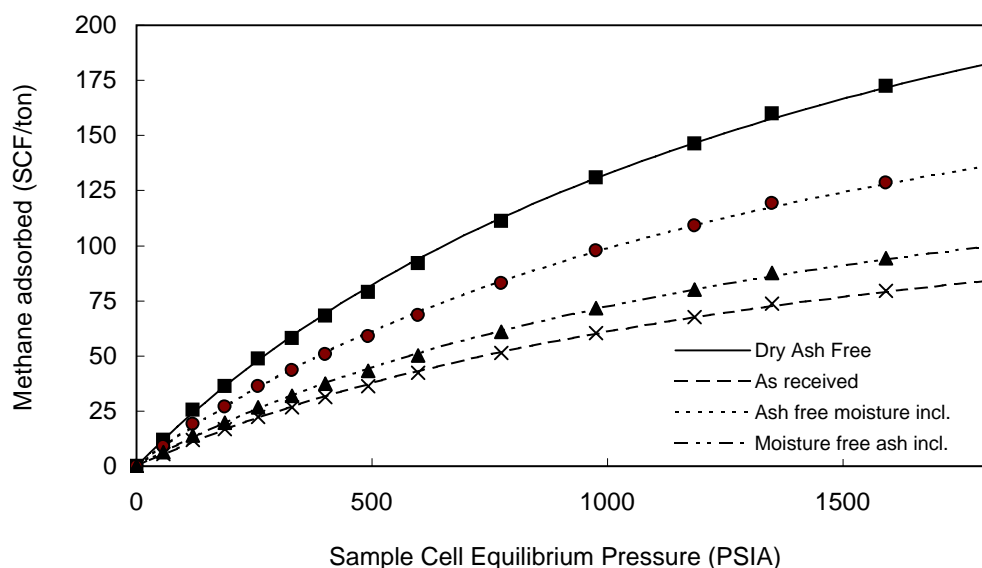


4-LA-1 Methane



Pressure (PSIA)	Adsorbed gas (ft ³ /ton)			
	As Received	moisture free ash incl.	ash free moisture incl.	Dry Ash Free
57	5.5	6.5	8.9	11.9
119	11.8	14.0	19.1	25.5
188	16.7	19.8	27.1	36.3
258	22.5	26.7	36.4	48.7
330	26.8	31.8	43.4	58.2
401	31.5	37.4	50.9	68.3
492	36.4	43.1	58.8	78.8
598	42.4	50.4	68.7	92.0
774	51.3	60.9	83.0	111.3
976	60.4	71.7	97.8	131.0
1185	67.5	80.1	109.2	146.3
1350	73.8	87.5	119.4	160.0
1591	79.6	94.4	128.7	172.5

