



**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: 218177

REQUEST No: 83323

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for March 2019

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	29/04/2019	2.22	AS 3583.5
Relative water requirement	09/05/2019	113%	AS 3583.6
Relative strength 7days (accelerated)	16/05/2019	102%	AS 3583.6
Relative strength 28days (standard)	06/06/2019	87%	AS 3583.6

Note: Sample supplied by the client and tested as received.

Shaun Guthridge, Mat. File, File



Approved Signatory *Julius Alvaro* **Julius Alvaro**
Date 11/06/19 Serial No. 180983

Accredited for compliance with ISO/IEC 17025

NATA Accredited Laboratory

Number: 547



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TEST REPORT

CLIENT: XYPEX AUSTRALIA

FILE NO: 256/19

ADDRESS: 190 Toongabbie Road, Girraween, NSW 2145

REQUEST NO: 83323

LAB SAMPLE NO: 218177

SOURCE OF SAMPLE: Unknown

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for March 2019

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: 16/05/2019

Date Crushed: 23/05/2019 @ 7 Days

Results:	Accelerated Pozzolanic Strength Activity Index:	101% @ 7 Days
	Control Mix Strength:	27.4 MPa
	Test Mix Strength:	27.6 MPa

Note:

Test mix used 242 mls of water and 1.7 grams of Dry Water Reducer (1000 NT from BASF) to obtain a flow of 100%.

Note: Sample supplied by the client and tested as received.

Shaun Guthridge, Mat. File, File



Approved Signatory

Julius Alvaro Julius Alvaro

Date 11/06/19

Serial No.

180984

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Number: 547



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TEST REPORT

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

FILE NO: 256/19

REQUEST NO: 83323

LAB. SAMPLE NO: 218177

SOURCE OF SAMPLE: Unknown

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for March 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	11/06/2019	0.6%	AS 3583.2	Max. 3.0%
Loss on ignition	15/05/2019	1.7%	AS 3583.3	Max. 6.0%
Relative Density	29/04/2019	2.22	AS 3583.5	

Note: Sample supplied by the client and tested as received.

Shaun Guthridge, Mat. File, File



Approved Signatory Julius C. Alvaro **Julius Alvaro**
Date 11/06/19 Serial No. 180985

Accredited for compliance with ISO/IEC 17025

NATA Accredited Laboratory

Number: 547



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TEST REPORT

CLIENT: XYPEX AUSTRALIA

FILE NO: 256/19

ADDRESS: 190 Toongabbie Road, Girraween, NSW 2145

REQUEST NO: 83323

LAB. SAMPLE NO: 218177

SOURCE OF SAMPLE: Unknown

SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for March 2019

Bulk Density - AS3582.3 – Clause 7.1.7

Result: 638 Kg/m³

Note: Sample supplied by the client and tested as received.

Shaun Guthridge, Mat. File, File

A handwritten signature in black ink, appearing to read "Julius Alvaro".
Julius Alvaro
11/06/2019



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TEST REPORT

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

FILE No.:256/19

PROJECT: Testing of Silica Fume sample for start of March '2019

REQUEST No.:83323

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

Laboratory Sample No.: 218177
Date Sampled: Start of March '2019
Date Received: 18/03/19
Sample Description: Ecotec Silca Fume
monthly sample for start
of March' '2019.
Field No.: 1

TEST RESULTS:

Chloride as Cl⁻ (%) 0.045
Sulphate as SO₃ (%) 0.8

Samples submitted by the Client.

S.Guthridge, Mat. File, File.



Approved Signatory

Nanthini Selvadurai

Date 07-05-19

Serial No.

180986

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.:256/19

PROJECT: Testing of Silica Fume sample for start of March '2019.

REQUEST No.: 83323

TEST PROCEDURE:

AS 3583.12 – 1991 – Determination of Available Alkali

Laboratory Sample No.: 218177
Date Sampled: start of March '2019
Date Received: 18/03/19
Sample Description: Ecotec Silca Fume –
Monthly Sample for start
of March '2019.
Field No.: 1

TEST RESULTS:

Sodium as Na₂O (%) 0.13
Potassium as K₂O (%) 0.06
Available Alkali (%) 0.2

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

Samples submitted by the Client.

