



**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:** 256/18

**LAB SAMPLE NO:** 206469

**REQUEST No:** 79073

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume – Monthly Sample for Mid June 2018

**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	04/07/2018	2.20	AS 3583.5
Relative water requirement	05/07/2018	112 %	AS 3583.6
Relative strength 7days (accelerated)	12/07/2018	108 %	AS 3583.6
Relative strength 28days (standard)	02/08/2018	95 %	AS 3583.6

Shaun Guthridge, Mat. File, File



Approved Signatory \_\_\_\_\_

**Sharjeel Mahmood**

Date 13-08-2018

Serial No. \_\_\_\_\_

170580

Accredited for compliance with ISO/IEC 17025

NATA Accredited Laboratory

Number: 547



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**REQUEST NO:** 79073

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**SOURCE OF SAMPLE:** Unknown

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume – Monthly Sample for Mid June 2018

**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:** 02-08-2018

**Date Crushed:** 09-08-2018 @ 7 Days

<b>Results:</b>	<b>Accelerated Pozzolanic Strength Activity Index:</b>	<b>118 % @ 7 Days</b>
	<b>Control Mix Strength:</b>	<b>27.8 MPa</b>
	<b>Test Mix Strength:</b>	<b>32.7 MPa</b>

**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 %.

Shaun Guthridge, Mat. File, File



Approved Signatory

**Sharjeel Mahmood**

Date 13-08-2018 Serial No. 170581

170581

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: 256/18**

**REQUEST NO: 79073**

**LAB. SAMPLE NO: 206469**

**SOURCE OF SAMPLE: Unknown**

**SAMPLE IDENTIFICATION: Ecotec Silica Fume – Monthly Sample for Mid-June 2018**

**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	09/08/2018	0.7 %	AS 3583.2	Max. 3.0%
Loss on ignition	09/08/2018	1.9 %	AS 3583.3	Max. 6.0%
Relative Density	04/07/2018	2.20	AS 3583.5	

Sample submitted by the client.

Shaun Guthridge, Mat. File, File



Approved Signatory \_\_\_\_\_

**Sharjeel Mahmood**

Date 13-08-2018

Serial No. \_\_\_\_\_

170582

Accredited for compliance with ISO/IEC 17025

NATA Accredited Laboratory

Number: 547



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**TEST REPORT**

**CLIENT:** XYPEX AUSTRALIA

**FILE NO:** 256/18

**ADDRESS:** 190 Toongabbie Road, Girraween, NSW 2145

**REQUEST NO:** 79073

**LAB. SAMPLE NO:** 206469

**SOURCE OF SAMPLE:** Unknown

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume – Monthly Sample for Mid-June 2018

**Bulk Density - AS3582.3 – Clause 7.1.7**

**Result:** 698 Kg/m<sup>3</sup>

Shaun Guthridge, Mat. File, File

A handwritten signature in black ink, appearing to read "Julius Alvaro".  
Julius Alvaro  
13/08/2018



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**TEST REPORT**

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

FILE No.: 256/18

PROJECT: Testing of Silica fume sample for Mid of June 2018.

REQUEST No.: 79073

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

Laboratory Sample No.: 206469  
Date Sampled: Mid. June 2018.  
Date Received: 29/06/18  
Sample Description: Ecotec Silica Fume  
Mid. of June 2018.  
Field No.: 1

**TEST RESULTS**

Silicon as SiO<sub>2</sub> (%) 94.4

Sample submitted by the Client.

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

Nanthini S  
Analytical Chemist  
09<sup>th</sup> August 2018.  
S.Guthridge, Mat. File, File.



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**TEST REPORT**

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

FILE No.:256/18

PROJECT: Testing of Silica Fume sample for Mid. of June .2018.