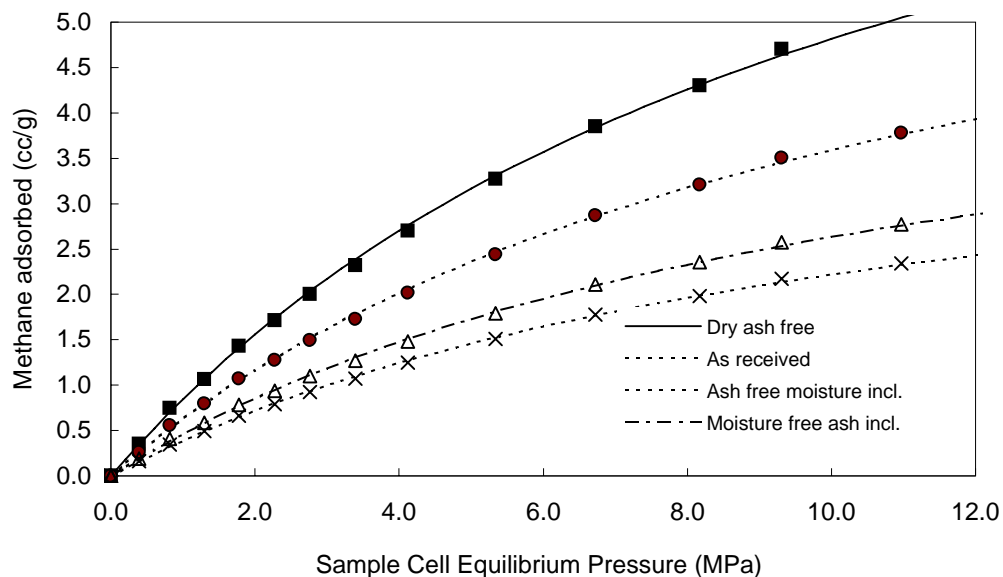
Langmuir Parameters

	As Received	Moisture free ash incl	Ash free moisture incl	Dry Ash Free
Vol. (ft ³ /ton)	158.0	187.4	255.5	342.4
Pressure (PSIA)	1581.6	1581.6	1581.6	1581.6

SUMMARY OF ADSORPTION ANALYSES IMP. UNITS

Isotherm Temperature: 97.0 °F
 Goodness of fit of Langmuir regression: 0.99
 % Ash= 38.17 % Moisture= 15.70 Density g/cc 1.588

4-LA-1 Methane



Pressure (MPa)	Adsorbed gas (cc/g)			
	As Received	Moisture free ash incl.	ash free moisture incl	Dry Ash Free
0.392	0.16	0.19	0.26	0.35
0.821	0.35	0.41	0.56	0.75
1.294	0.49	0.58	0.80	1.07
1.779	0.66	0.78	1.07	1.43
2.273	0.79	0.94	1.28	1.71
2.764	0.93	1.10	1.50	2.01
3.389	1.07	1.27	1.73	2.32
4.122	1.25	1.48	2.02	2.70
5.338	1.51	1.79	2.44	3.27
6.726	1.78	2.11	2.87	3.85
8.168	1.98	2.35	3.21	4.30
9.305	2.17	2.57	3.51	4.70
10.969	2.34	2.77	3.78	5.07

Langmuir Parameters

	As Received	Moisture free ash incl.	Ash free moisture incl	Dry Ash Free
Vol. (cc/g)	4.64	5.51	7.51	10.06
Pressure (MPa)	10.90	10.90	10.90	10.90

SUMMARY OF ADSORPTION ANALYSES SI UNITS

Isotherm Temperature:

36.1 °C

Goodness of fit of Langmuir regression:

0.99

% Ash= 38.17

% Moisture =

15.70

Density (g/cc)

1.588

4-LA-1 Methane

Methane Adsorption (Imperial Units)

Summary of Analyses

	As Received	DAF basis
Langmuir Volume (SCF)	158	342
Langmuir Pressure (PSIA)	1582	1582
Goodness of fit Langmuir		
Equation R-squared	0.99	0.99
Ash Content Wt.%	38.17	38.17
Equilibrium Moisture Wt.%	15.70	15.70

Contents of Appendix

data sheets

As Received
Dry Ash Free
Dry Ash Included
Moist Ash Free

Charts

As Received
Dry Ash Free
Dry Ash Included
Moist Ash Free

4-LA-1 Methane

GAS ADSORPTION ISOTHERM IMPERIAL UNITS

AS RECEIVED BASIS

Isotherm Temperature ° F:	97.0	Moisture Content % :	15.70
Gas used:	Methane	Ash Content, % :	38.17
		Helium Density g/cc	1.588

PRESSURE (PSI)	ADSORBED GAS (SCF/ton)	P / V
57	5.49	10.34
119	11.78	10.11
188	16.73	11.22
258	22.48	11.48
330	26.84	12.28
401	31.49	12.73
492	36.37	13.51
598	42.45	14.08
774	51.34	15.08
976	60.45	16.14
1185	67.49	17.55
1350	73.79	18.29
1591	79.57	20.00

Saturated Monolayer Volume (SCF/ton):	158.0
Langmuir Pressure (PSIA):	1581.6
Correlation Coefficient:	0.9927

DRY ASH FREE BASIS

57	11.91	4.77
119	25.54	4.66
188	36.26	5.18
258	48.74	5.29
330	58.19	5.67
401	68.26	5.87
492	78.85	6.23
598	92.01	6.50
774	111.29	6.96
976	131.03	7.44
1185	146.31	8.10
1350	159.97	8.44
1591	172.48	9.22