S.Guthridge, Mat. File, File.



Approved Signatory

Nanthini Selvadurai

Date 07-05-19 Serial No.

180987

Accredited for compliance with ISO/IEC 17025

NATA Accredited Laboratory

Number: 9968



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Report Template Rev. (2) April 2017 - Authorised by M.A.

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TEST REPORT

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

FILE No.: 256/19

PROJECT: Testing of Silica fume sample for start of March' 2019.

REQUEST No.: 83323

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

Laboratory Sample No.: 218177
Date Sampled: Start of March' 2019.
Date Received: 18/03/19
Sample Description: Ecotec Silica Fume
monthly sample for
start of March' 2019.
Field No.: 1

TEST RESULTS

Silicon as SiO ₂ (%)	93.7
Sodium as Na ₂ O (%)	0.29
Potassium as K ₂ O (%)	0.81
Total Alkali content as Na ₂ O equiv. (%)	0.8

Sample submitted by the Client.

Nanthini S
Analytical Chemist
07th May 2019.
S.Guthridge, Mat. File, File.



Particle and Surface Sciences Pty. Limited

PO Box 1926, Gosford NSW Australia 2250 Phone: (+61) 02 4323 7822 Email: pssinfo@bigpond.com ACN: 051 682 396 ABN: 32 051 682 396

MicroActive 4.06

2000
Serial # 836 Unit 1

Page 1 of 8

Sample: Ecotec Silica Fume -Monthly-March19-LSN-218177
Operator: KW
Submitter: Boral
File: C:\Users\kayia\Dropbox (PsS)\Lab\Custom...\000-118.SMP

Started: 30/05/2019 8:11:38 AM	Analysis adsorptive: N2
Completed: 30/05/2019 11:43:48 AM	Analysis bath temp.: 77.350 K
Report time: 6/06/2019 10:27:14 AM	Thermal correction: No
Sample mass: 0.5297 g	Warm free space: 15.8623 cm ³ Measured
Cold free space: 46.2454 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 $p/p^{\circ} = 0.149630636$: 16.7405 m²/g

BET Surface Area: 16.9861 m²/g

Langmuir Surface Area: 25.7607 m²/g



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Page 2 of 8

Sample: Ecotec Silica Fume -Monthly-March19-LSN-218177
Operator: KW
Submitter: Boral
File: C:\Users\kayla\Dropbox (PsS)\Lab\Custom...\000-118.SMP

