



**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: 231781

DATE RECEIVED: 26/02/2020

REQUEST No: 88202

SAMPLE IDENTIFICATION: Ecotec Silica Fume – 2020 – HSXY-15

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	04/03/2020	2.24	AS 3583.5
Relative water requirement	05/03/2020	110%	AS 3583.6
Relative strength 7days (accelerated)	12/03/2020	104%	AS 3583.6

Note:

- Sample supplied by the client and tested as received.

Shaun Guthridge, Mat. File, File



ACCREDITED FOR
TECHNICAL
COMPETENCE

Approved Signatory Julius C Alvaro Julius Alvaro
Date 23/03/2020 Serial No. CEM88202.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



**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: 256/20

ADDRESS: 190 Toongabbie Road, Girraween, NSW 2145

REQUEST NO: 88202

LAB SAMPLE NO: 231781

SOURCE OF SAMPLE: Unknown

DATE RECEIVED: 26/02/2020

SAMPLE IDENTIFICATION: Ecotec Silica Fume – 2020 – HSXY-15

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: 10/03/2020

Date Crushed: 17/03/2020 @ 7 Days

Results:	Accelerated Pozzolanic Strength Activity Index:	105% @ 7 Days
	Control Mix Strength:	35.1 MPa
	Test Mix Strength:	36.7 MPa

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 101%.

Note:

- Sample supplied by the client and tested as received.

Shaun Guthridge, Mat. File, File



Approved Signatory Julius Alvaro
Date 23/03/2020 Serial No. CEM88202.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
Test results in this Test Report relate only to the samples tested

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: 256/20

REQUEST NO: 88202

LAB. SAMPLE NO: 231781

SOURCE OF SAMPLE: Unknown

DATE RECEIVED: 26/02/2020

SAMPLE IDENTIFICATION: Ecotec Silica Fume – 2020 – HSXY-15

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	12/03/2020	0.7%	AS 3583.2	Max. 3.0%
Loss on ignition	12/03/2020	1.7%	AS 3583.3	Max. 6.0%
Relative Density	04/03/2020	2.24	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 23/03/2020 Serial No. CEM88202.JA.3

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



**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: 256/20

ADDRESS: 190 Toongabbie Road, Girraween, NSW 2145

REQUEST NO: 88202

LAB. SAMPLE NO: 231781

SOURCE OF SAMPLE: Unknown

DATE RECEIVED: 26/02/2020

SAMPLE IDENTIFICATION: Ecotec Silica Fume – 2020 – HSXY-15

PROPERTY	DATE TESTED	RESULT	TEST METHOD
Bulk Density	17/03/2020	771 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


Julius Alvaro
23/03/2020



**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.: 256/20

PROJECT: Testing of Silica Fume sample for 2020-HSXY-15.

REQUEST No.: 88202

TEST PROCEDURE:

AS 3583.12 – 1991 – Determination of Available Alkali

Laboratory Sample No.: 231781
Date Sampled: Unknown
Date Received: 26/02/20
Date Tested: 27/03/20
Sample Description: Ecotec Silca Fume 2020 HSXY-15
Field No.: 1

TEST RESULTS:

Sodium as Na₂O (%) < 0.01
Potassium as K₂O (%) 0.15
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

Nanthini Selvadurai

Date 30-03-20

Serial No.

CHEM88202.NS.1



**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.:256/20

PROJECT: Testing of Silica Fume sample for 2020 –HSXY-15.

REQUEST No.:88202

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

Laboratory Sample No.: 231781
Date Sampled: Unknown
Date Received: 26/02/20
Date Tested: 06/03/20 to 23/03/20
Sample Description: Ecotec Silca Fume 2020-
HSXY -15.
Field No.: 1

TEST RESULTS:

Chloride as Cl⁻ (%) 0.208
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

N.S.

Nanthini Selvadurai

Date: 30-03-20

Serial No.

CHEM88202.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.: 256/20

PROJECT: Testing of Silica fume sample for 2020 HSXY-15.