Saturated Monolayer Volume (SCF/ton, daf):	342
Langmuir Pressure (PSIA):	1582
Correlation Coefficient:	0.9927

4-LA-1 Methane

GAS ADSORPTION ISOTHERM IMPERIAL UNITS

MOISTURE FREE ASH INCLUDED

Isotherm Temperature° F:	97.0	Moisture Content % :	15.70
Gas used:	Methane	Ash Content, % :	38.17
		Helium Density g/cc	1.588

PRESSURE (PSI)	ADSORBED GAS (SCF/ton)	P / V
57	7	8.72
119	14	8.52
188	20	9.46
258	27	9.68
330	32	10.35
401	37	10.73
492	43	11.39
598	50	11.87
774	61	12.71
976	72	13.61
1185	80	14.80
1350	88	15.42
1591	94	16.86

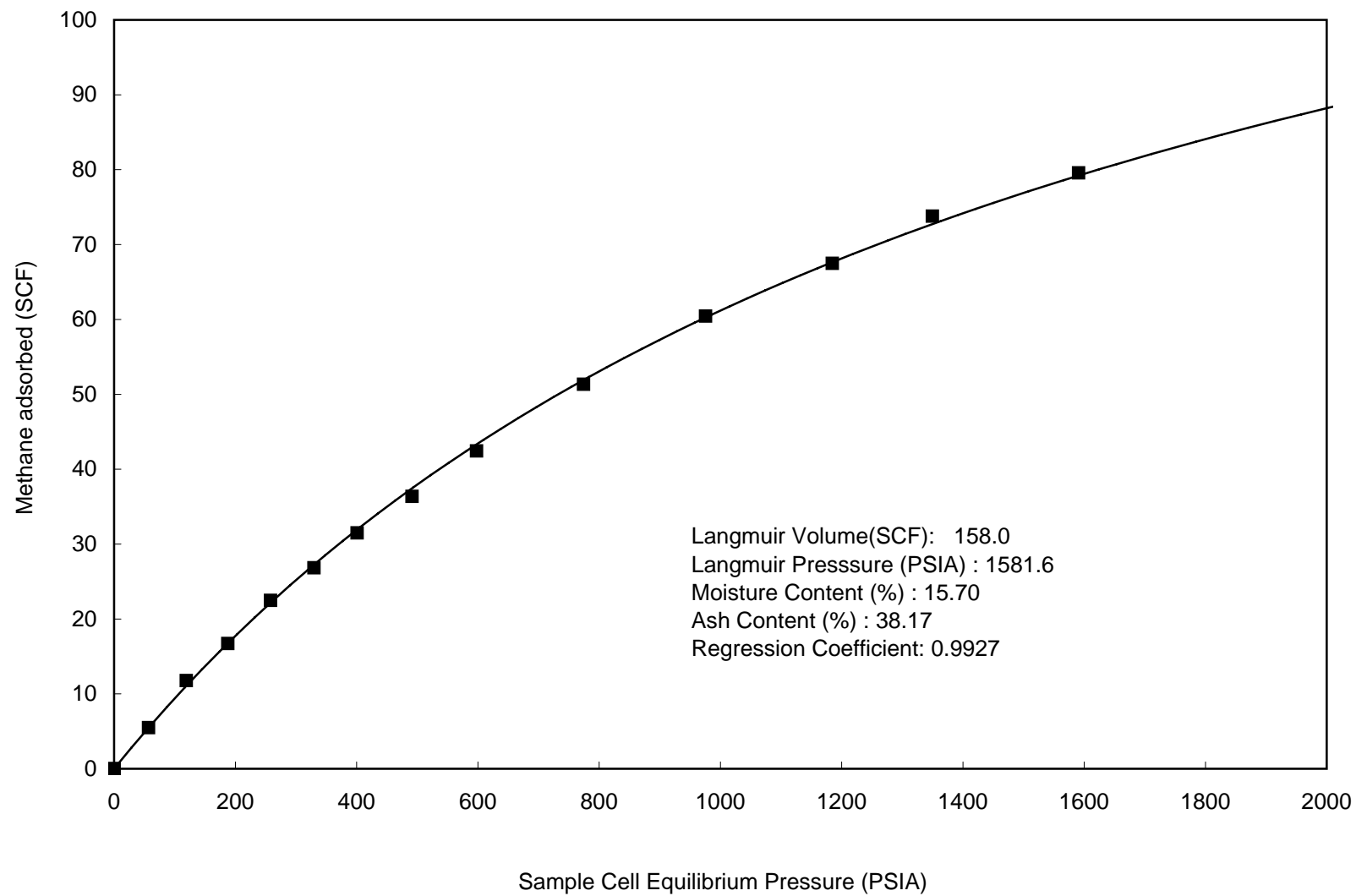
Saturated Monolayer Volume (SCF/ton):	187
Langmuir Pressure (PSIA):	1582
Correlation Coefficient:	0.9927