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Isotherm Tabular Report

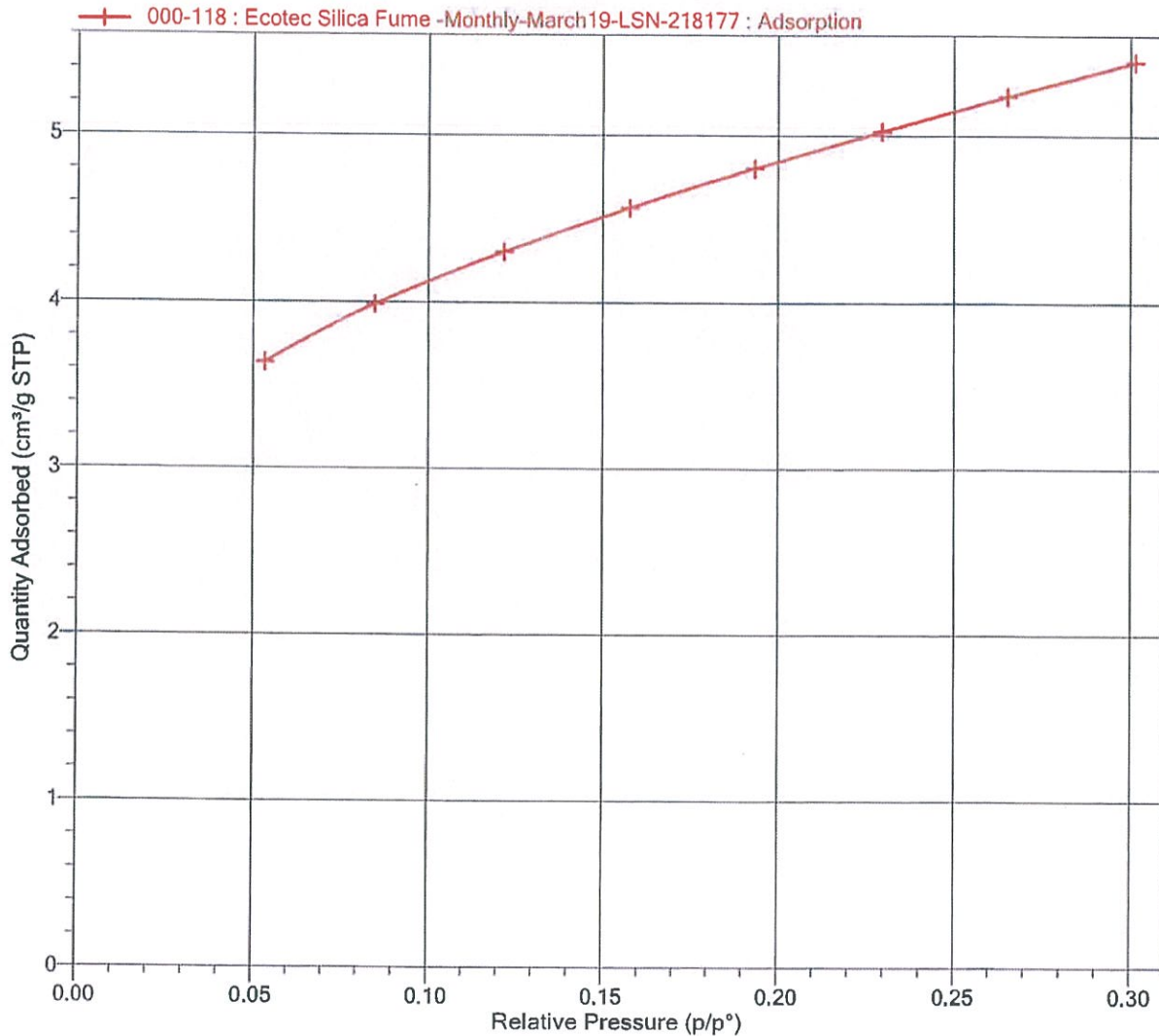
Relative Pressure (p/p [*])	Absolute Pressure (mmHg)	Quantity Adsorbed (cm ³ /g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
0.053366266	40.787624	3.6318	02:52	764.296021
0.084768934	64.788559	3.9817	03:08	
0.121767378	93.066322	4.3004	03:11	
0.157568171	120.428726	4.5655	03:15	
0.193389258	147.806641	4.8040	03:18	
0.229447205	175.365585	5.0238	03:21	
0.265241220	202.722809	5.2389	03:25	
0.301299126	230.281723	5.4466	03:28	
			03:32	



Sample: Ecotec Silica Fume -Monthly-March19-LSN-218177
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Automatic degas: No	

