



**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:** 256/20

**LAB SAMPLE NO:** 242844

**DATE RECEIVED:** 30/07/2020

**REQUEST No:** 90588

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume – 2020 – SA – 0204A

**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	05/08/2020	2.34	AS 3583.5
Relative water requirement	06/08/2020	112%	AS 3583.6
Relative strength 7days (accelerated)	13/08/2020	106%	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 25/09/2020 Serial No. CEM90588.JA.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  
 Test results in this Test Report relate only to the samples tested

NATA Accredited Laboratory

Number: 547



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**TEST REPORT**

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**FILE NO:** 256/20

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

**REQUEST NO:** 90588

**LAB SAMPLE NO:** 242844

**SOURCE OF SAMPLE:** Unknown

**DATE RECEIVED:** 30/07/2020

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume – 2020 – SA – 0204A

**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:** 11/08/2020

**Date Crushed:** 18/08/2020 @ 7 Days

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

107% @ 7 Days  
37.0 MPa  
39.7 MPa

**Note:**

Test mix used 242 mls of water and 1.8 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 C. Alvaro*

Julius Alvaro

Date 25/09/2020

Serial No. CEM90588.JA.2

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**TEST REPORT**

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

**FILE NO:** 256/20

**REQUEST NO:** 90588

**LAB. SAMPLE NO:** 242844

**SOURCE OF SAMPLE:** Unknown

**DATE RECEIVED:** 30/07/2020

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume – 2020 – SA – 0204A

**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	13/08/2020	0.9%	AS 3583.2	Max. 3.0%
Loss on ignition	13/08/2020	2.1%	AS 3583.3	Max. 6.0%
Relative Density	05/08/2020	2.34	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 25/09/2020 Serial No. CEM90588.JA.3

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**TEST REPORT**

**CLIENT:** XYPEX AUSTRALIA

**FILE NO:** 256/20

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

**REQUEST NO:** 90588

**LAB. SAMPLE NO:** 242844

**SOURCE OF SAMPLE:** Unknown

**DATE RECEIVED:** 30/07/2020

**SAMPLE IDENTIFICATION:** Ecotec Silica Fume – 2020 – SA – 0204A

PROPERTY	DATE TESTED	RESULT	TEST METHOD
Bulk Density	18/08/2020	677 Kg/m <sup>3</sup>	AS3582.3 – Clause 7.1.7

**Notes:**

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Shaun Guthridge, Mat. File, File

  
Julius Alvaro  
25/09/2020



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**TEST REPORT**

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

FILE No.: 256/20

PROJECT: Testing of Silica fume samples.

REQUEST No.: 90588

**TEST PROCEDURE:** Boral In House Method 7 – Based on AS2350.2 using XRF.

Laboratory Sample No.:	242844
Date Sampled:	Unknown
Date Received:	30/07/20
Sample Description:	Ecotec Silica Fume – 2020 SA – 0204A.
Field No.:	1

**TEST RESULTS**

Silicon as SiO <sub>2</sub> (%)	85.6
Sodium as Na <sub>2</sub> O (%)	1.01
Potassium as K <sub>2</sub> O (%)	2.51
Total Alkali content as Na <sub>2</sub> O equiv. (%)	2.7

Sample submitted by the Client.

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

Nanthini S  
Analytical Chemist  
03<sup>rd</sup> September 2020.  
S.Guthridge, Mat. File, File.



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**TEST REPORT**

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

FILE No.:256/20

PROJECT: Testing of Silica Fume Sample.

REQUEST No.: 90588

**TEST PROCEDURE:**

**AS 3583.12 – 1991 – Determination of Available Alkali**

Laboratory Sample No.: 242844  
Date Sampled: Unknown  
Date Received: 30/07/20  
Date Tested: 02/09/20  
Sample Description: Ecotec Silica Fume  
2020 SA – 0204A.  
Field No.: 1

**TEST RESULTS:**

Sodium as Na<sub>2</sub>O (%) 0.20  
Potassium as K<sub>2</sub>O (%) 0.25  
Available Alkali (%) 0.4

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

**Note:**

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S.Guthridge, Mat. File, File



Approved Signatory

Nanthini Selvadurai

CHEM90588.NS.5

Date 03-09-20 Serial No.

