



**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: 256/19

LAB SAMPLE NO: 226441

DATE RECEIVED: 20/09/2019

REQUEST No: 86026

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for Mid of September 2019

IDENTIFICATION OF CEMENT USED: Boral Cement SL Berrima Ref. No. 211-903-368-Mar 2019

TEST METHOD: AS3583: Methods of test for supplementary cementitious materials for use with Portland Cement

PROPERTY	DATE TESTED	RESULT	TEST METHOD
Relative density	01/10/2019	2.24	AS 3583.5
Relative water requirement	01/10/2019	112%	AS 3583.6
Relative strength 7days (accelerated)	08/10/2019	101%	AS 3583.6
Relative strength 28days (standard)	29/10/2019	97%	AS 3583.6

Notes:

- Sample supplied by the client and tested as received.
- Test results in this Test Report relate only to samples tested.

Shaun Guthridge, Mat. File, File



Approved Signatory

Julius C. Alvaro

Julius Alvaro

Date 31/10/19

Serial No.

CEM86026.JA.1

ACCREDITED FOR
TECHNICAL
COMPETENCE

Accredited for compliance with ISO/IEC 17025 - Testing
This report shall not be reproduced except in full without the approval of the Boral MTS Laboratory

NATA Accredited Laboratory

Number: 547



**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

FILE NO: 256/19

ADDRESS: 190 Toongabbie Road, Girraween, NSW 2145

REQUEST NO: 86026

LAB SAMPLE NO: 226441

SOURCE OF SAMPLE: Unknown

DATE RECEIVED: 20/09/2019

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for Mid of September 2019

IDENTIFICATION OF CEMENT USED: Boral Cement SL Berrima – Ref. 2019

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: 15/10/2019

Date Crushed: 22/10/2019 @ 7 Days

Results: Accelerated Pozzolanic Strength Activity Index:
Control Mix Strength:
Test Mix Strength:

104% @ 7 Days
31.6MPa
32.9MPa

Note:

Test mix used 242 mls of water and 1.9 grams of Dry Water Reducer (1000 NT from BASF) to obtain a flow of 100%.

Notes:

- Sample supplied by the client and tested as received.
- Test results in this Test Report relate only to samples tested.

Shaun Guthridge, Mat. File, File



Approved Signatory Julius C. Alvaro Julius Alvaro
Date 31/10/19 Serial No. CEM86026.JA.2

Accredited for compliance with ISO/IEC 17025 - Testing
This report shall not be reproduced except in full without the approval of the Boral MTS Laboratory

NATA Accredited Laboratory

Number: 547



**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: 256/19

REQUEST NO: 86026

LAB. SAMPLE NO: 226441

SOURCE OF SAMPLE: Unknown

DATE RECEIVED: 20/09/2019

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for Mid of September 2019

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	22/10/2019	0.5%	AS 3583.2	Max. 3.0%
Loss on ignition	22/10/2019	1.6%	AS 3583.3	Max. 6.0%
Relative Density	01/10/2019	2.24	AS 3583.5	

Notes:

- Sample supplied by the client and tested as received.
- Test results in this Test Report relate only to samples tested.

Shaun Guthridge, Mat. File, File



Approved Signatory Julius C Alvaro
Date 31/10/19 Serial No. CEM86026.JA.3

Julius Alvaro

NATA Accredited Laboratory

Accredited for compliance with ISO/IEC 17025 - Testing
This report shall not be reproduced except in full without the approval of the Boral MTS Laboratory

Number: 547



**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

FILE NO: 256/19

ADDRESS: 190 Toongabbie Road, Girraween, NSW 2145

REQUEST NO: 86026

LAB. SAMPLE NO: 226441

SOURCE OF SAMPLE: Unknown

DATE RECEIVED: 20/09/2019

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for Mid of September 2019

PROPERTY	DATE TESTED	RESULT	TEST METHOD
Bulk Density	22/10/2019	646 Kg/m ³	AS3582.3 – Clause 7.1.7

Notes:

- Sample supplied by the client and tested as received.
- Test results in this Test Report relate only to samples tested.