Isotherm Linear Plot

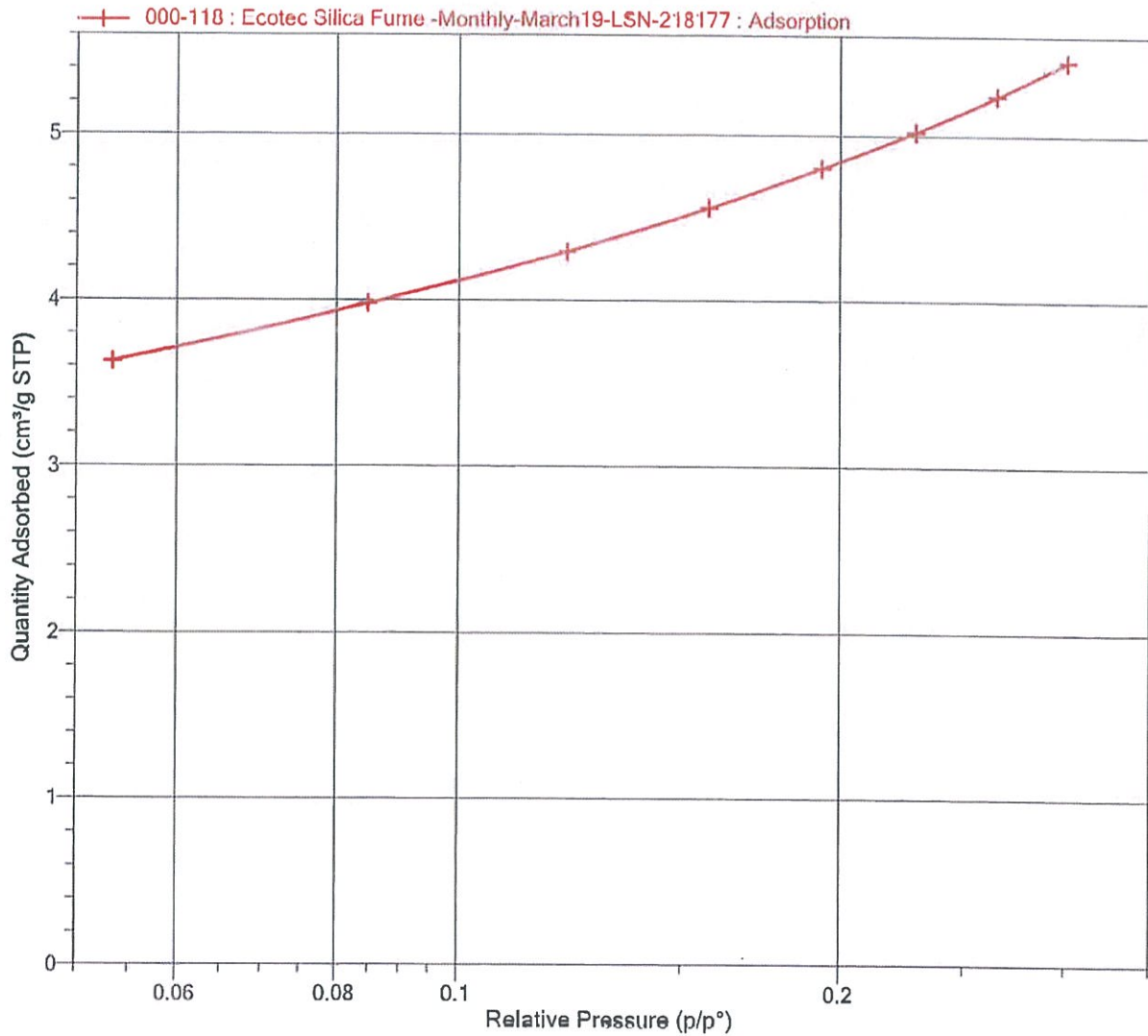




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Isotherm Log Plot





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

BET Report

BET surface area: 16.9861 ± 0.1939 m²/g
Slope: 0.254916 ± 0.002871 g/cm³ STP
Y-Intercept: 0.001328 ± 0.000557 g/cm³ STP
C: 192.941763
Qm: 3.9025 cm³/g STP
Correlation coefficient: 0.9996196
Molecular cross-sectional area: 0.1620 nm²

Relative Pressure (p/p°)	Quantity Adsorbed (cm ³ /g STP)	1/[Q(p°/p - 1)]
0.053366266	3.6318	0.015522
0.084768934	3.9817	0.023261
0.121767378	4.3004	0.032241
0.157568171	4.5655	0.040968
0.193389258	4.8040	0.049908
0.229447205	5.0238	0.059272
0.265241220	5.2389	0.068905
0.301299126	5.4466	0.079174



