



**Boral Construction Materials
Materials Technical Services**

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

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F: +61 (02) 9624 9999

www.boral.com.au

TEST REPORT

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

FILE No.: 256/16

PROJECT: Testing of Silica fume sample for month of June' 2016.

REQUEST No.: 67974

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

Laboratory Sample No.: 179169
Date Sampled: June '2016.
Date Received: 10/06/16
Sample Description: Ecotec Silica
Fume June' 2016.
Field No.: 1

TEST RESULTS

Silicon as SiO₂ (%) 95.2

Sample submitted by the Client.

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

Nanthini S
Analytical Chemist
26th July 2016.
M.Hanlon, Mat. File, File.



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TEST REPORT

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

FILE NO: 256/16

REQUEST NO: 67974

LAB. SAMPLE NO: 179169

SOURCE OF SAMPLE: Unkown

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for June 2016.

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	23-06-16	0.9 %	AS3583.2	Max. 3.0%
Loss on ignition	23-06-16	3.1 %	AS3583.3	Max. 6.0%
Relative Density	23-06-16	2.27	AS3583.5	

Sample submitted by the client.

Mark Hanlon, Mat. File, File



Approved Signatory

Muans Abdulnebe

Date 26-07-16 Serial No. 148297

Accredited for compliance with ISO/IEC 17025

NATA Accredited Laboratory

Number: 547



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TEST REPORT

CLIENT: XYPEX AUSTRALIA

FILE NO: 256/16

ADDRESS: 190 Toongabbie road, Girraween, NSW 2145

REQUEST NO: 67974

LAB SAMPLE NO: 179169

SOURCE OF SAMPLE: Unknown

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for June 2016.

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: 23-06-16

Date Crushed: 30-06-16 @ 7 Days

Results:	Accelerated Pozzolanic Strength Activity Index:	105 % @ 7 Days
	Control Mix Strength:	36.9 MPa
	Test Mix Strength:	38.6 MPa

Note:

Test mix used 242 mls of water and 2.0 grams of Dry Water Reducer (Rheobuild 1000 from BASF) to obtain a flow of 106 %.

Mark Hanlon, Mat. File, File



Approved Signatory _____

Muans Abdulnebe

Date 26-07-16 Serial No. 148296

Accredited for compliance with ISO/IEC 17025

NATA Accredited Laboratory

Number: 547



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TEST REPORT

CLIENT: XYPEX AUSTRALIA
190 Toongabbie Road Girraween NSW 2145.

FILE No.:256/16

PROJECT: Testing of Silica Fume sample for month of June' 2016.

REQUEST No.: 67974

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

Laboratory Sample No.: 179169
Date Sampled: June' 2016
Date Received: 10/06/2016
Sample Description: Ecotec Silica Fume
Testing monthly sample
for June' 2016.
Field No.: 1

TEST RESULTS

Chloride as Cl⁻ (%) 0.211
Sulphate as SO₃ (%) 0.5

Samples submitted by the Client.

M.Hanlon, M.File, File.



Approved Signatory N.S.
Date 26-07-16 Serial No. 148299

Nanthini Selvadurai

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.:256/16

PROJECT: Testing of Silica Fume Sample for month of June 2016.

REQUEST No.: 67974

TEST PROCEDURE:

AS3583.12 – 1991 – Determination of Available Alkali

Laboratory Sample No.: 179169
Date Sampled: June' 2016.
Date Received: 10/06/2016.
Sample Description: Ecotec Silica Fume
Testing – Monthly Sample
for June' 2016.
Field No.: 1

TEST RESULTS

Sodium as Na ₂ O (%)	0.15
Potassium as K ₂ O (%)	0.26
Available Alkali (%)	0.3

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

Samples submitted by the Client.

M.Hanlon,Mat. File,File.



Approved Signatory

NOS

Nanthini.Selvadurai

Date

26-07-16

Serial No.