Shaun Guthridge, Mat. File, File

A handwritten signature in black ink, appearing to read "Julius C. Alvaro".
Julius Alvaro
31/10/2019



**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.: 256/19

PROJECT: Testing of Silica Fume sample for Mid of September '2019.

REQUEST No.: 86026

TEST PROCEDURE:

AS 3583.12 – 1991 – Determination of Available Alkali

Laboratory Sample No.: 226441
Date Sampled: Mid of Sept '2019
Date Received: 20/09/19
Date Tested: 28/10/19
Sample Description: Ecotec Silca Fume – Monthly
Sample Mid of Sept '2019.
Field No.: 1

TEST RESULTS:

Sodium as Na₂O (%) 0.05
Potassium as K₂O (%) 0.07
Available Alkali (%) 0.1

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

Note:

- Samples submitted by the Client.
- Test results in this Test Report relate only to the sample tested

S.Guthridge, Mat. File, File.



Approved Signatory NQS Nanthini Selvadurai

Date 28-10-19 Serial No. CHEM86026.NS.1

Accredited for compliance with ISO/IEC 17025 - Testing
This report shall not be reproduced except in full without the approval of the Boral MTS Laboratory

NATA Accredited Laboratory

Number: 9968



**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.:256/19

PROJECT: Testing of Silica Fume sample for Mid of September '2019

REQUEST No.:86026

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

Laboratory Sample No.: 226441
Date Sampled: Mid of September '2019
Date Received: 20/09/19
Date Tested: 16/10/19 to 24/09/19
Sample Description: Ecotec Silca Fume monthly
sample Mid of September'
2019.
Field No.: 1

TEST RESULTS:

Chloride as Cl⁻ (%) 0.045
Sulphate as SO₃ (%) < 0.1

Note:

- Samples submitted by the Client.
- Test results in this Test Report relate only to the sample tested

S.Guthridge, Mat. File, File.



Approved Signatory

Nanthini Selvadurai

Date 29-10-19

Serial No. CHEM86026.NS.2

NATA Accredited Laboratory

Accredited for compliance with ISO/IEC 17025 - Testing
This report shall not be reproduced except in full without the approval of the Boral MTS Laboratory

Number: 9968



**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.: 256/19

PROJECT: Testing of Silica fume sample for Mid of September' 2019.

REQUEST No.: 86026

TEST PROCEDURE: Boral In house Method 34 – Determination of metal oxides by XRF Flux (66:34) Fusion Bead and analysed using XRF

Laboratory Sample No.: 226441
Date Sampled: Mid of Sept' 2019.
Date Received: 20/09/19
Sample Description: Ecotec Silica Fume
monthly sample Mid
of September' 2019.

Field No.: 1

TEST RESULTS

Silicon as SiO ₂ (%)	95.6
Sodium as Na ₂ O (%)	0.22
Potassium as K ₂ O (%)	0.72
Total Alkali content as Na ₂ O equiv. (%)	0.7

Sample submitted by the Client.

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

Nanthini S
Analytical Chemist
29th October 2019.
S.Guthridge, Mat. File, File.



MicroActive 4.06

2000
Serial # 836 Unit 1

Page 1 of 8

Sample: Silica Fume-Ecotec-MonthlyMidSept2019-LSN-226441
Operator: KW
Submitter: Boral
File: C:\Users\kayla\Dropbox (PsS)\Lab\Custom...\000-155.SMP

Started: 16/10/2019 6:55:45 AM	Analysis adsorptive: N2
Completed: 16/10/2019 10:51:35 AM	Analysis bath temp.: 77.350 K
Report time: 30/10/2019 8:28:29 AM	Thermal correction: No
Sample mass: 0.3798 g	Warm free space: 18.7100 cm ³ Measured
Cold free space: 55.7430 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 $p/p^{\circ} = 0.149630636$: 19.4660 m²/g