NATA Accredited Laboratory

Accredited for compliance with ISO/IEC 17025

Number: 9968



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**TEST REPORT**

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

FILE No.:256/20

PROJECT: Testing of Silica Fume samples

REQUEST No.: 90588

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

Laboratory Sample No.:	242844
Date Sampled:	Unknown
Date Received:	30/07/20
Date Tested:	07/08/20
Sample Description:	Ecotec Silica Fume 2020- SA -0204A
Field No.:	1

**TEST RESULTS:**

Chloride as Cl <sup>-</sup> (%)	0.101
Sulphate as SO <sub>3</sub> (%)	0.3

Notes:

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S.Guthridge, Mat. File, File



Approved Signatory

Nanthini Selvadurai

CHEM90588.NS.1

Date 03-09-20 Serial No. \_\_\_\_\_

NATA Accredited Laboratory



TriStar 3000 V6.08 A

Unit 1 Port 2

Serial #: 1586

Page 1

Sample: LSN 242844  
Operator: MG  
Submitter: Boral  
File: Y:\...\TRISTAR\000-165.SMP

Started: 4/09/2020 11:13:50AM  
Completed: 4/09/2020 4:22:26PM  
Report Time: 4/09/2020 4:41:19PM  
Warm Free Space: 17.4871 cm<sup>3</sup> Measured  
Equilibration Interval: 15 s  
Sample Density: 1.000 g/cm<sup>3</sup>

Analysis Adsorptive: N2  
Analysis Bath Temp.: 77.300 K  
Sample Mass: 0.5770 g  
Cold Free Space: 48.7036 cm<sup>3</sup> Measured  
Low Pressure Dose: None  
Automatic Degas: No

**Isotherm Tabular Report**

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm <sup>3</sup> /g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
0.026311761	20.34863	3.2035	03:22	773.36652
0.033128280	25.62030	3.3472	03:37	
0.054574754	42.20629	3.6633	03:44	
0.097476216	75.38484	4.0942	03:49	
0.149341397	115.49564	4.4874	03:53	
0.199502468	154.28853	4.8158	03:57	
0.249697593	193.10776	5.1216	04:01	
0.300020551	232.02585	5.4198	04:04	
			04:08	