REQUEST No.: 79073

**TEST PROCEDURE:**

AS 3583.12 – 1991 – Determination of Available Alkali

Laboratory Sample No.: 206469  
Date Sampled: Mid. of June' 2018  
Date Received: 29/06/18  
Sample Description: Ecotec Silca Fume –  
Monthly Sample for Mid.  
June 2018.  
Field No.: 1

**TEST RESULTS:**

Sodium as Na<sub>2</sub>O (%) 0.06  
Potassium as K<sub>2</sub>O (%) 0.06  
Available Alkali (%) 0.1

Available Alkali (%) = Na<sub>2</sub>O (%) + (0.658 x K<sub>2</sub>O %)

Samples submitted by the Client.

S.Guthridge, Mat. File, File.



Approved Signatory

Nanthini Selvadurai

Date 10-08-18

Serial No.

17 0 5 8 3

NATA Accredited Laboratory



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**TEST REPORT**

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

FILE No.:256/18

PROJECT: Testing of Silica Fume sample for Mid of June' 2018

REQUEST No.: 79073

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

Laboratory Sample No.: 206469  
Date Sampled: Mid. June '2018  
Date Received: 29/06/18  
Sample Description: Ecotec Silca Fume  
monthly sample for Mid.  
June' 2018.  
Field No.: 1

**TEST RESULTS:**

Chloride as Cl<sup>-</sup> (%) 0.011  
Sulphate as SO<sub>3</sub> (%) < 0.1

Samples submitted by the Client.

S.Guthridge, Mat. File, File.



Approved Signatory

Nanthini Selvadurai

Date 10-08-18

Serial No.

170584



MicroActive 4.02

3000  
Serial # 1586 Unit 1 Port 2

Page 1 of 8

Sample: LSN:206469  
Operator: KW  
Submitter: Boral  
File: \\192.168.0.110\Public\PsS\Customers\L1...\000-060.SMP

Started: 2/08/2018 11:48:57 AM	Analysis adsorptive: N2
Completed: 2/08/2018 2:11:28 PM	Analysis bath temp.: 77.461 K
Report time: 10/08/2018 12:08:58 PM	Thermal correction: No
Sample mass: 1.6571 g	Warm free space: 11.8908 cm <sup>3</sup> Measured
Cold free space: 30.6715 cm <sup>3</sup>	Equilibration interval: 15 s
Low pressure dose: None	Sample density: 1.000 g/cm <sup>3</sup>
Automatic degas: No	

### Summary Report

#### Surface Area

Single point surface area at  $p/p^\circ = 0.149630636$ : 17.3942 m<sup>2</sup>/g

BET Surface Area: 17.7243 m<sup>2</sup>/g

Langmuir Surface Area: 24.9452 m<sup>2</sup>/g





Sample: LSN:206469  
Operator: KW  
Submitter: Boral  
File: \\192.168.0.110\Public\PsS\Customers\L1...1000-060.SMP

Started: 2/08/2018 11:48:57 AM  
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Automatic degas: No  
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Thermal correction: No  
Warm free space: 11.8908 cm<sup>3</sup> Measured  
Equilibration interval: 15 s  
Sample density: 1.000 g/cm<sup>3</sup>