BET Surface Area: 19.5338 m²/g

Langmuir Surface Area: 29.5246 m²/g



MicroActive 4.06

2000
Serial # 836 Unit 1

Page 2 of 8

Sample: Silica Fume-ecotec-MonthlyMidSept2019-LSN-226441
Operator: KW
Submitter: Boral
File: C:\Users\kayla\Dropbox (PsS)\Lab\Custom...\000-155.SMP

Started: 16/10/2019 6:55:45 AM
Completed: 16/10/2019 10:51:35 AM
Report time: 30/10/2019 8:28:29 AM
Sample mass: 0.3798 g
Cold free space: 55.7430 cm³
Low pressure dose: None
Automatic degas: No
Analysis adsorptive: N2
Analysis bath temp.: 77.350 K
Thermal correction: No
Warm free space: 18.7100 cm³ Measured
Equilibration interval: 15 s
Sample density: 1.000 g/cm³

Isotherm Tabular Report

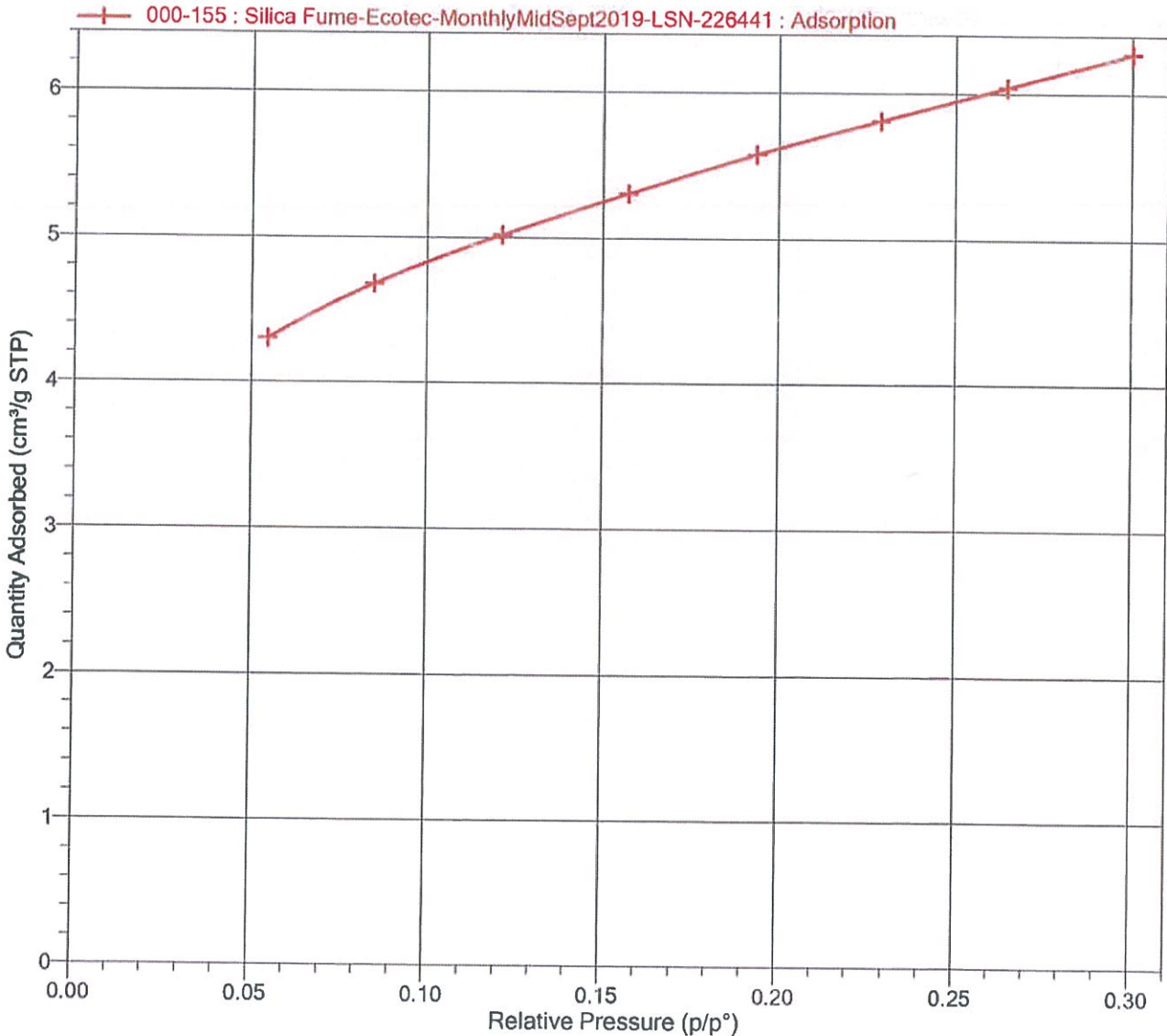
Relative Pressure (p/p ^o)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm ³ /g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			03:16	764.244263
0.054675881	41.785728	4.3017	03:32	
0.084991205	64.954041	4.6785	03:35	
0.121126025	92.569870	5.0187	03:39	
0.157179615	120.123619	5.3063	03:42	
0.193598620	147.956635	5.5804	03:46	
0.228731914	174.807053	5.8158	03:49	
0.264643376	202.252182	6.0464	03:53	
0.300108283	229.356033	6.2780	03:56	