TriStar 3000 V6.08 A

Unit 1 Port 2

Serial #: 1586

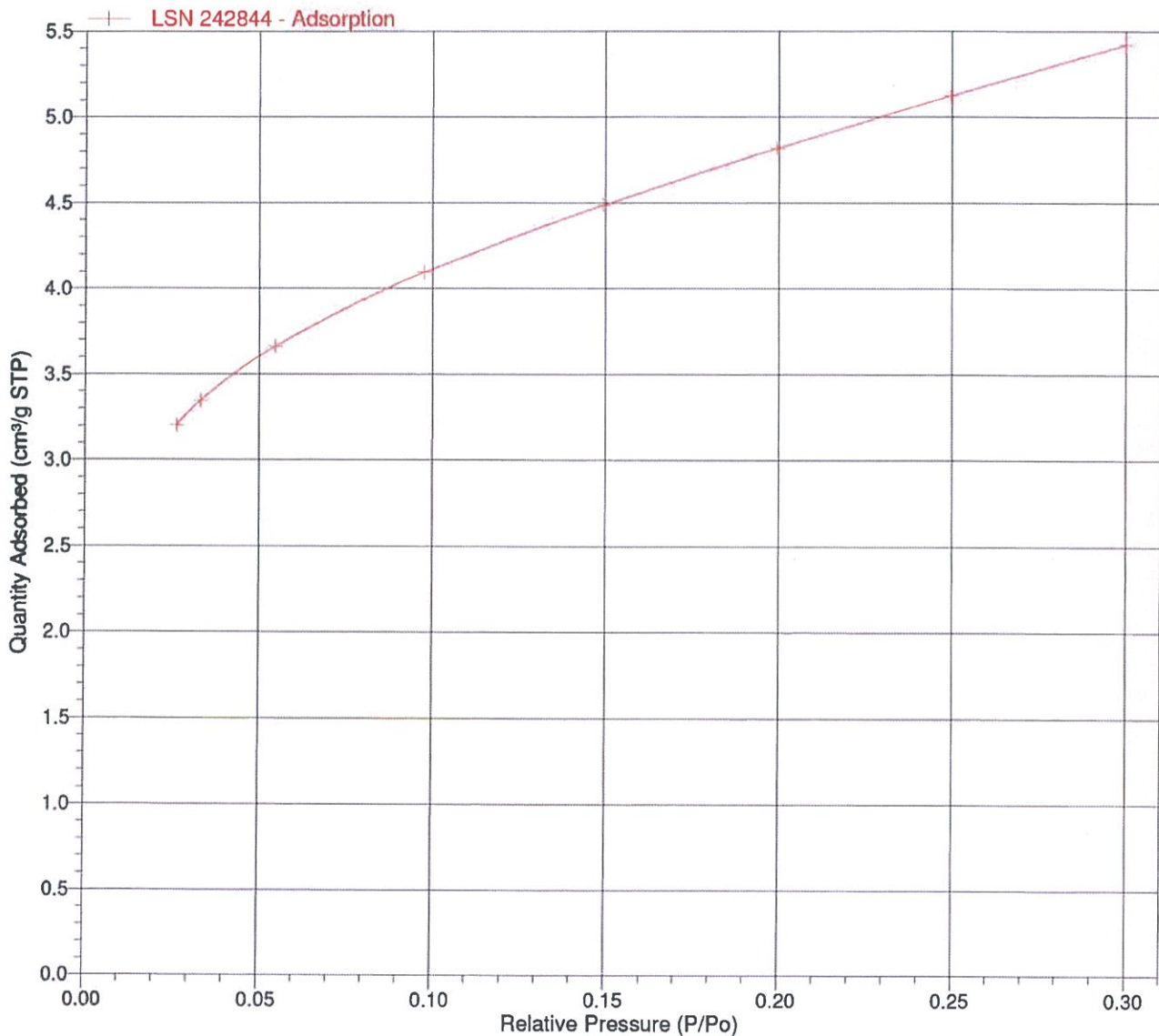
Page 2

Sample: LSN 242844  
Operator: MG  
Submitter: Boral  
File: Y:\...\TRISTAR\000-165.SMP

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Sample Density: 1.000 g/cm<sup>3</sup>

Analysis Adsorptive: N2  
Analysis Bath Temp.: 77.300 K  
Sample Mass: 0.5770 g  
Cold Free Space: 48.7036 cm<sup>3</sup> Measured  
Low Pressure Dose: None  
Automatic Degas: No