REQUEST No.: 88202

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.: 231781
Date Sampled: Unknown
Date Received: 26/02/20
Sample Description: Ecotec Silica Fume –
2020 HSXY-15.
Field No.: 1

TEST RESULTS

Silicon as SiO ₂ (%)	93.8
Sodium as Na ₂ O (%)	0.35
Potassium as K ₂ O (%)	1.22
Total Alkali content as Na ₂ O equiv. (%)	1.2

Sample submitted by the Client.

Nanthini S
Analytical Chemist
27th March 2020.
S.Guthridge, Mat. File, File.



TriStar 3000 V6.08 A

Unit 1 Port 1

Serial #: 1586

Page 1

Sample: Ecotec Silica Fume 2020 HSXY 15 LSN 231781
Operator: MG
Submitter: Boral
File: Y:\...\TRISTAR\000-071.SMP

Started: 23/03/2020 2:15:37PM
Completed: 23/03/2020 5:46:44PM
Report Time: 23/03/2020 6:37:25PM
Warm Free Space: 17.3631 cm³ Measured
Equilibration Interval: 15 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.300 K
Sample Mass: 1.0990 g
Cold Free Space: 47.8213 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Isotherm Tabular Report

Relative Pressure (P/Po)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm ³ /g STP)	Elapsed Time (h:min)	Saturation Pressure (mmHg)
			02:46	795.94537
0.026040652	20.72694	3.0372	02:57	
0.032345051	25.74489	3.1638	03:02	
0.052420706	41.72402	3.4613	03:06	
0.095601178	76.09332	3.8857	03:11	
0.149260705	118.80337	4.2697	03:15	
0.199678945	158.93353	4.5767	03:19	
0.250156567	199.11096	4.8618	03:23	
0.300795413	239.41672	5.1398	03:27	