Sample: Silica Fume-Ecotec-MonthlyMidSept2019-LSN-226441
Operator: KW
Submitter: Boral
File: C:\Users\kayla\Dropbox (PsS)\Lab\Custom...\000-155.SMP

Started: 16/10/2019 6:55:45 AM	Analysis adsorptive: N2
Completed: 16/10/2019 10:51:35 AM	Analysis bath temp.: 77.350 K
Report time: 30/10/2019 8:28:29 AM	Thermal correction: No
Sample mass: 0.3798 g	Warm free space: 18.7100 cm ³ Measured
Cold free space: 55.7430 cm ³	Equilibration interval: 15 s
Low pressure dose: None	Sample density: 1.000 g/cm ³
Automatic degas: No	

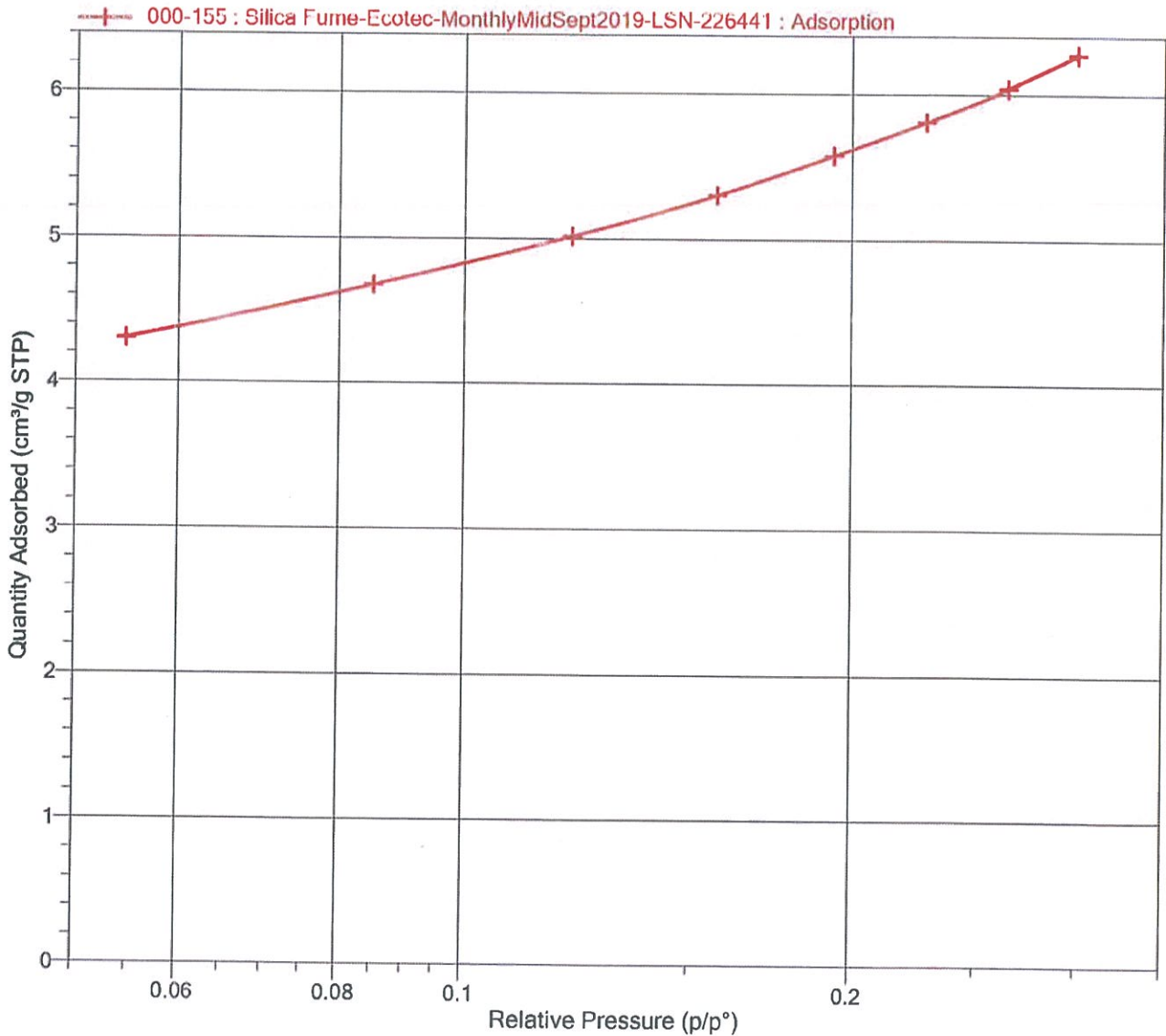
Isotherm Linear Plot



Sample: Silica Fume-Ecotec-MonthlyMidSept2019-LSN-226441
 Operator: KW
 Submitter: Boral
 File: C:\Users\kayla\Dropbox (PsS)\Lab\Custom...\000-155.SMP

Started: 16/10/2019 6:55:45 AM	Analysis adsorptive: N2
Completed: 16/10/2019 10:51:35 AM	Analysis bath temp.: 77.350 K
Report time: 30/10/2019 8:28:29 AM	Thermal correction: No
Sample mass: 0.3798 g	Warm free space: 18.7100 cm ³ Measured