Isotherm Linear Plot





TriStar 3000 V6.08 A

Unit 1 Port 2

Serial #: 1586

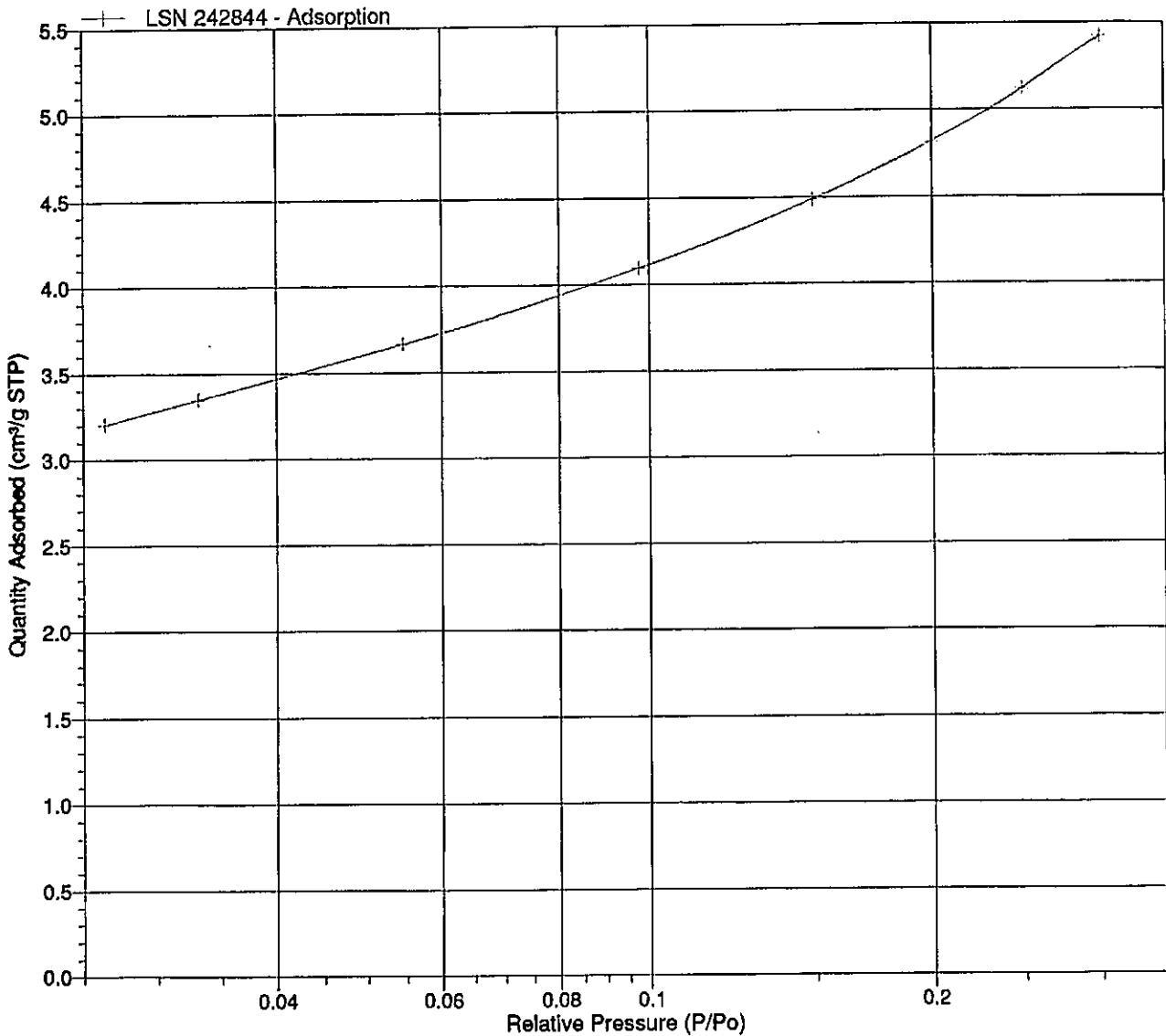
Page 3

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Equilibration Interval: 15 s  
Sample Density: 1.000 g/cm<sup>3</sup>

Analysis Adsorptive: N<sub>2</sub>  
Analysis Bath Temp.: 77.300 K  
Sample Mass: 0.5770 g  
Cold Free Space: 48.7036 cm<sup>3</sup> Measured  
Low Pressure Dose: None  
Automatic Degas: No

Isotherm Log Plot





TriStar 3000 V6.08 A

Unit 1 Port 2

Serial #: 1586

Page 4

Sample: LSN 242844  
Operator: MG  
Submitter: Boral  
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Equilibration Interval: 15 s  
Sample Density: 1.000 g/cm<sup>3</sup>