TriStar 3000 V6.08 A

Unit 1 Port 1

Serial #: 1586

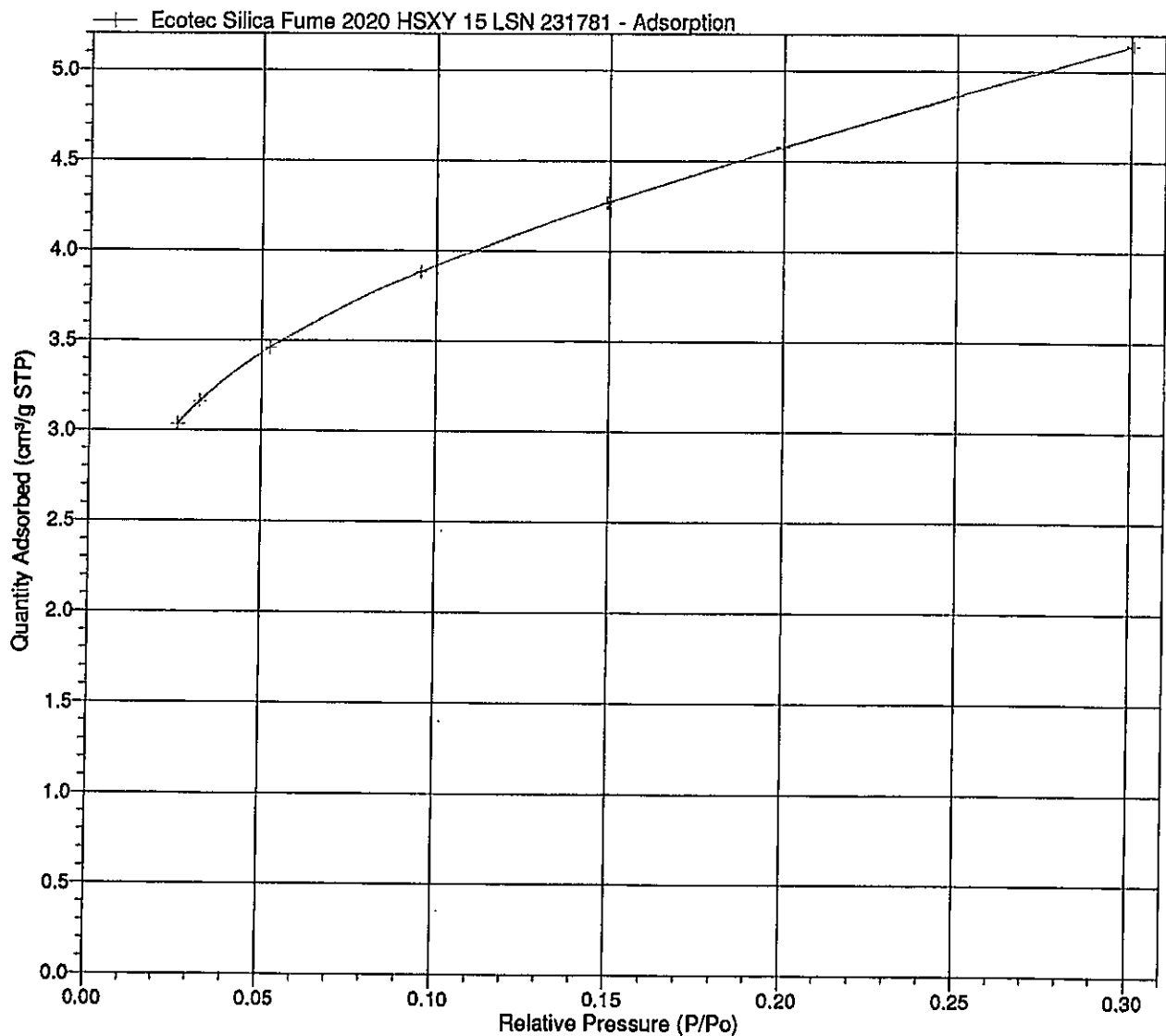
Page 2

Sample: Ecotec Silica Fume 2020 HSXY 15 LSN 231781
Operator: MG
Submitter: Boral
File: Y:\...\TRISTAR\000-071.SMP

Started: 23/03/2020 2:15:37PM
Completed: 23/03/2020 5:46:44PM
Report Time: 23/03/2020 6:37:25PM
Warm Free Space: 17.3631 cm³ Measured
Equilibration Interval: 15 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N₂
Analysis Bath Temp.: 77.300 K
Sample Mass: 1.0990 g
Cold Free Space: 47.8213 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Isotherm Linear Plot