Cold free space: 55.7430 cm ³	Equilibration interval: 15 s
Low pressure dose: None	Sample density: 1.000 g/cm ³
Automatic degas: No	

Isotherm Log Plot





MicroActive 4.06

2000
Serial # 836 Unit 1

Page 5 of 8

Sample: Silica Fume-Ecotec-MonthlyMidSept2019-LSN-226441
Operator: KW
Submitter: Boral
File: C:\Users\kayla\Dropbox (PsS)\Lab\Custom...\000-155.SMP

Started: 16/10/2019 6:55:45 AM
Completed: 16/10/2019 10:51:35 AM
Report time: 30/10/2019 8:28:29 AM
Sample mass: 0.3798 g
Cold free space: 55.7430 cm³
Low pressure dose: None
Automatic degas: No
Analysis adsorptive: N2
Analysis bath temp.: 77.350 K
Thermal correction: No
Warm free space: 18.7100 cm³ Measured
Equilibration interval: 15 s
Sample density: 1.000 g/cm³

BET Report

BET surface area: 19.5338 ± 0.2401 m²/g
Slope: 0.222116 ± 0.002689 g/cm³ STP
Y-intercept: 0.000707 ± 0.000520 g/cm³ STP
C: 315.161584
Qm: 4.4879 cm³/g STP
Correlation coefficient: 0.9995607
Molecular cross-sectional area: 0.1620 nm²

