



**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: 201098

REQUEST No: 77012

SAMPLE IDENTIFICATION: Ecotec Silica Fume – received 12/02/2018

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	21/02/2018	2.23	AS 3583.5
Relative water requirement	22/02/2018	113 %	AS 3583.6
Relative strength 7days (accelerated)	01/03/2018	128 %	AS 3583.6
Relative strength 28days (standard)	22/03/2018	105 %	AS 3583.6

Shaun Guthridge, Mat. File, File



Approved Signatory

Sharjeel Mahmood

Date 22-03-2018

Serial No. 166524

Accredited for compliance with ISO/IEC 17025

NATA Accredited Laboratory

Number: 547



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TEST REPORT

CLIENT: XYPEX AUSTRALIA

FILE NO: 256/18

ADDRESS: 190 Toongabbie Road, Girraween, NSW 2145

REQUEST NO: 77012

LAB SAMPLE NO: 201098

SOURCE OF SAMPLE: Unknown

SAMPLE IDENTIFICATION: Ecotec Silica Fume – received 12/02/2018

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

Results:	Accelerated Pozzolanic Strength Activity Index:	124 % @ 7 Days
	Control Mix Strength:	33.8 MPa
	Test Mix Strength:	41.9 MPa

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 105 %.

Shaun Guthridge, Mat. File, File



ACCREDITED FOR
TECHNICAL
COMPETENCE

Approved Signatory Sharjeel
Date 22-03-2018 Serial No. 166525

Sharjeel Mahmood

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: 256/18

REQUEST NO: 77012

LAB. SAMPLE NO: 201098

SOURCE OF SAMPLE: Unknown

SAMPLE IDENTIFICATION: Ecotec Silica Fume – received 12/02/2018

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	22/03/2018	0.4%	AS 3583.2	Max. 3.0%
Loss on ignition	22/03/2018	2.8%	AS 3583.3	Max. 6.0%
Relative Density	21/02/2018	2.23	AS 3583.5	

Sample submitted by the client.

Shaun Guthridge, Mat. File, File



Approved Signatory

Sharjeel Mahmood

Date 22-03-2018 Serial No. 166526

Accredited for compliance with ISO/IEC 17025

NATA Accredited Laboratory

Number: 547



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TEST REPORT

CLIENT: XYPEX AUSTRALIA

FILE NO: 256/18

ADDRESS: 190 Toongabbie Road, Girraween, NSW 2145

REQUEST NO: 77012

LAB. SAMPLE NO: 201098

SOURCE OF SAMPLE: Unknown

SAMPLE IDENTIFICATION: Ecotec Silica Fume – received 12/02/2018

Bulk Density - AS3582.3 – Clause 7.1.7

Result: 616 Kg/m³

Shaun Guthridge, Mat. File, File


Julius Alvaro
22/03/2018



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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 received 12/02/18.

REQUEST No.: 77012

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

Laboratory Sample No.: 201098
Date Sampled: 12/02/18
Date Received: 12/02/18
Sample Description: Ecotec Silca Fume
monthly sample received
12/02/18.
Field No.: 1

TEST RESULTS:

Chloride as Cl⁻ (%) 0.008
Sulphate as SO₃ (%) 1.7

Samples submitted by the Client.

S.Guthridge, Mat. File, File.



Approved Signatory N.S. Nanthini Selvadurai

Date 28-03-18 Serial No. 166527



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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 received 12/02/18.

REQUEST No.: 77012

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

Laboratory Sample No.: 201098
Date Sampled: 12/02/18.
Date Received: 12/02/18.
Sample Description: Ecotec Silica Fume
received 12/02/18.
Field No.: 1

TEST RESULTS

Silicon as SiO₂ (%) 96.3

Sample submitted by the Client.



Nanthini S
Analytical Chemist
21st March 2018.
S.Guthridge, Mat. File, File.



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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 received 12/02/18.

REQUEST No.: 77012

TEST PROCEDURE:

AS 3583.12 – 1991 – Determination of Available Alkali

Laboratory Sample No.: 201098
Date Sampled: 12/02/18
Date Received: 12/02/18
Sample Description: Ecotec Silca Fume –
Monthly Sample received
12/02/18.
Field No.: 1

TEST RESULTS:

Sodium as Na₂O (%) 0.04
Potassium as K₂O (%) 0.06
Available Alkali (%) 0.1

Available Alkali (%) = Na₂O (%) + (0.658 x K₂O %)

Samples submitted by the Client.