ASH FREE MOISTURE INCLUDED

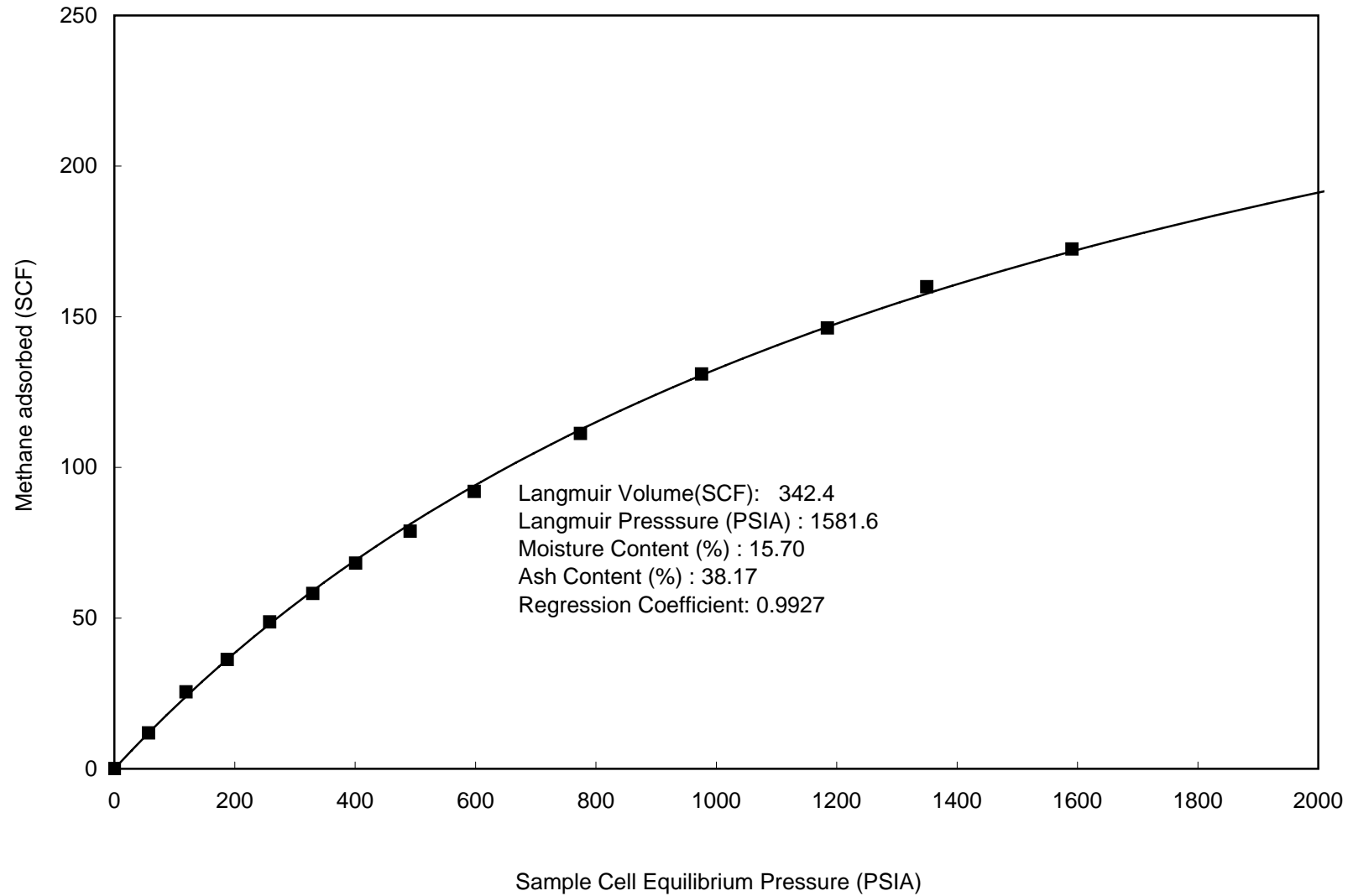
57	9	6.39
119	19	6.25
188	27	6.94
258	36	7.10
330	43	7.59
401	51	7.87
492	59	8.36
598	69	8.71
774	83	9.32
976	98	9.98
1185	109	10.85
1350	119	11.31
1591	129	12.36