Analysis Adsorptive: N2  
Analysis Bath Temp.: 77.300 K  
Sample Mass: 0.5770 g  
Cold Free Space: 48.7036 cm<sup>3</sup> Measured  
Low Pressure Dose: None  
Automatic Degas: No

### BET Surface Area Report

BET Surface Area: 17.1798 ± 0.1393 m<sup>2</sup>/g  
Slope: 0.251555 ± 0.002026 g/cm<sup>3</sup> STP  
Y-Intercept: 0.001835 ± 0.000335 g/cm<sup>3</sup> STP  
C: 138.078990  
Qm: 3.9465 cm<sup>3</sup>/g STP  
Correlation Coefficient: 0.9999027  
Molecular Cross-Sectional Area: 0.1620 nm<sup>2</sup>

Relative Pressure (P/Po)	Quantity Adsorbed (cm <sup>3</sup> /g STP)	1/[Q(Po/P - 1)]
0.054574754	3.6633	0.015758
0.097476216	4.0942	0.026380
0.149341397	4.4874	0.039123
0.199502468	4.8158	0.051751
0.249697593	5.1216	0.064979



TriStar 3000 V6.08 A

Unit 1 Port 2

Serial #: 1586

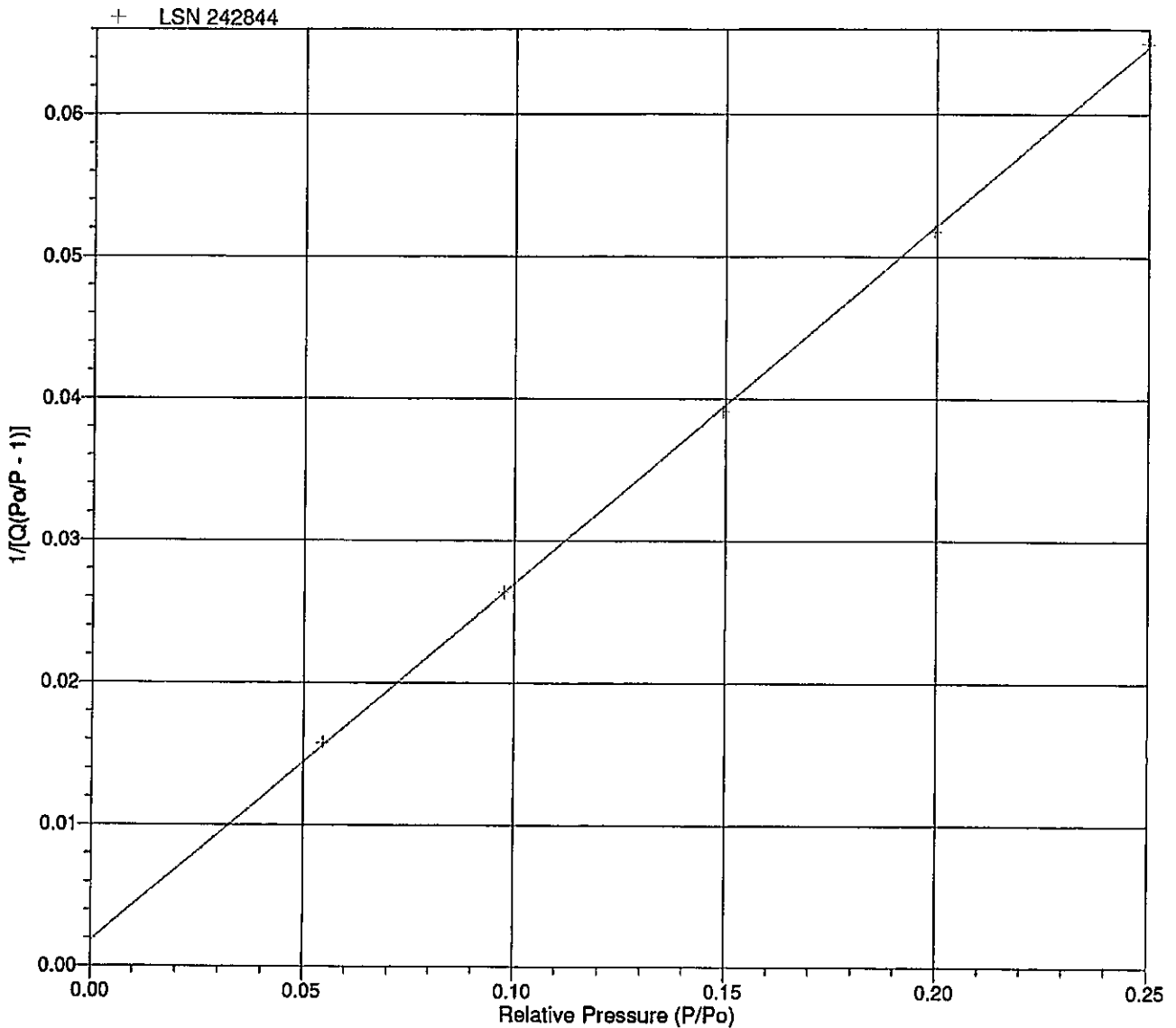
Page 5

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Equilibration Interval: 15 s  
Sample Density: 1.000 g/cm<sup>3</sup>

Analysis Adsorptive: N<sub>2</sub>  
Analysis Bath Temp.: 77.300 K  
Sample Mass: 0.5770 g  