TriStar 3000 V6.08 A

Unit 1 Port 1

Serial #: 1586

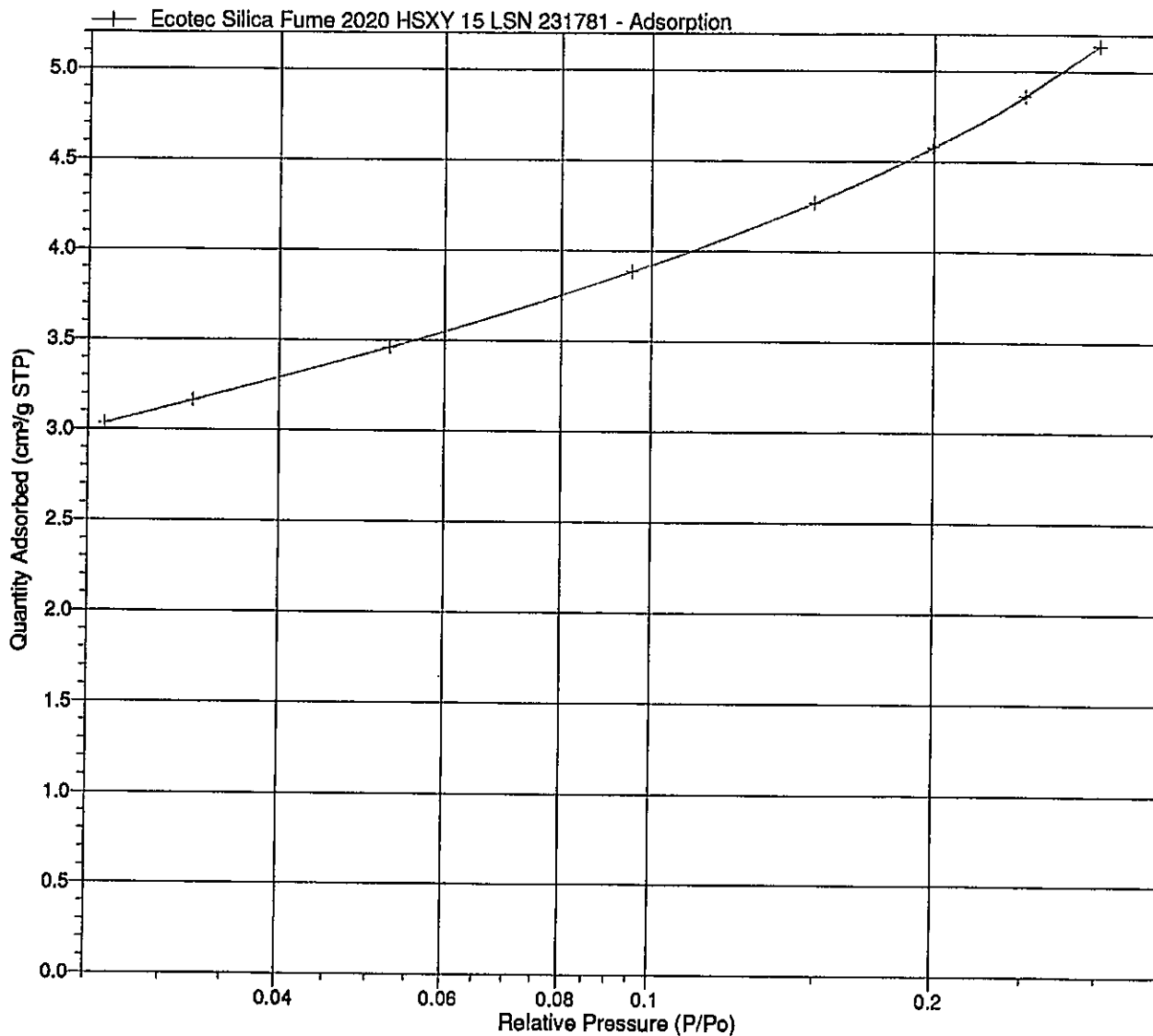
Page 3

Sample: Ecotec Silica Fume 2020 HSXY 15 LSN 231781
Operator: MG
Submitter: Boral
File: Y:\...\TRISTAR\000-071.SMP

Started: 23/03/2020 2:15:37PM
Completed: 23/03/2020 5:46:44PM
Report Time: 23/03/2020 6:37:25PM
Warm Free Space: 17.3631 cm³ Measured
Equilibration Interval: 15 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.300 K
Sample Mass: 1.0990 g
Cold Free Space: 47.8213 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Isotherm Log Plot





TriStar 3000 V6.08 A

Unit 1 Port 1

Serial #: 1586

Page 4

Sample: Ecotec Silica Fume 2020 HSXY 15 LSN 231781
Operator: MG
Submitter: Boral
File: Y:\...\TRISTAR\000-071.SMP

Started: 23/03/2020 2:15:37PM
Completed: 23/03/2020 5:46:44PM
Report Time: 23/03/2020 6:37:25PM
Warm Free Space: 17.3631 cm³ Measured
Equilibration Interval: 15 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.300 K
Sample Mass: 1.0990 g
Cold Free Space: 47.8213 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

BET Surface Area Report

BET Surface Area: 16.2881 ± 0.1488 m²/g
Slope: 0.265444 ± 0.002410 g/cm³ STP
Y-Intercept: 0.001819 ± 0.000398 g/cm³ STP
C: 146.948339
Qm: 3.7416 cm³/g STP
Correlation Coefficient: 0.9998764
Molecular Cross-Sectional Area: 0.1620 nm²