Saturated Monolayer Volume (SCF/ton):	255
Langmuir Pressure (PSIA):	1582
Correlation Coefficient:	0.9927

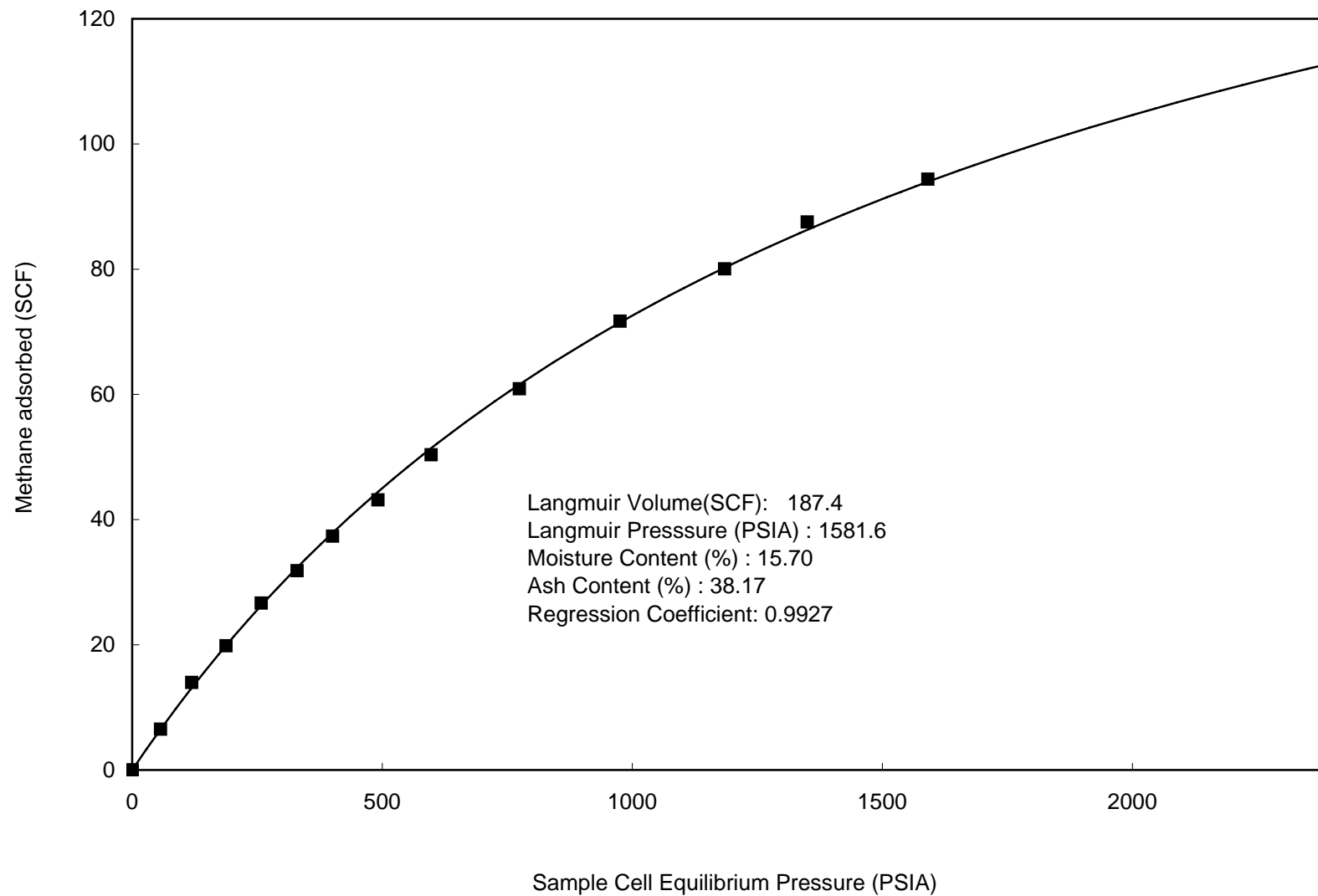
4-LA-1 Methane (as received basis)