**Isotherm Tabular Report**

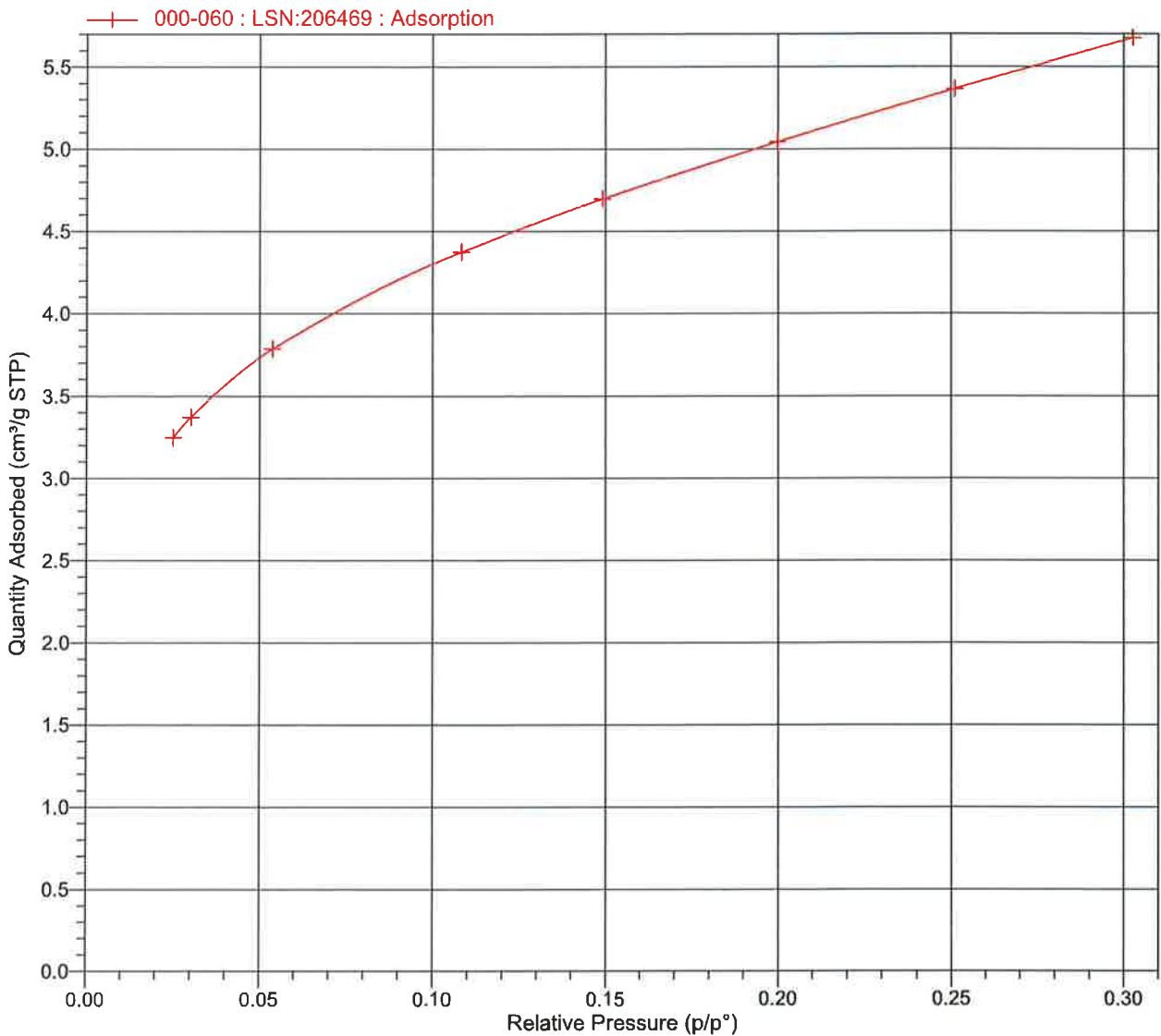
Relative Pressure (p/p°)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm <sup>3</sup> /g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			01:28	769.839905
0.025228011	19.421530	3.2496	01:41	
0.030350875	23.365314	3.3737	01:45	
0.053790082	41.409752	3.7844	01:51	
0.108394787	83.446632	4.3743	01:58	
0.149318916	114.951660	4.6978	02:02	
0.200018481	153.982208	5.0435	02:07	
0.251196736	193.381271	5.3650	02:12	
0.302752913	233.071274	5.6754	02:16	



Sample: LSN:206469  
Operator: KW  
Submitter: Boral  
File: \\192.168.0.110\Public\PsS\Customers\L1...\000-060.SMP