148298

NATA Accredited Laboratory

Accredited for compliance with ISO/IEC 17025

Number: 9968



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TEST REPORT

CLIENT: XYPEX AUSTRALIA

FILE NO: 256/16

ADDRESS: 190 Toongabbie Road, Girraween, NSW 2145

REQUEST NO: 67974

LAB. SAMPLE NO: 179169


SOURCE OF SAMPLE: Unknown

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for June 2016.

Bulk Density - AS3582.3.6.5

Result: 659 Kg/m³

Mark Hanlon, Mat. File, File


Sharjeel Mahmood
30/06/2016



Particle & Surface Sciences Pty. Limited

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MicroActive 4.00

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Serial # 1586 Unit 1 Port 3

Sample: Silica Fume Ecotec-Monthly-June2016-LSN179169
Operator: Kayla Wells
Submitter: Boral
File: L:\Tristar\Boral\000-304.SMP

Started: 8/07/2016 11:04:00 AM
Completed: 8/07/2016 12:54:55 PM
Report time: 12/07/2016 10:58:06 AM
Sample mass: 0.8878 g
Cold free space: 33.4501 cm³
Low pressure dose: None
Automatic degas: No

Analysis adsorptive: N2
Analysis bath temp.: 77.300 K
Thermal correction: No
Warm free space: 12.2972 cm³ Measured
Equilibration interval: 10 s
Sample density: 1.000 g/cm³

Summary Report

Surface Area

Single point surface area at $p/p^{\circ} = 0.301901415$: 20.7692 m²/g

BET Surface Area: 21.2583 m²/g

Langmuir Surface Area: 31.1303 m²/g

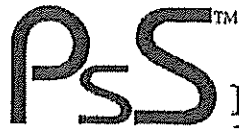
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Sample mass: 0.8878 g	Warm free space: 12.2972 cm ³ Measured
Cold free space: 33.4501 cm ³	Equilibration Interval: 10 s
Low pressure dose: None	Sample density: 1.000 g/cm ³
Automatic degas: No	

BET Report

BET surface area: 21.2583 ± 0.2541 m²/g
Slope: 4.576434 ± 0.054082 g/mmol
Y-intercept: 0.012791 ± 0.009237 g/mmol
C: 358.773536
Qm: 0.21790 mmol/g
Correlation coefficient: 0.9995813
Molecular cross-sectional area: 0.1620 nm²

Relative Pressure (p/p ⁰)	Quantity Adsorbed (mmol/g)	1/[Q(p ⁰ /p - 1)]
0.025327643	0.19033	0.13653
0.031665952	0.19735	0.16571
0.051064762	0.21314	0.25248
0.111794801	0.24379	0.51629
0.149747882	0.25783	0.68310
0.200130186	0.27443	0.91172
0.250964610	0.28987	1.15587
0.301901415	0.30495	1.41812



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Serial # 1586 Unit 1 Port 3

Sample: Silica Fume Ecotec-Monthly-June2016-LSN179169
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Cold free space: 33.4501 cm³
Low pressure dose: None
Automatic degas: No
Analysis adsorptive: N2
Analysis bath temp.: 77.300 K
Thermal correction: No
Warm free space: 12.2972 cm³ Measured
Equilibration interval: 10 s
Sample density: 1.000 g/cm³

Langmuir Report

Langmuir surface area: 31.1303 ± 1.0019 m²/g
Slope: 3.13389 ± 0.10088 g/mmol
Y-intercept: 61.78 ± 13.31 mmHg·g/mmol
b: 0.050728 1/mmHg
Qm: 0.31909 mmol/g
Correlation coefficient: 0.996907
Molecular cross-sectional area: 0.1620 nm²

Pressure (mmHg)	Quantity Adsorbed (mmol/g)	p/Q (mmHg·g/mmol)
19.576073	0.19033	102.85
24.475037	0.19735	124.02
39.468636	0.21314	185.18
86.407692	0.24379	354.44
115.742134	0.25783	448.92
154.683289	0.27443	563.66
193.973892	0.28987	669.18
233.343628	0.30495	765.18