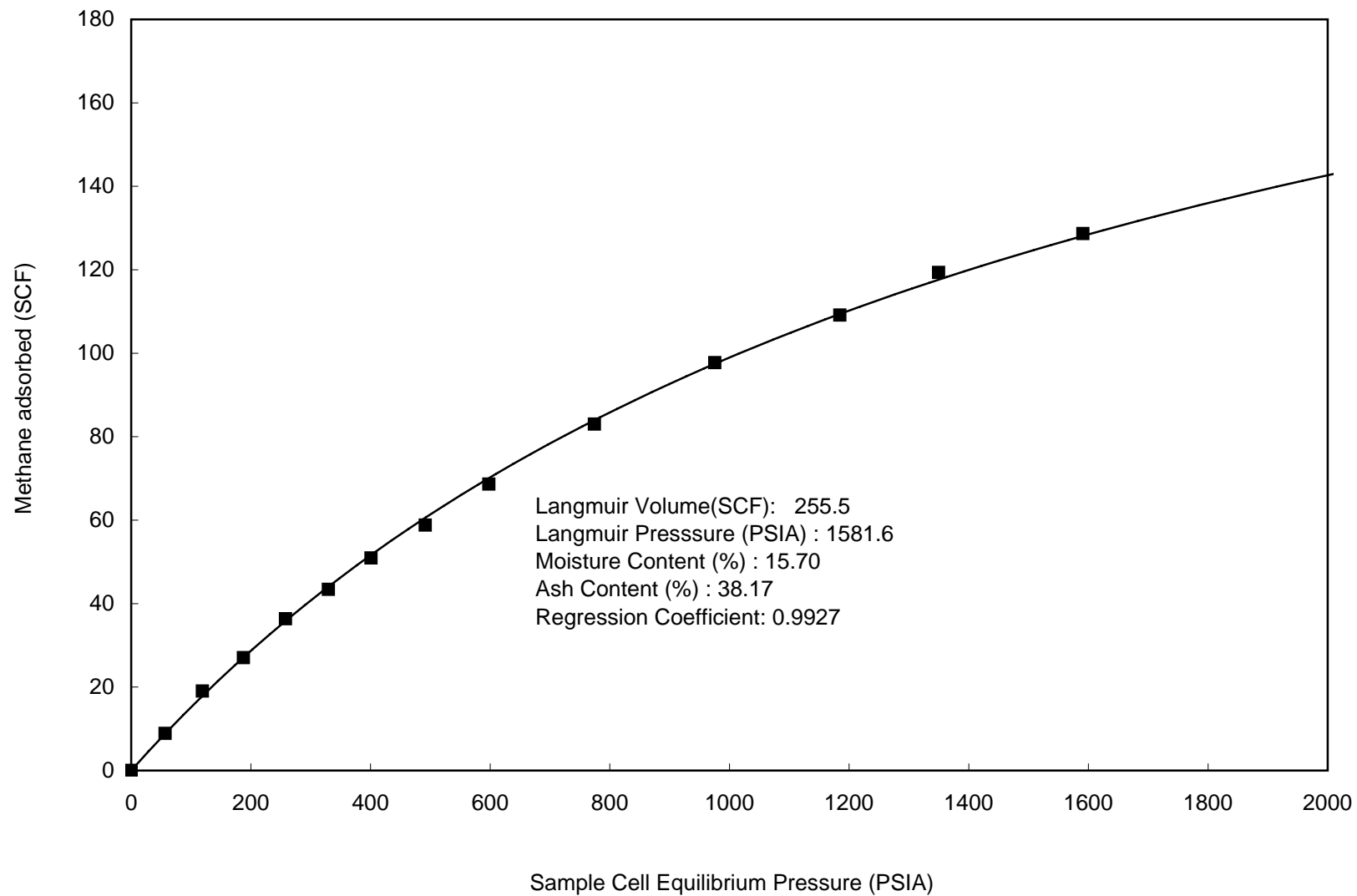
4-LA-1 Methane (dry & ash free basis)