Relative Pressure (p/p ^o)	Quantity Adsorbed (cm ³ /g STP)	1/[Q(p ^o /p - 1)]
0.054675881	4.3017	0.013445
0.084991205	4.6785	0.019854
0.121126025	5.0187	0.027461
0.157179615	5.3063	0.035145
0.193598620	5.5804	0.043022
0.228731914	5.8158	0.050993
0.264643376	6.0464	0.059521
0.300108283	6.2780	0.068300



MicroActive 4.06

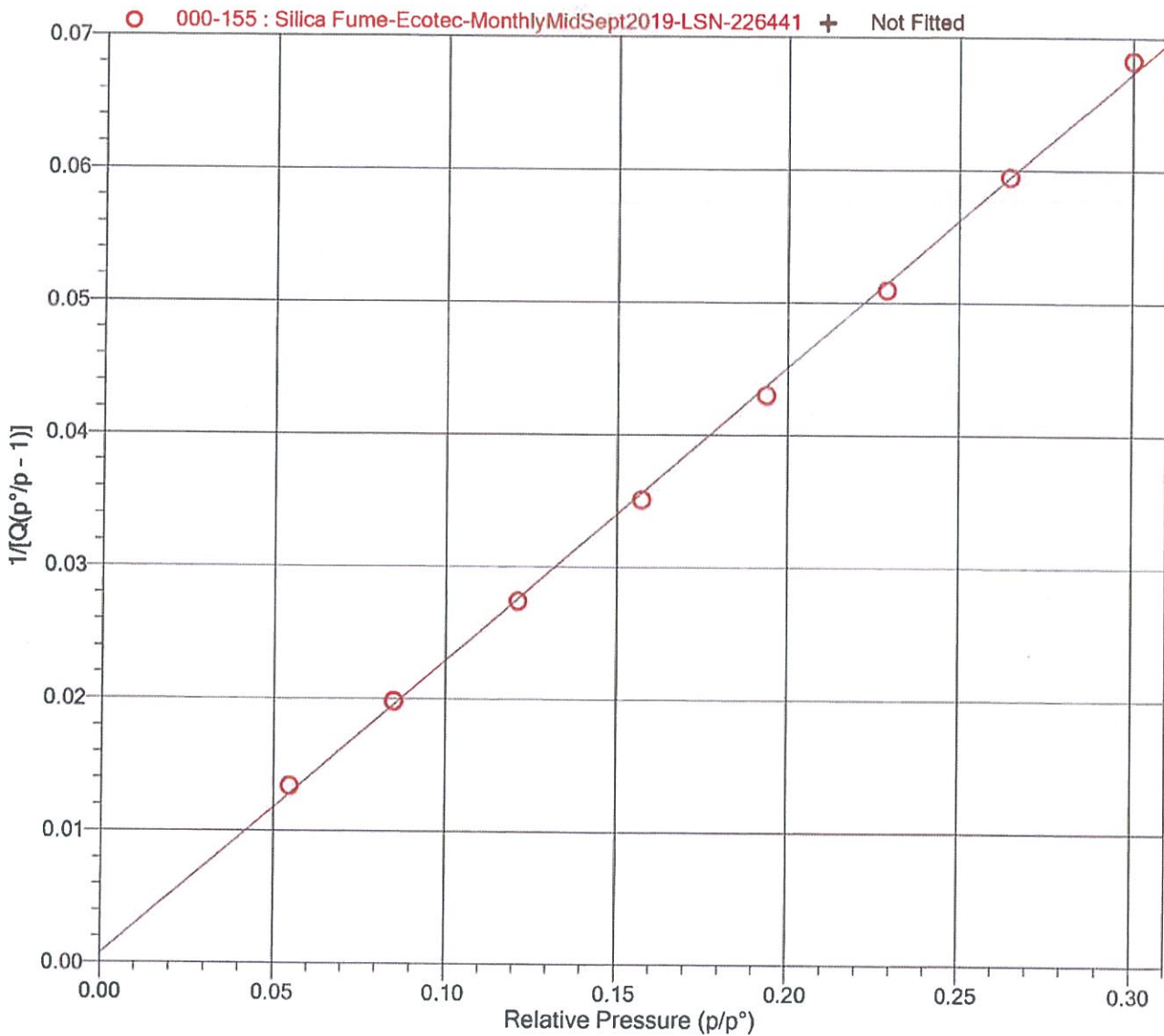
2000
Serial # 836 Unit 1

Page 6 of 8

Sample: Silica Fume-Ecotec-MonthlyMidSept2019-LSN-226441
Operator: KW
Submitter: Boral
File: C:\Users\kayla\Dropbox (PsS)\Lab\Custom...\000-155.SMP

Started: 16/10/2019 6:55:45 AM	Analysis adsorptive: N2
Completed: 16/10/2019 10:51:35 AM	Analysis bath temp.: 77.350 K
Report time: 30/10/2019 8:28:29 AM	Thermal correction: No
Sample mass: 0.3798 g	Warm free space: 18.7100 cm ³ Measured
Cold free space: 55.7430 cm ³	Equilibration interval: 15 s
Low pressure dose: None	Sample density: 1.000 g/cm ³
Automatic degas: No	

BET Surface Area Plot





MicroActive 4.06

2000
Serial # 836 Unit 1

Page 7 of 8

Sample: Silica Fume-Ecotec-MonthlyMidSept2019-LSN-226441
Operator: KW
Submitter: Boral
File: C:\Users\kayla\Dropbox (PsS)\Lab\Custom...\000-155.SMP

Started: 16/10/2019 6:55:45 AM
Completed: 16/10/2019 10:51:35 AM
Report time: 30/10/2019 8:28:29 AM
Sample mass: 0.3798 g
Cold free space: 55.7430 cm³