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

Isotherm Linear Plot



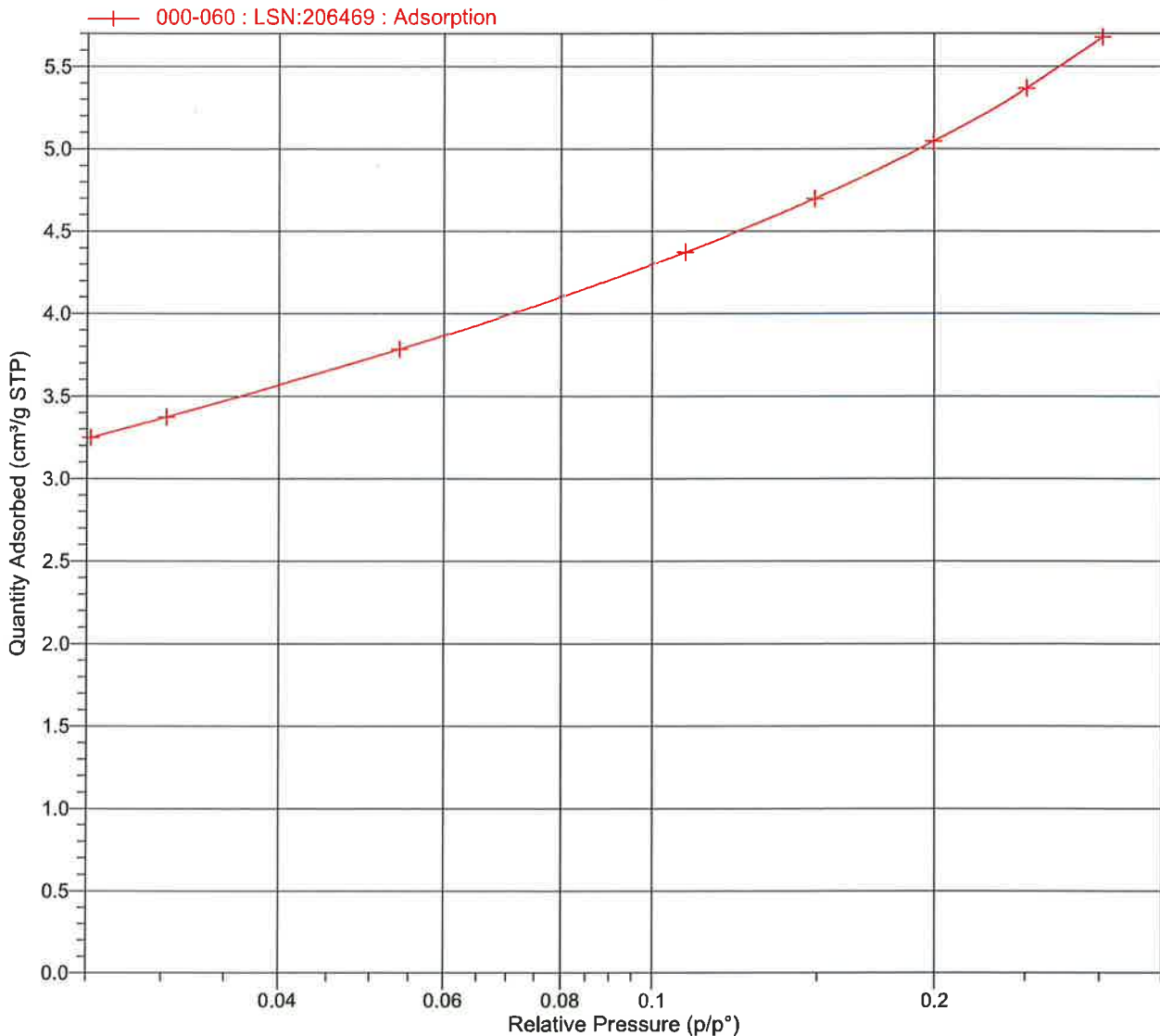


Sample: LSN:206469  
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Low pressure dose: None  
Automatic degas: No

