



**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.: 256/16

PROJECT: Testing of Silica fume sample for month of Mid.June' 2017.

REQUEST No.: 73676

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

Laboratory Sample No.: 193590
Date Sampled: Mid.June '2017.
Date Received: 23/06/17
Sample Description: Ecotec Silica
Fume Mid.June'
2017.
Field No.: 1

TEST RESULTS

Silicon as SiO₂(%) 97.2

Sample submitted by the Client.

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

Nanthini S
Analytical Chemist
08th August 2017.
M.Hanlon, Mat. File, File.



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TEST REPORT

CLIENT: XYPEX AUSTRALIA

Address: 190 Toongabbie Road Girraween, NSW 2145

FILE NO: 256/17

REQUEST NO: 73676

LAB. SAMPLE NO: 193590

SOURCE OF SAMPLE: Unknown

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for Mid June 2017.

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	13/07/2017	0.8 %	AS3583.2	Max. 3.0%
Loss on ignition	13/07/2017	2.6 %	AS3583.3	Max. 6.0%
Relative Density	28/06/2017	2.23	AS3583.5	

Sample submitted by the client.

Mark Hanlon, Mat. File, File



Approved Signatory _____

Muans Abdulnebe

Date 23-08-17

Serial No. 160448

Accredited for compliance with ISO/IEC 17025

NATA Accredited Laboratory

Number: 547



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TEST REPORT

CLIENT: XYPEX AUSTRALIA

FILE NO: 256/17

ADDRESS: 190 Toongabbie Road, Girraween, NSW 2145

REQUEST NO: 73676

LAB SAMPLE NO: 193590

SOURCE OF SAMPLE: Unknown

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for Mid June 2017.

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: 06-07-2017

Date Crushed: 13-07-2017 @ 7 Days

Results:	Accelerated Pozzolanic Strength Activity Index:	105 % @ 7 Days
	Control Mix Strength:	30.7 MPa
	Test Mix Strength:	32.1 MPa

Note:

Test mix used 242 mls of water and 1.6 grams of Dry Water Reducer (Rheobuild 1000 from BASF) to obtain a flow of **104 %**.

Mark Hanlon, Mat. File, File



Approved Signatory

Muans Abduinebe

Date 23-08-17

Serial No. 160447

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TEST REPORT

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

FILE NO: 256/17

LAB SAMPLE NO: 193590

REQUEST No: 73676

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for Mid June 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	28/06/2017	2.23	AS3583.5
Relative water requirement	29/06/2017	111 %	AS3583.6
Relative strength 7days (accelerated)	06/07/2017	107 %	AS3583.6
Relative strength 28days (standard)	27/07/2017	94 %	AS3583.6

Mark Hanlon, Mat. File, File



Approved Signatory  Muans Abdulnebe

Date 23-08-17 Serial No. 160446

Accredited for compliance with ISO/IEC 17025

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TEST REPORT

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

FILE No.:256/17

PROJECT: Testing of Silica Fume sample for Mid.June.2017.

REQUEST No.: 73676

TEST PROCEDURE:

AS 3583.12 – 1991 – Determination of Available Alkali

Laboratory Sample No.: 193590
Date Sampled: Mid.June' 2017
Date Received: 23/06/17
Sample Description: Ecotec Silca Fume –
Monthly Sample for
Mid.June 2017.
Field No.: 1

TEST RESULTS:

Sodium as Na₂O (%) 0.28
Potassium as K₂O (%) 0.10
Available Alkali (%) 0.3

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

Samples submitted by the Client.

M.Hanlon, Mat.File, File.



Approved Signatory

Nanthini Selvadurai

Date 08-08-17 Serial No. 160450

NATA Accredited Laboratory

Accredited for compliance with ISO/IEC 17025

Number: 9968



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TEST REPORT

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

FILE No.:256/17

PROJECT: Testing of Silica Fume sample for month of Mid.June'2017

REQUEST No.: 73676

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

Laboratory Sample No.: 193590
Date Sampled: Mid.June'2017
Date Received: 23/06/17
Sample Description: Ecotec Silca Fume
monthly sample for
Mid.June 2017.

Field No.:

TEST RESULTS:

Chloride as Cl⁻ (%) 0.010
Sulphate as SO₃ (%) 1.5

Samples submitted by the Client.