S.Guthridge, Mat. File, File.



Approved Signatory

Nanthini Selvadurai

Date 28-03-18

Serial No. 166528

NATA Accredited Laboratory

Sample: LSN 201098
Operator: Paul Sheean
Submitter: Boral
File: L:\Customers\L192 - boral quarries & co...\000-013.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 3:40:10 PM	Thermal correction: No
Sample mass: 0.6861 g	Warm free space: 17.4788 cm ³ Measured
Cold free space: 49.1788 cm ³	Equilibration interval: 15 s
Low pressure dose: None	Sample density: 1.000 g/cm ³
Automatic degas: No	

Summary Report

Surface Area

Single point surface area at $p/p^\circ = 0.300295654$: 21.7855 m²/g

BET Surface Area: 23.0495 m²/g

Sample: LSN 201098
Operator: Paul Sheean
Submitter: Boral
File: L:\Customers\L192 - boral quarries & co...\000-013.SMP

Started: 9/03/2018 1:53:32 PM	Analysis adsorptive: N2
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Cold free space: 49.1788 cm ³	Equilibration interval: 15 s
Low pressure dose: None	Sample density: 1.000 g/cm ³
Automatic degas: No	

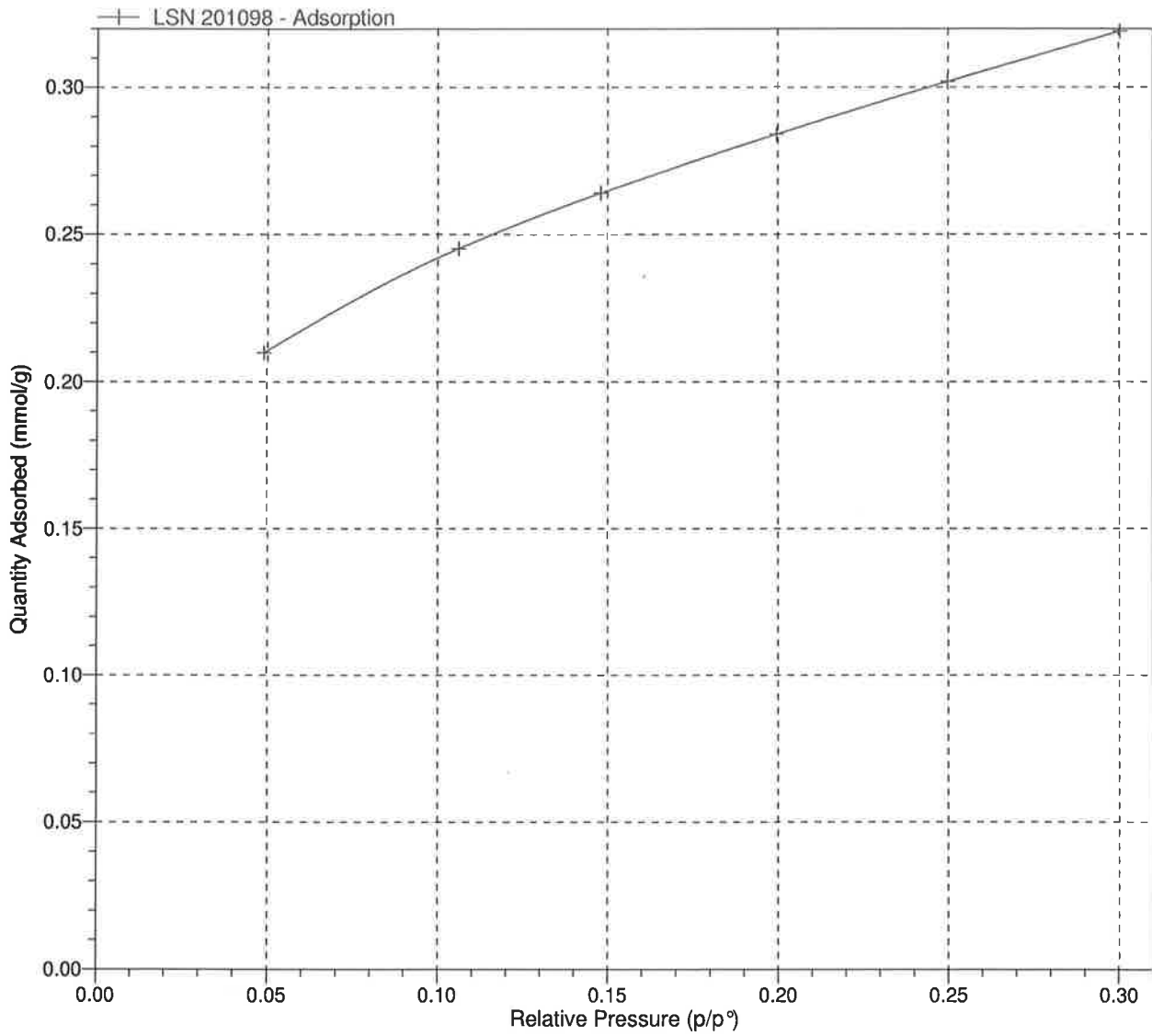
Isotherm Tabular Report

Relative Pressure (p/p ^o)	Absolute Pressure (kPa)	Quantity Adsorbed (mmol/g)	Elapsed Time (h:min)	Saturation Pressure (kPa)
			01:42	103.4365615
0.048883980	5.0563908	0.20983	02:05	
0.106068076	10.9713171	0.24523	02:11	
0.147901966	15.2984708	0.26411	02:15	
0.199560990	20.6419026	0.28413	02:20	
0.249836642	25.8422431	0.30197	02:24	
0.300295654	31.0615498	0.31914	02:28	

Sample: LSN 201098
Operator: Paul Sheean
Submitter: Boral
File: L:\Customers\L192 - boral quarries & co...\000-013.SMP

Started: 9/03/2018 1:53:32 PM	Analysis adsorptive: N2
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Cold free space: 49.1788 cm ³	Equilibration interval: 15 s
Low pressure dose: None	Sample density: 1.000 g/cm ³
Automatic degas: No	

