



**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 November' 2016.

REQUEST No.: 70115

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

Laboratory Sample No.: 184376
Date Sampled: November '2016.
Date Received: 01/11/16
Sample Description: Ecotec Silica
Fume November'
2016.
Field No.: 1

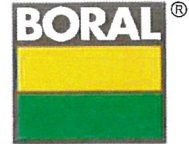
TEST RESULTS

Silicon as SiO₂ (%) 96.1

Sample submitted by the Client.

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

Nanthini S
Analytical Chemist
01st December 2016.
M.Hanlon, Mat. File, File.



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TEST REPORT

CLIENT: XYPEX AUSTRALIA

FILE NO: 256/16

ADDRESS: 190 Toongabbie road, Girraween, NSW 2145

REQUEST NO: 70115

LAB SAMPLE NO: 184376

SOURCE OF SAMPLE: Unknown

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for Nov 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: 03-11-16

Date Crushed: 10-11-16 @ 7 Days

| | | |
|-----------------|--|----------------|
| Results: | Accelerated Pozzolanic Strength Activity Index: | 107 % @ 7 Days |
| | Control Mix Strength: | 35.3 MPa |
| | Test Mix Strength: | 37.9 MPa |

Note:

Test mix used 242 mls of water and 1.8 grams of Dry Water Reducer (Rheobuild 1000 from BASF) to obtain a flow of 108%.

Mark Hanlon, Mat. File, File

Muans Abdulnebe



Approved Signatory _____

Date 23-11-16 Serial No. 15 2 3 5 0

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: 256/16

REQUEST NO: 70115

LAB. SAMPLE NO: 184376

SOURCE OF SAMPLE: Unknown

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for Nov 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 | 03-11-16 | 0.8% | AS3583.2 | Max. 3.0% |
| Loss on ignition | 03-11-16 | 2.3% | AS3583.3 | Max. 6.0% |
| Relative Density | 03-11-16 | 2.27 | AS3583.5 | |

Sample submitted by the client.

Mark Hanlon, Mat. File, File

Muans Abdulnebe



Approved Signatory 

Date 23-11-16 Serial No. 152351

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 November' 2016.

REQUEST No.:70115

TEST PROCEDURE:

AS3583.12 – 1991 – Determination of Available Alkali

Laboratory Sample No.: 184376
Date Sampled: November' 2016.
Date Received: 01/11/2016.
Sample Description: Ecotec Silica Fume
Testing – Monthly Sample
for November' 2016.
Field No.: 1

TEST RESULTS

| | |
|-----------------------------------|------|
| Sodium as Na ₂ O (%) | 0.14 |
| Potassium as K ₂ O (%) | 0.20 |
| 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 05-12-16

Serial No. 152352

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 November' 2016.

REQUEST No.: 70115

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

Laboratory Sample No.: 184376
Date Sampled: November' 2016
Date Received: 01/11/2016
Sample Description: Ecotec Silica Fume
Testing monthly sample
for November' 2016.
Field No.: 1

TEST RESULTS

Chloride as Cl⁻ (%) 0.158
Sulphate as SO₃ (%) 0.6

Samples submitted by the Client.

M.Hanlon, M.File, File.



Approved Signatory

Nanthini Selvadurai

Date 05-12-16 Serial No. 152353

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: 70115

LAB. SAMPLE NO: 184376

SOURCE OF SAMPLE: Unknown

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for Nov 2016

Bulk Density - AS3582.3.6.5

Result: 666 Kg/m³

Mark Hanlon, Mat. File, File


Sharjeel Mahmood
10-11-2016



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

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Serial # 1586 Unit 1 Port 1

Sample: Silica Fume Ecotec-Monthly-Novemeber2016-LSN184376
Operator: Kayla Wells
Submitter: Boral
File: L:\Tristar\Data\L192\5293\000-337.SMP

| | |
|--|---|
| Started: 6/12/2016 11:48:44 AM | Analysis adsorptive: N2 |
| Completed: 6/12/2016 1:36:35 PM | Analysis bath temp.: 77.300 K |
| Report time: 7/12/2016 10:59:14 AM | Thermal correction: No |
| Sample mass: 0.8626 g | Warm free space: 12.3095 cm ³ Measured |
| Cold free space: 32.1310 cm ³ | Equilibration interval: 10 s |
| Low pressure dose: None | Sample density: 1.000 g/cm ³ |
| Automatic degas: No | |

Summary Report

Surface Area

Single point surface area at $p/p^{\circ} = 0.301382036$: 18.9290 m²/g

BET Surface Area: 19.4236 m²/g

Langmuir Surface Area: 28.5941 m²/g

Sample: Silica Fume Ecotec-Monthly-Novemeber2016-LSN184376
Operator: Kayla Wells
Submitter: Boral
File: L:\Tristar\Data\L192\5293\000-337.SMP

| | |
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| Low pressure dose: None | Sample density: 1.000 g/cm ³ |
| Automatic degas: No | |

Isotherm Tabular Report

| Relative Pressure (p/p°) | Absolute Pressure (mmHg) | Quantity Adsorbed (mmol/g) | Elapsed Time (h:min) | Saturation Pressure (mmHg) |
|--------------------------|--------------------------|----------------------------|----------------------|----------------------------|
| | | | 01:11 | 764.823181 |
| 0.026330058 | 20.137838 | 0.16596 | 01:25 | |
| 0.031967257 | 24.449299 | 0.17212 | 01:28 | |
| 0.051151081 | 39.121532 | 0.18761 | 01:31 | |
| 0.111581860 | 85.340393 | 0.21768 | 01:35 | |
| 0.149533226 | 114.366478 | 0.23160 | 01:38 | |
| 0.199912448 | 152.897675 | 0.24776 | 01:41 | |
| 0.250569175 | 191.641113 | 0.26289 | 01:43 | |
| 0.301382036 | 230.503967 | 0.27773 | 01:46 | |

Sample: Silica Fume Ecotec-Monthly-Novemeber2016-LSN184376
Operator: Kayla Wells
Submitter: Boral
File: L:\Tristar\Data\L192\5293\000-337.SMP

| | |
|--|---|
| Started: 6/12/2016 11:48:44 AM | Analysis adsorptive: N2 |
| Completed: 6/12/2016 1:36:35 PM | Analysis bath temp.: 77.300 K |
| Report time: 7/12/2016 10:59:14 AM | Thermal correction: No |
| Sample mass: 0.8626 g | Warm free space: 12.3095 cm ³ Measured |
| Cold free space: 32.1310 cm ³ | Equilibration interval: 10 s |
| Low pressure dose: None | Sample density: 1.000 g/cm ³ |
| Automatic degas: No | |

Langmuir Report

Langmuir surface area: 28.5941 ± 0.9870 m²/g
Slope: 3.41187 ± 0.11777 g/mmol
Y-intercept: 75.61 ± 15.36 mmHg·g/mmol
b: 0.045125 1/mmHg
Qm: 0.29309 mmol/g
Correlation coefficient: 0.996445
Molecular cross-sectional area: 0.1620 nm²

| Pressure (mmHg) | Quantity Adsorbed (mmol/g) | p/Q (mmHg·g/mmol) |
|--------------------|----------------------------------|----------------------|
| 20.137838 | 0.16596 | 121.34 |
| 24.449299 | 0.17212 | 142.04 |
| 39.121532 | 0.18761 | 208.53 |
| 85.340393 | 0.21768 | 392.04 |
| 114.366478 | 0.23160 | 493.82 |
| 152.897675 | 0.24776 | 617.12 |
| 191.641113 | 0.26289 | 728.97 |
| 230.503967 | 0.27773 | 829.96 |