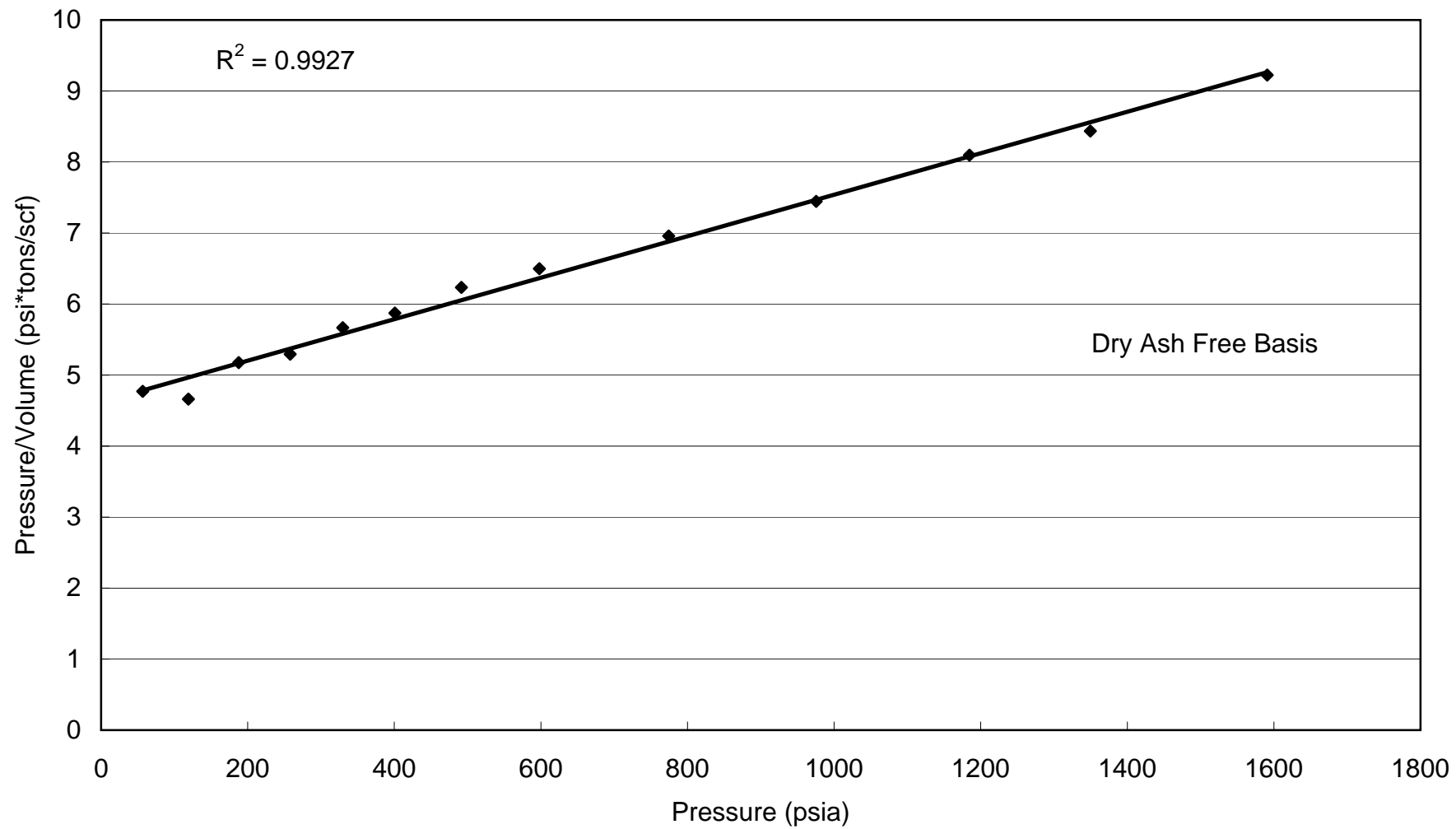
4-LA-1 Methane (moisture free, ash included basis)