Cold Free Space: 48.7036 cm<sup>3</sup> Measured  
Low Pressure Dose: None  
Automatic Degas: No

BET Surface Area Plot





TriStar 3000 V6.08 A

Unit 1 Port 2

Serial #: 1586

Page 6

Sample: LSN 242844  
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Submitter: Boral  
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Equilibration Interval: 15 s  
Sample Density: 1.000 g/cm<sup>3</sup>

Analysis Adsorptive: N2  
Analysis Bath Temp.: 77.300 K  
Sample Mass: 0.5770 g  
Cold Free Space: 48.7036 cm<sup>3</sup> Measured  
Low Pressure Dose: None  
Automatic Degas: No

**Langmuir Surface Area Report**

Langmuir Surface Area: 22.6086 ± 0.7002 m<sup>2</sup>/g  
Slope: 0.192546 ± 0.005963 g/cm<sup>3</sup> STP  
Y-Intercept: 3.046278 ± 0.520304 mmHg·g/cm<sup>3</sup> STP  
b: 0.063207 1/mmHg  
Qm: 5.1936 cm<sup>3</sup>/g STP  
Correlation Coefficient: 0.998087  
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)
20.34863	3.2035	6.352
25.62030	3.3472	7.654
42.20629	3.6633	11.522
75.38484	4.0942	18.413
115.49564	4.4874	25.738
154.28853	4.8158	32.038