Relative Pressure (P/Po)	Quantity Adsorbed (cm ³ /g STP)	1/[Q(Po/P - 1)]
0.052420706	3.4613	0.015983
0.095601178	3.8857	0.027204
0.149260705	4.2697	0.041091
0.199678945	4.5767	0.054516
0.250156567	4.8618	0.068618



TriStar 3000 V6.08 A

Unit 1 Port 1

Serial #: 1586

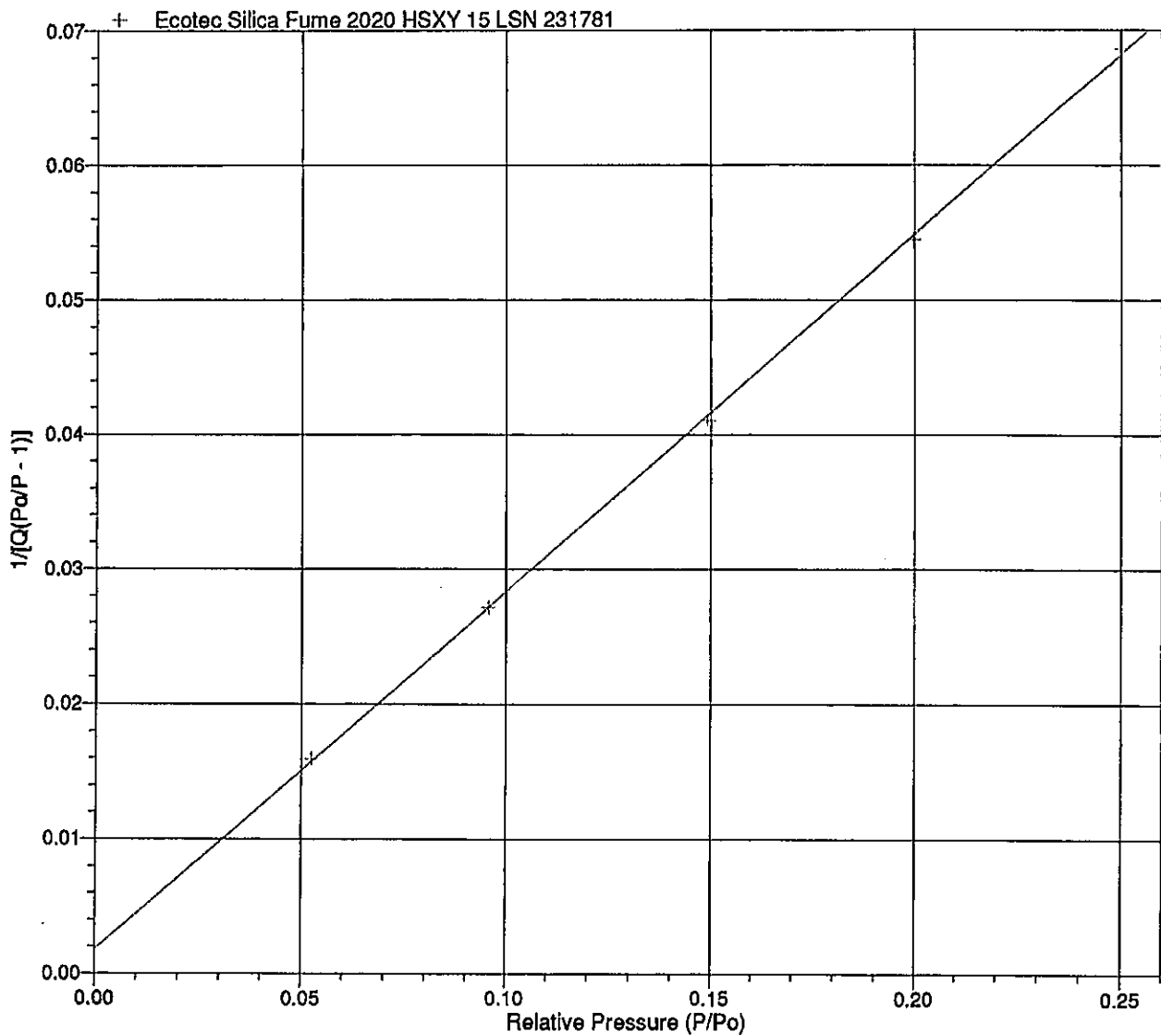
Page 5

Sample: Ecotec Silica Fume 2020 HSXY 15 LSN 231781
Operator: MG
Submitter: Boral
File: Y:\...\TRISTAR\000-071.SMP

Started: 23/03/2020 2:15:37PM
Completed: 23/03/2020 5:46:44PM
Report Time: 23/03/2020 6:37:25PM
Warm Free Space: 17.3631 cm³ Measured
Equilibration Interval: 15 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N₂
Analysis Bath Temp.: 77.300 K
Sample Mass: 1.0990 g
Cold Free Space: 47.8213 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

BET Surface Area Plot





TriStar 3000 V6.08 A

Unit 1 Port 1

Serial #: 1586

Page 6

Sample: Ecotec Silica Fume 2020 HSXY 15 LSN 231781
Operator: MG
Submitter: Boral
File: Y:\...TRISTAR\000-071.SMP

Started: 23/03/2020 2:15:37PM
Completed: 23/03/2020 5:46:44PM
Report Time: 23/03/2020 6:37:25PM
Warm Free Space: 17.3631 cm³ Measured
Equilibration Interval: 15 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.300 K
Sample Mass: 1.0990 g
Cold Free Space: 47.8213 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Langmuir Surface Area Report

Langmuir Surface Area: 21.4800 ± 0.6381 m²/g
Slope: 0.202663 ± 0.006020 g/cm³ STP
Y-Intercept: 3.261381 ± 0.538469 mmHg·g/cm³ STP
b: 0.062140 1/mmHg
Qm: 4.9343 cm³/g STP
Correlation Coefficient: 0.998240
Molecular Cross-Sectional Area: 0.1620 nm²

Table with 3 columns: Pressure (mmHg), Quantity Adsorbed (cm³/g STP), P/Q (mmHg·g/cm³ STP). Rows contain numerical data points.