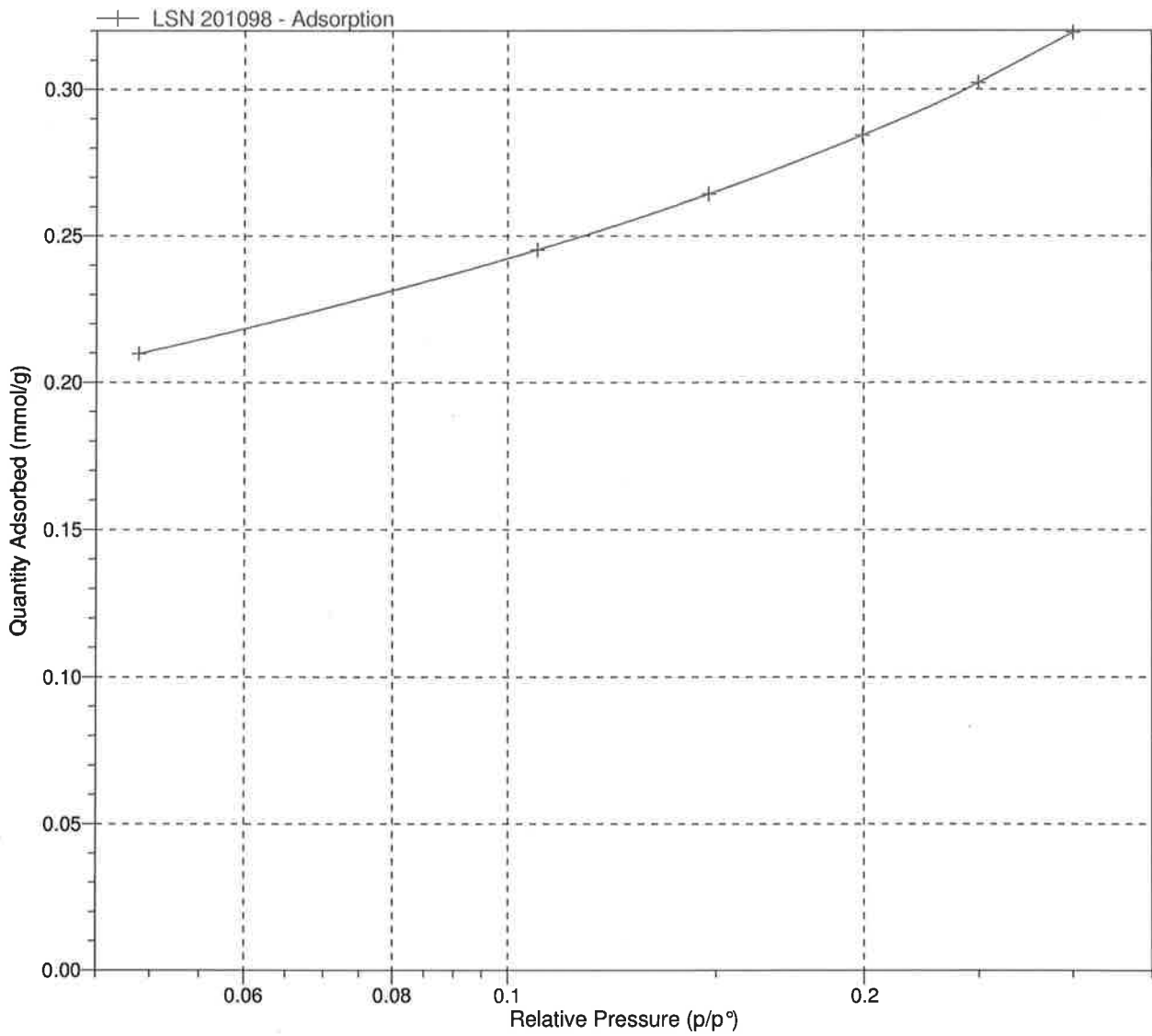
Isotherm Linear Plot



Sample: LSN 201098
Operator: Paul Sheean
Submitter: Boral
File: L:\Customers\L192 - boral quarries & co...\000-013.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 3:40:10 PM	Thermal correction: No
Sample mass: 0.6861 g	Warm free space: 17.4788 cm ³ Measured
Cold free space: 49.1788 cm ³	Equilibration interval: 15 s
Low pressure dose: None	Sample density: 1.000 g/cm ³
Automatic degas: No	

Isotherm Log Plot



Sample: LSN 201098
 Operator: Paul Sheean
 Submitter: Boral
 File: L:\Customers\L192 - boral quarries & co...\000-013.SMP

Started: 9/03/2018 1:53:32 PM	Analysis adsorptive: N2
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Sample mass: 0.6861 g	Warm free space: 17.4788 cm ³ Measured
Cold free space: 49.1788 cm ³	Equilibration interval: 15 s
Low pressure dose: None	Sample density: 1.000 g/cm ³
Automatic degas: No	

BET Report