TriStar 3000 V6.08 A

Unit 1 Port 2

Serial #: 1586

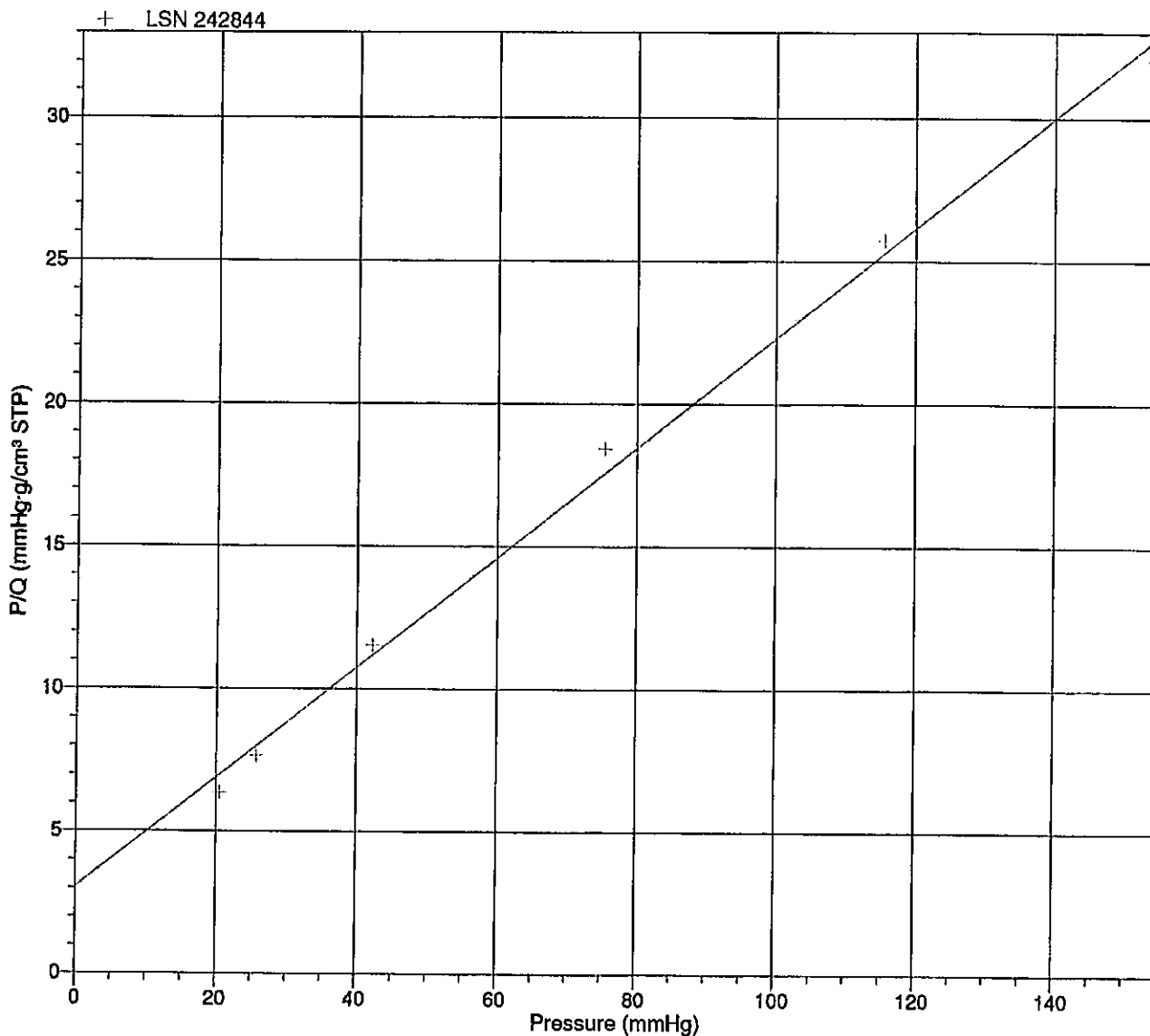
Page 7

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Equilibration Interval: 15 s  
Sample Density: 1.000 g/cm<sup>3</sup>

Analysis Adsorptive: N2  
Analysis Bath Temp.: 77.300 K  
Sample Mass: 0.5770 g  
Cold Free Space: 48.7036 cm<sup>3</sup> Measured  
Low Pressure Dose: None  
Automatic Degas: No

Langmuir Surface Area Plot





TriStar 3000 V6.08 A

Unit 1 Port 2

Serial #: 1586

Page 8

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Submitter: Boral  
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Analysis Adsorptive: N2  
Analysis Bath Temp.: 77.300 K  
Sample Mass: 0.5770 g  
Cold Free Space: 48.7036 cm<sup>3</sup> Measured  
Low Pressure Dose: None  
Automatic Degas: No

### Summary Report

#### Surface Area

Single point surface area at P/Po = 0.249697593: 16.7283 m<sup>2</sup>/g

BET Surface Area: 17.1798 m<sup>2</sup>/g

Langmuir Surface Area: 22.6086 m<sup>2</sup>/g