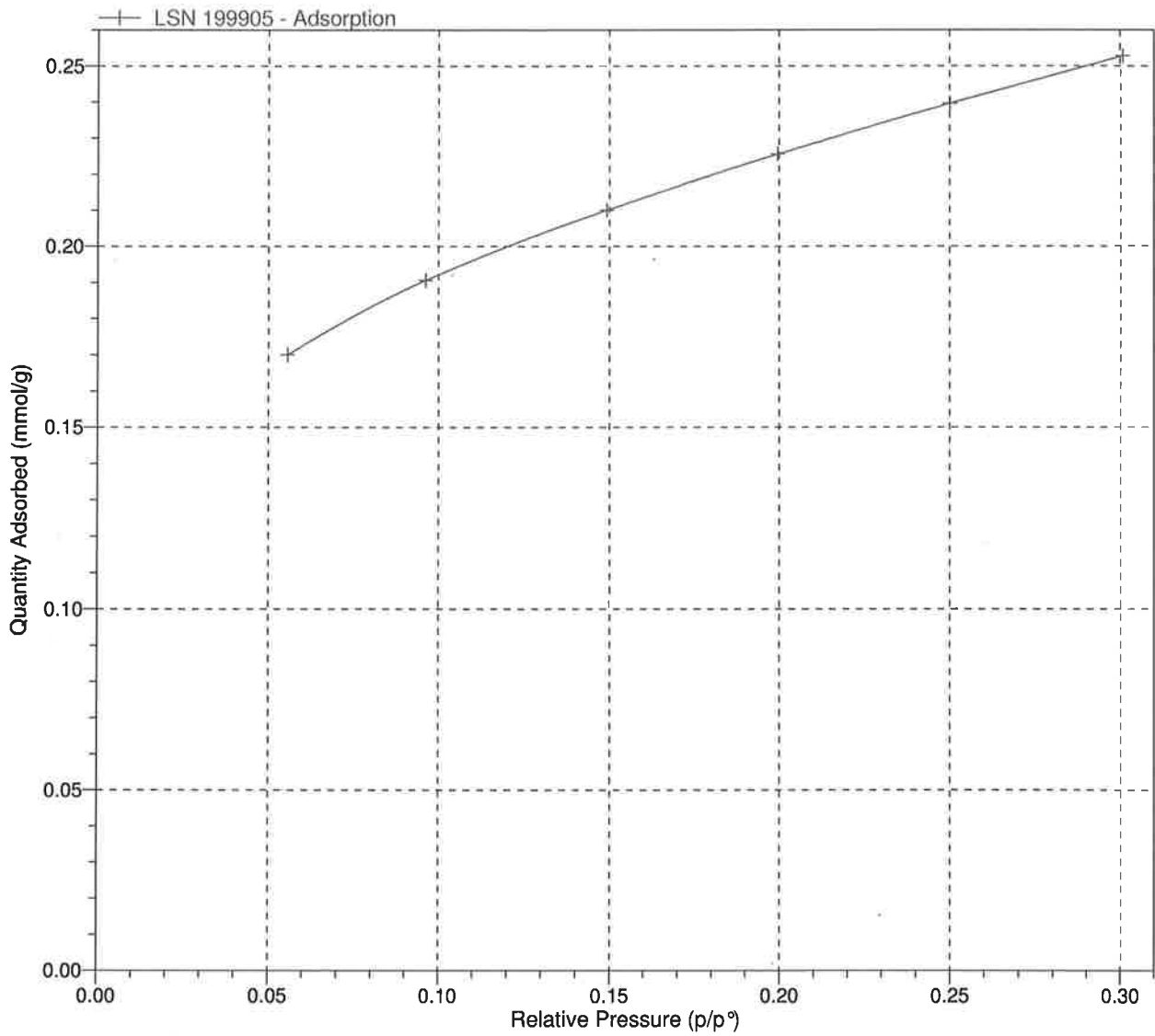
**Isotherm Tabular Report**

Relative Pressure (p/p°)	Absolute Pressure (kPa)	Quantity Adsorbed (mmol/g)	Elapsed Time (h:min)	Saturation Pressure (kPa)
0.055760800	5.4785267	0.17013	01:48	98.2505040
0.096254284	9.4570319	0.19064	02:00	
0.149347696	14.6734864	0.21008	02:04	
0.199668408	19.6175217	0.22551	02:08	
0.250164630	24.5788010	0.23947	02:11	
0.300757341	29.5495604	0.25273	02:15	
			02:18	

Sample: LSN 199905  
Operator: Paul Sheean  
Submitter: Boral  
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### Isotherm Linear Plot