M.Hanlon, Mat.File,File.



Approved Signatory Nanthini Selvadurai

Date 08-08-17 Serial No. 160449

Accredited for compliance with ISO/IEC 17025

NATA Accredited Laboratory

Number: 9968



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TEST REPORT

CLIENT: XYPEX AUSTRALIA

FILE NO: 256/17

ADDRESS: 190 Toongabbie Road, Girraween, NSW 2145

REQUEST NO: 73676

LAB. SAMPLE NO: 193590

SOURCE OF SAMPLE: Unknown

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for Mid June 2017

Bulk Density - AS3582.3 – Clause 7.1.7

Result: 647 Kg/m³

Mark Hanlon, Mat. File, File


Sharjeel Mahmood
28/07/2017



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

Page 1 of 8

Serial # 1586 Unit 1 Port 2

Sample: Ecotec-Monthly-Mid June-17-LSN-193590
Operator: Kayla Wells
Submitter: Boral
File: L:\Tristar\08-17\000-395.SMP

Started: 24/08/2017 12:54:04 PM	Analysis adsorptive: N2
Completed: 24/08/2017 2:59:47 PM	Analysis bath temp.: 77.300 K
Report time: 24/08/2017 4:29:54 PM	Thermal correction: No
Sample mass: 1.0429 g	Warm free space: 11.9114 cm ³ Measured
Cold free space: 31.2813 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 $p/p^{\circ} = 0.302281008$: 16.7067 m²/g

BET Surface Area: 17.1309 m²/g

Langmuir Surface Area: 25.1327 m²/g



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Serial # 1586 Unit 1 Port 2

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Analysis adsorptive: N2
Analysis bath temp.: 77.300 K
Thermal correction: No
Warm free space: 11.9114 cm³ Measured
Equilibration interval: 15 s
Sample density: 1.000 g/cm³

BET Report

BET surface area: 17.1309 ± 0.2273 m²/g
Slope: 0.253356 ± 0.003324 g/cm³ STP
Y-intercept: 0.000722 ± 0.000568 g/cm³ STP
C: 352.122780
Qm: 3.9358 cm³/g STP
Correlation coefficient: 0.9994841
Molecular cross-sectional area: 0.1620 nm²

Relative Pressure (p/p ^o)	Quantity Adsorbed (cm ³ /g STP)	1/[Q(p ^o /p - 1)]
0.026321654	3.4277	0.007887
0.031928832	3.5429	0.009309
0.050920620	3.8364	0.013985
0.111408913	4.4095	0.028433
0.149780937	4.6697	0.037726
0.200389112	4.9656	0.050469
0.251216840	5.2384	0.064046
0.302281008	5.5013	0.078753

Sample: Ecotec-Monthly-Mid June-17-LSN-193590
Operator: Kayla Wells
Submitter: Boral
File: L:\Tristar\08-17\000-395.SMP

Started: 24/08/2017 12:54:04 PM	Analysis adsorptive: N2
Completed: 24/08/2017 2:59:47 PM	Analysis bath temp.: 77.300 K
Report time: 24/08/2017 4:29:54 PM	Thermal correction: No
Sample mass: 1.0429 g	Warm free space: 11.9114 cm ³ Measured
Cold free space: 31.2813 cm ³	Equilibration interval: 15 s
Low pressure dose: None	Sample density: 1.000 g/cm ³
Automatic degas: No	

Langmuir Report

Langmuir surface area: 25.1327 ± 0.7677 m²/g
Slope: 0.173184 ± 0.005290 g/cm³ STP
Y-intercept: 3.435 ± 0.693 mmHg·g/cm³ STP
b: 0.050424 1/mmHg
Qm: 5.7742 cm³/g STP
Correlation coefficient: 0.997213
Molecular cross-sectional area: 0.1620 nm²

Pressure (mmHg)	Quantity Adsorbed (cm ³ /g STP)	p/Q (mmHg·g/cm ³ STP)
20.166660	3.4277	5.883
24.462669	3.5429	6.905
39.013462	3.8364	10.169
85.357315	4.4095	19.357
114.756516	4.6697	24.575
153.530594	4.9656	30.919
192.472885	5.2384	36.743
231.596329	5.5013	42.099