Analysis adsorptive: N2  
Analysis bath temp.: 77.461 K  
Thermal correction: No  
Warm free space: 11.8908 cm<sup>3</sup> Measured  
Equilibration interval: 15 s  
Sample density: 1.000 g/cm<sup>3</sup>

Isotherm Log Plot





Sample: LSN:206469  
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Submitter: Boral  
File: \\192.168.0.110\Public\PSS\Customers\L1...\000-060.SMP

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Report time: 10/08/2018 12:08:58 PM  
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Cold free space: 30.6715 cm<sup>3</sup>  
Low pressure dose: None  
Automatic degas: No  
Analysis adsorptive: N2  
Analysis bath temp.: 77.461 K  
Thermal correction: No  
Warm free space: 11.8908 cm<sup>3</sup> Measured  
Equilibration interval: 15 s  
Sample density: 1.000 g/cm<sup>3</sup>

**BET Report**

BET surface area: 17.7243 ± 0.1747 m<sup>2</sup>/g  
Slope: 0.244010 ± 0.002386 g/cm<sup>3</sup> STP  
Y-intercept: 0.001560 ± 0.000407 g/cm<sup>3</sup> STP  
C: 157.380726  
Qm: 4.0721 cm<sup>3</sup>/g STP  
Correlation coefficient: 0.9997133  
Molecular cross-sectional area: 0.1620 nm<sup>2</sup>

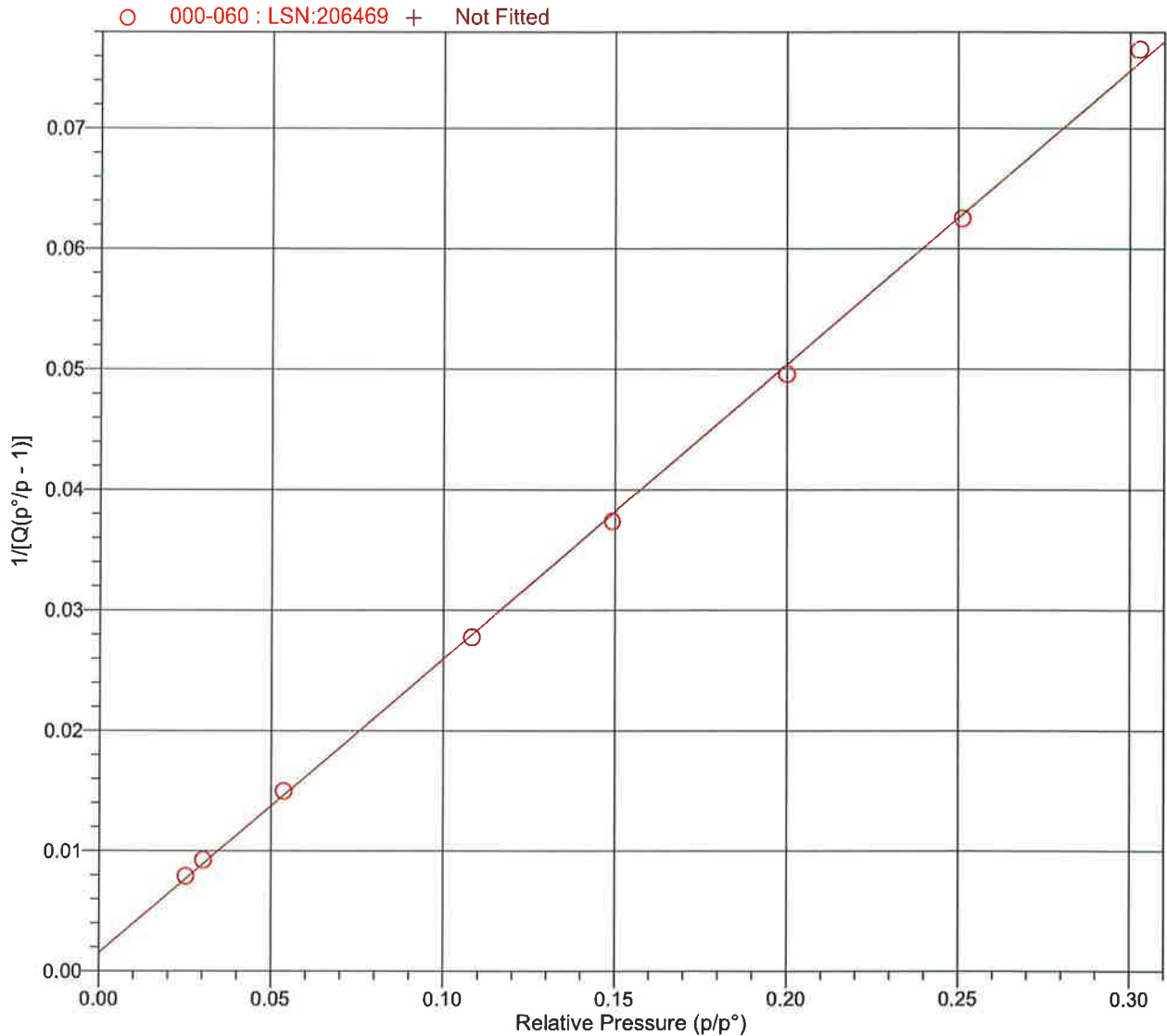
Relative Pressure (p/p <sup>o</sup> )	Quantity Adsorbed (cm <sup>3</sup> /g STP)	1/[Q(p <sup>o</sup> /p - 1)]
0.025228011	3.2496	0.007964
0.030350875	3.3737	0.009278
0.053790082	3.7844	0.015022
0.108394787	4.3743	0.027792
0.149318916	4.6978	0.037364
0.200018481	5.0435	0.049574
0.251196736	5.3650	0.062529
0.302752913	5.6754	0.076507