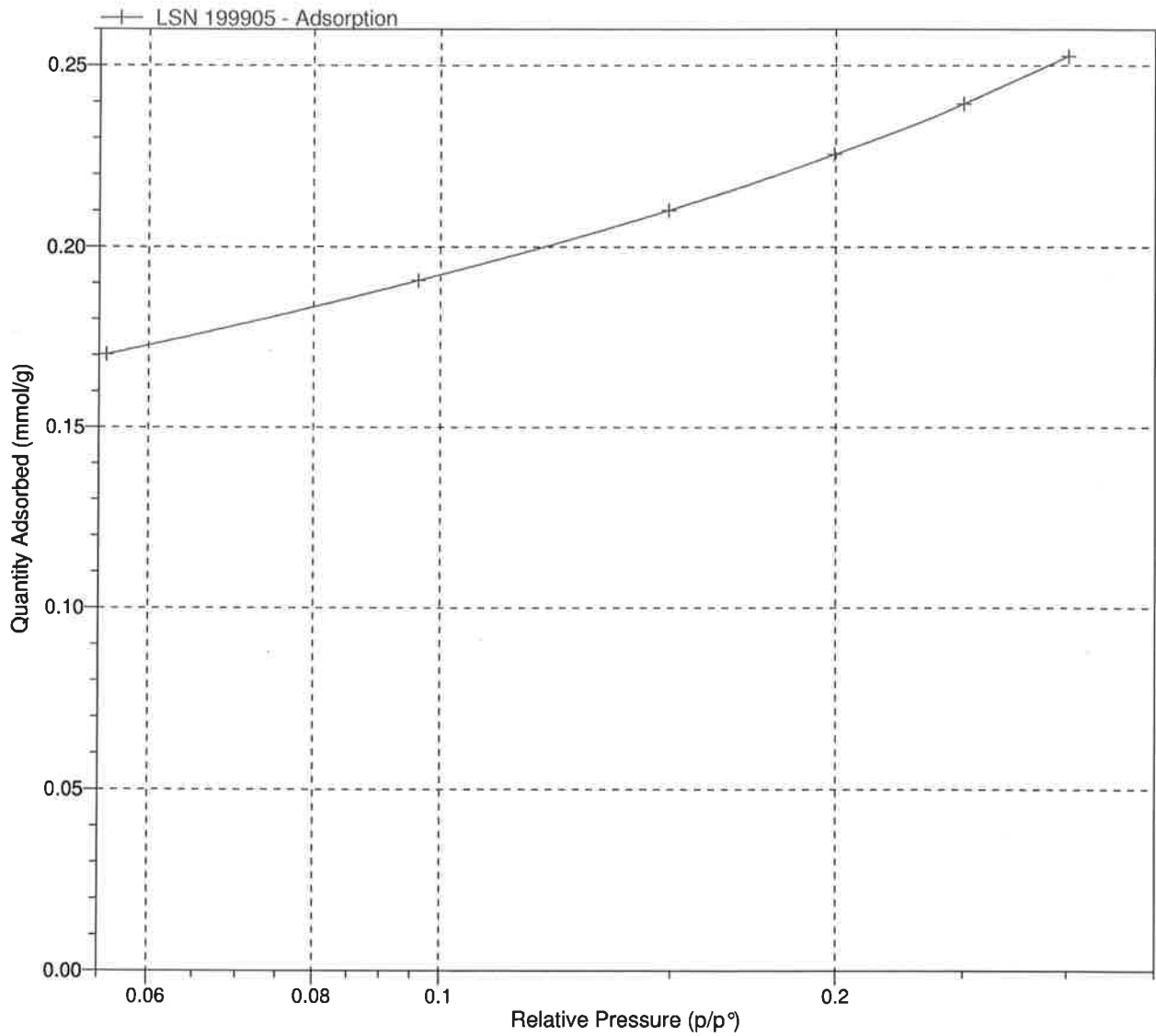


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Sample density: 1.000 g/cm<sup>3</sup>

Isotherm Log Plot



Sample: LSN 199905  
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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: 11.9657 cm<sup>3</sup> Measured  
Equilibration interval: 15 s  
Sample density: 1.000 g/cm<sup>3</sup>

**BET Report**

BET surface area: 18.3310 ± 0.0934 m<sup>2</sup>/g  
Slope: 5.270278 ± 0.026875 g/mmol  
Y-intercept: 0.051808 ± 0.003669 g/mmol  
C: 102.726380  
Qm: 0.18790 mmol/g  
Correlation coefficient: 0.9999740  
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)]
0.055760800	0.17013	0.34710
0.096254284	0.19064	0.55866
0.149347696	0.21008	0.83574
0.199668408	0.22551	1.10630

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Sample density: 1.000 g/cm<sup>3</sup>

### BET Surface Area Plot