TriStar 3000 V6.08 A

Unit 1 Port 1

Serial #: 1586

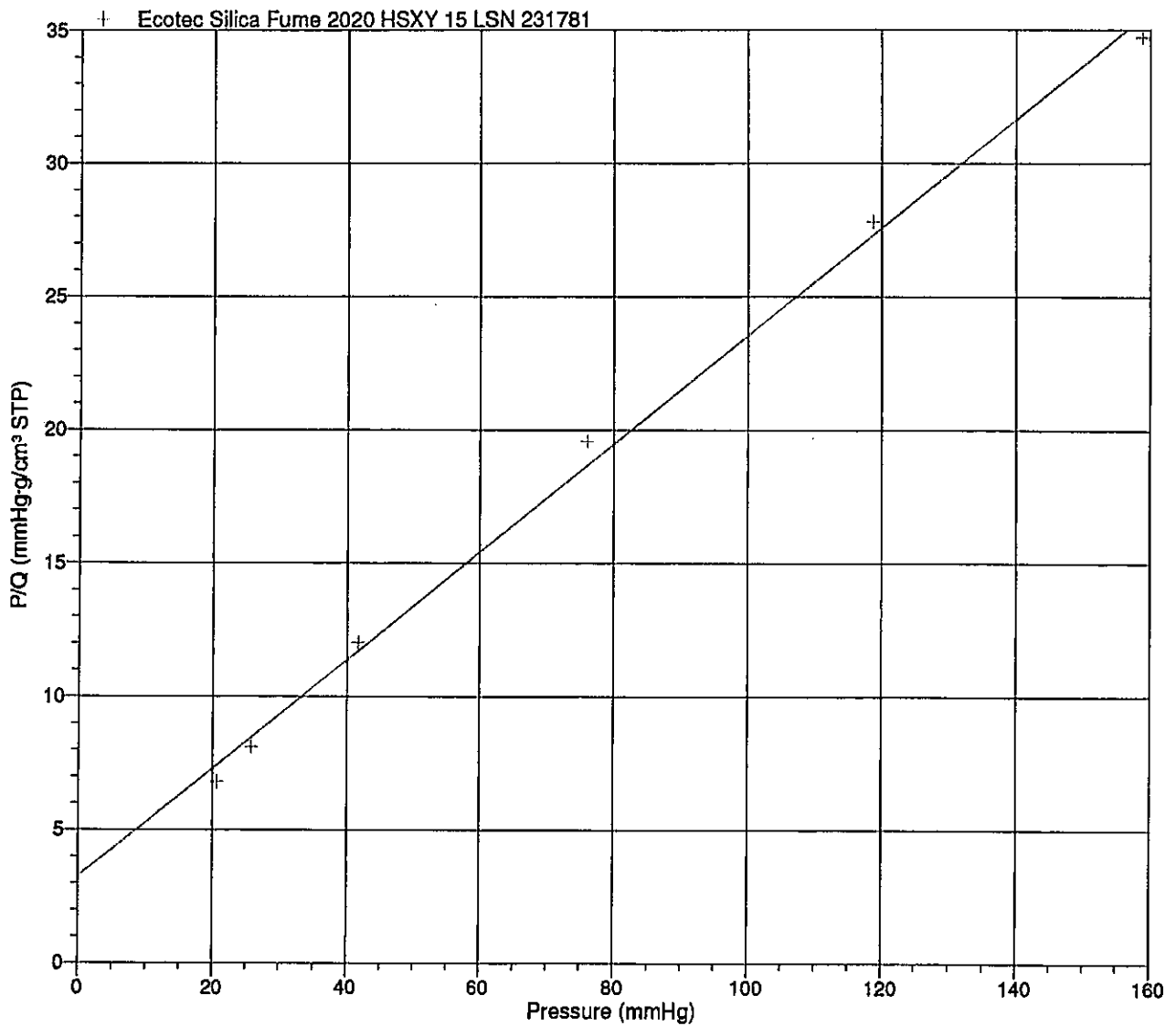
Page 7

Sample: Ecotec Silica Fume 2020 HSXY 15 LSN 231781
Operator: MG
Submitter: Boral
File: Y:\...TRISTAR\000-071.SMP

Started: 23/03/2020 2:15:37PM
Completed: 23/03/2020 5:46:44PM
Report Time: 23/03/2020 6:37:25PM
Warm Free Space: 17.3631 cm³ Measured
Equilibration Interval: 15 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.300 K
Sample Mass: 1.0990 g
Cold Free Space: 47.8213 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Langmuir Surface Area Plot





TriStar 3000 V6.08 A

Unit 1 Port 1

Serial #: 1586

Page 8

Sample: Ecotec Silica Fume 2020 HSXY 15 LSN 231781
Operator: MG
Submitter: Boral
File: Y:\...\TRISTAR\000-071.SMP

Started: 23/03/2020 2:15:37PM
Completed: 23/03/2020 5:46:44PM
Report Time: 23/03/2020 6:37:25PM
Warm Free Space: 17.3631 cm³ Measured
Equilibration Interval: 15 s
Sample Density: 1.000 g/cm³

Analysis Adsorptive: N2
Analysis Bath Temp.: 77.300 K
Sample Mass: 1.0990 g
Cold Free Space: 47.8213 cm³ Measured
Low Pressure Dose: None
Automatic Degas: No

Summary Report

Surface Area

Single point surface area at P/Po = 0.250156567: 15.8701 m²/g

BET Surface Area: 16.2881 m²/g

Langmuir Surface Area: 21.4800 m²/g