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Sample mass: 1.6571 g	Warm free space: 11.8908 cm <sup>3</sup> Measured
Cold free space: 30.6715 cm <sup>3</sup>	Equilibration interval: 15 s
Low pressure dose: None	Sample density: 1.000 g/cm <sup>3</sup>
Automatic degas: No	

BET Surface Area Plot





Sample: LSN:206469  
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Low pressure dose: None  
Automatic degas: No  
Analysis adsorptive: N2  
Analysis bath temp.: 77.461 K  
Thermal correction: No  
Warm free space: 11.8908 cm<sup>3</sup> Measured  
Equilibration interval: 15 s  
Sample density: 1.000 g/cm<sup>3</sup>

**Langmuir Report**

Langmuir surface area: 24.9452 ± 0.8308 m<sup>2</sup>/g  
Slope: 0.174486 ± 0.005811 g/cm<sup>3</sup> STP  
Y-intercept: 3.435 ± 0.636 mmHg·g/cm<sup>3</sup> STP  
b: 0.050791 1/mmHg  
Qm: 5.7311 cm<sup>3</sup>/g STP  
Correlation coefficient: 0.997238  
Molecular cross-sectional area: 0.1620 nm<sup>2</sup>

Pressure (mmHg)	Quantity Adsorbed (cm <sup>3</sup> /g STP)	p/Q (mmHg·g/cm <sup>3</sup> STP)
19.421530	3.2496	5.977
23.365314	3.3737	6.926
41.409752	3.7844	10.942
83.446632	4.3743	19.077
114.951660	4.6978	24.469
153.982208	5.0435	30.531
193.381271	5.3650	36.045



Sample: LSN:206469  
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Submitter: Boral  
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Analysis adsorptive: N2  
Analysis bath temp.: 77.461 K  
Thermal correction: No  
Warm free space: 11.8908 cm<sup>3</sup> Measured  
Equilibration interval: 15 s  
Sample density: 1.000 g/cm<sup>3</sup>

Langmuir Surface Area Plot