Low pressure dose: None
Automatic degas: No
Analysis adsorptive: N2
Analysis bath temp.: 77.350 K
Thermal correction: No
Warm free space: 18.7100 cm³ Measured
Equilibration interval: 15 s
Sample density: 1.000 g/cm³

Langmuir Report

Langmuir surface area: 29.5246 ± 0.8414 m²/g
Slope: 0.147422 ± 0.004201 g/cm³ STP
Y-Intercept: 4.316 ± 0.555 g/cm³ STP·mmHg
b: 0.034159 1/mmHg
Qm: 6.7832 cm³/g STP
Correlation coefficient: 0.997976
Molecular cross-sectional area: 0.1620 nm²

Pressure (mmHg)	Quantity Adsorbed (cm ³ /g STP)	p/Q (g/cm ³ STP·mmHg)
41.785728	4.3017	9.714
64.954041	4.6785	13.884
92.569870	5.0187	18.445
120.123619	5.3063	22.638
147.956635	5.5804	26.514
174.807053	5.8158	30.057
202.252182	6.0464	33.450



MicroActive 4.06

2000
Serial # 836 Unit 1

Page 8 of 8

Sample: Silica Fume-Ecotec-MonthlyMidSept2019-LSN-226441
Operator: KW
Submitter: Boral
File: C:\Users\kayla\Dropbox (PsS)\Lab\Custom...\000-155.SMP

Started: 16/10/2019 6:55:45 AM	Analysis adsorptive: N2
Completed: 16/10/2019 10:51:35 AM	Analysis bath temp.: 77.350 K
Report time: 30/10/2019 8:28:29 AM	Thermal correction: No
Sample mass: 0.3798 g	Warm free space: 18.7100 cm ³ Measured
Cold free space: 55.7430 cm ³	Equilibration interval: 15 s
Low pressure dose: None	Sample density: 1.000 g/cm ³
Automatic degas: No	

Langmuir Surface Area Plot