MicroActive 4.06

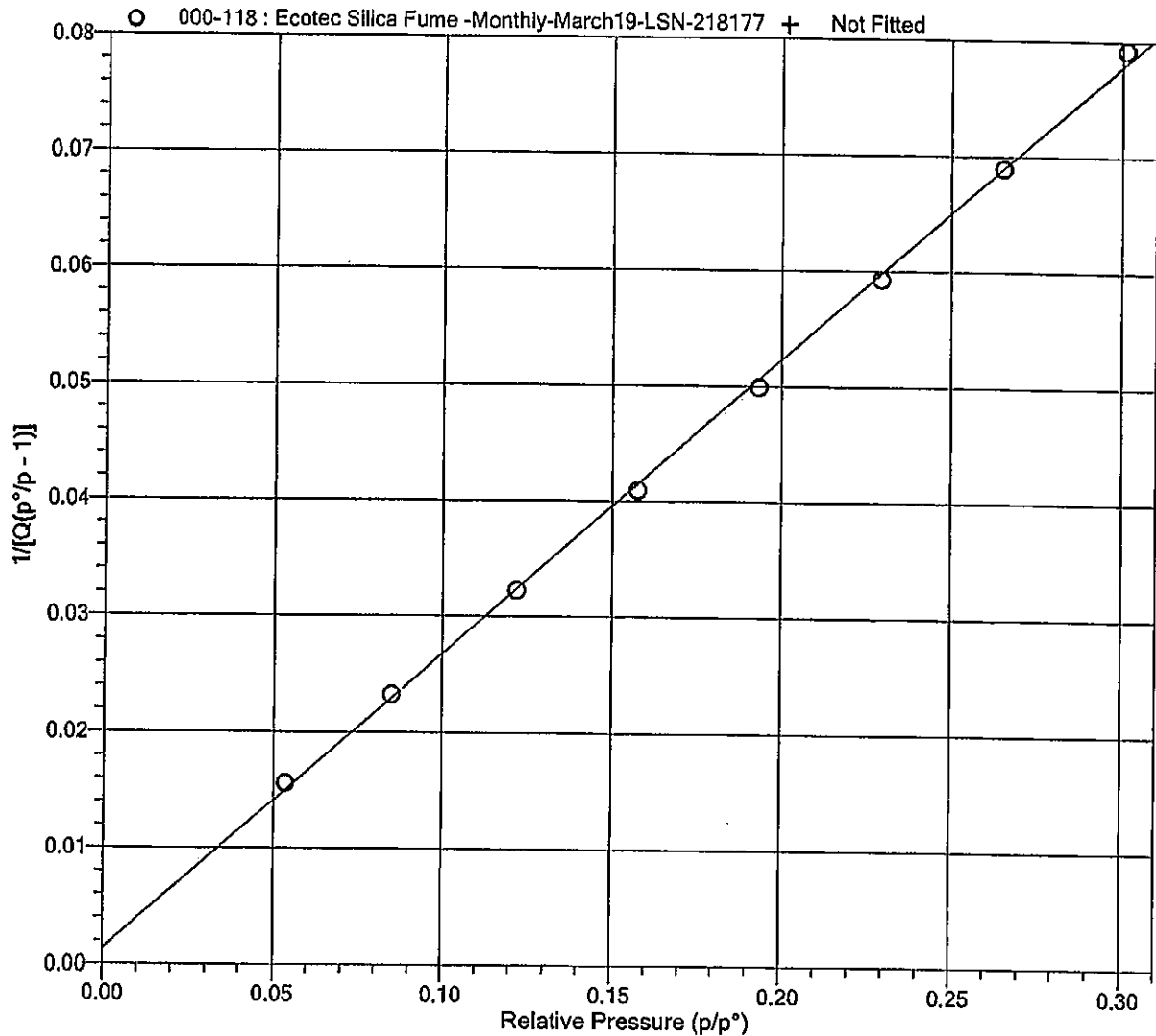
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BET Surface Area Plot





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

Langmuir Report

Langmuir surface area: 25.7607 ± 0.7948 m²/g
 Slope: 0.168962 ± 0.005213 g/cm³ STP
 Y-intercept: 5.303 ± 0.690 g/cm³ STP·mmHg
 b: 0.031859 1/mmHg
 Qm: 5.9185 cm³/g STP
 Correlation coefficient: 0.997628
 Molecular cross-sectional area: 0.1620 nm²

Pressure (mmHg)	Quantity Adsorbed (cm ³ /g STP)	p/Q (g/cm ³ STP·mmHg)
40.787624	3.6318	11.231
64.788559	3.9817	16.272
93.066322	4.3004	21.641
120.428726	4.5655	26.378
147.806641	4.8040	30.768
175.365585	5.0238	34.907
202.722809	5.2389	38.695



Sample: Ecotec Silica Fume -Monthly-March19-LSN-218177
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Langmuir Surface Area Plot