BET surface area: 23.0495 ± 0.0961 m²/g
 Slope: 4.193447 ± 0.017488 g/mmol
 Y-intercept: 0.039147 ± 0.002400 g/mmol
 C: 108.120663
 Qm: 0.23626 mmol/g
 Correlation coefficient: 0.9999826
 Molecular cross-sectional area: 0.1620 nm²

Relative Pressure (p/p ⁰)	Quantity Adsorbed (mmol/g)	1/[Q(p ⁰ /p - 1)]
0.048883980	0.20983	0.24494
0.106068076	0.24523	0.48384
0.147901966	0.26411	0.65720
0.199560990	0.28413	0.87746

Sample: LSN 201098
Operator: Paul Sheean
Submitter: Boral
File: L:\Customers\L192 - boral quarries & co...\000-013.SMP

Started: 9/03/2018 1:53:32 PM
Completed: 9/03/2018 4:23:35 PM
Report time: 9/03/2018 3:40:10 PM
Sample mass: 0.6861 g
Cold free space: 49.1788 cm³
Low pressure dose: None
Automatic degas: No

Analysis adsorptive: N2
Analysis bath temp.: 77.300 K
Thermal correction: No
Warm free space: 17.4788 cm³ Measured
Equilibration interval: 15 s
Sample density: 1.000 g/cm³

BET Surface Area Plot