4-LA-1 Methane (ash free, moisture included basis)



Adsorption Langmuir Plot



4-LA-1 Methane

Methane Adsorption (SI Units)

Summary of Analyses

	As Received	DAF basis
Langmuir Volume cc/g	4.64	10.06
Langmuir Pressure MPa	10.90	10.90
Goodness of fit Langmuir Equation R-squared	0.99	0.99
Ash Content Wt.%	38.17	38.17
Equilibrium Moisture Wt.%	15.70	15.70

Contents of Appendix

data sheets

As Received
Dry Ash Free
Dry Ash Included
Moist Ash Free

Charts

As Received
Dry Ash Free
Dry Ash Included
Moist Ash Free

4-LA-1 Methane
GAS ADSORPTION ISOTHERM SI UNITS

AS RECEIVED BASIS

Sample I.D. :	4-LA-1 Methane	Moisture Content (EQ) % :	15.70
Isotherm Temperature ° C:	36.1	Ash Content % :	38.17
Gas used:	Methane	Helium Density g/cc	1.588

PRESSURE (MPa)	ADSORBED GAS (cc/g @STP)	P / V
0.392	0.16	2.426
0.821	0.35	2.371
1.294	0.49	2.632
1.779	0.66	2.693
2.273	0.79	2.882
2.764	0.93	2.986
3.389	1.07	3.171
4.122	1.25	3.304
5.338	1.51	3.538
6.726	1.78	3.786
8.168	1.98	4.118
9.305	2.17	4.291
10.969	2.34	4.691

Saturated Monolayer Volume (cc/g @ STP):	4.64
Langmuir Pressure (MPa):	10.90

DRY ASH FREE BASIS

0.392	0.35	1.119
0.821	0.75	1.094
1.294	1.07	1.214
1.779	1.43	1.242
2.273	1.71	1.329
2.764	2.01	1.378
3.389	2.32	1.463
4.122	2.70	1.524
5.338	3.27	1.632
6.726	3.85	1.747
8.168	4.30	1.900
9.305	4.70	1.979
10.969	5.07	2.164

Saturated Monolayer Volume (cc/g @ STP, daf):	10.06
Langmuir Pressure (MPa):	10.90
Correlation Coefficient:	0.9927

4-LA-1 Methane

GAS ADSORPTION ISOTHERM SI UNITS

MOISTURE FREE ASH INCLUDED

Isotherm Temperature ° C:	36.1	Moisture Content (EQ) % :	15.70
Gas used:	Methane	Ash Content % :	38.17
		Helium Density g/cc	1.588

PRESSURE (MPa)	ADSORBED GAS (cc/g@STP)	P / V
0.392	0.19	2.05
0.821	0.41	2.00
1.294	0.58	2.22
1.779	0.78	2.27
2.273	0.94	2.43
2.764	1.10	2.52
3.389	1.27	2.67
4.122	1.48	2.79
5.338	1.79	2.98
6.726	2.11	3.19
8.168	2.35	3.47
9.305	2.57	3.62
10.969	2.77	3.95

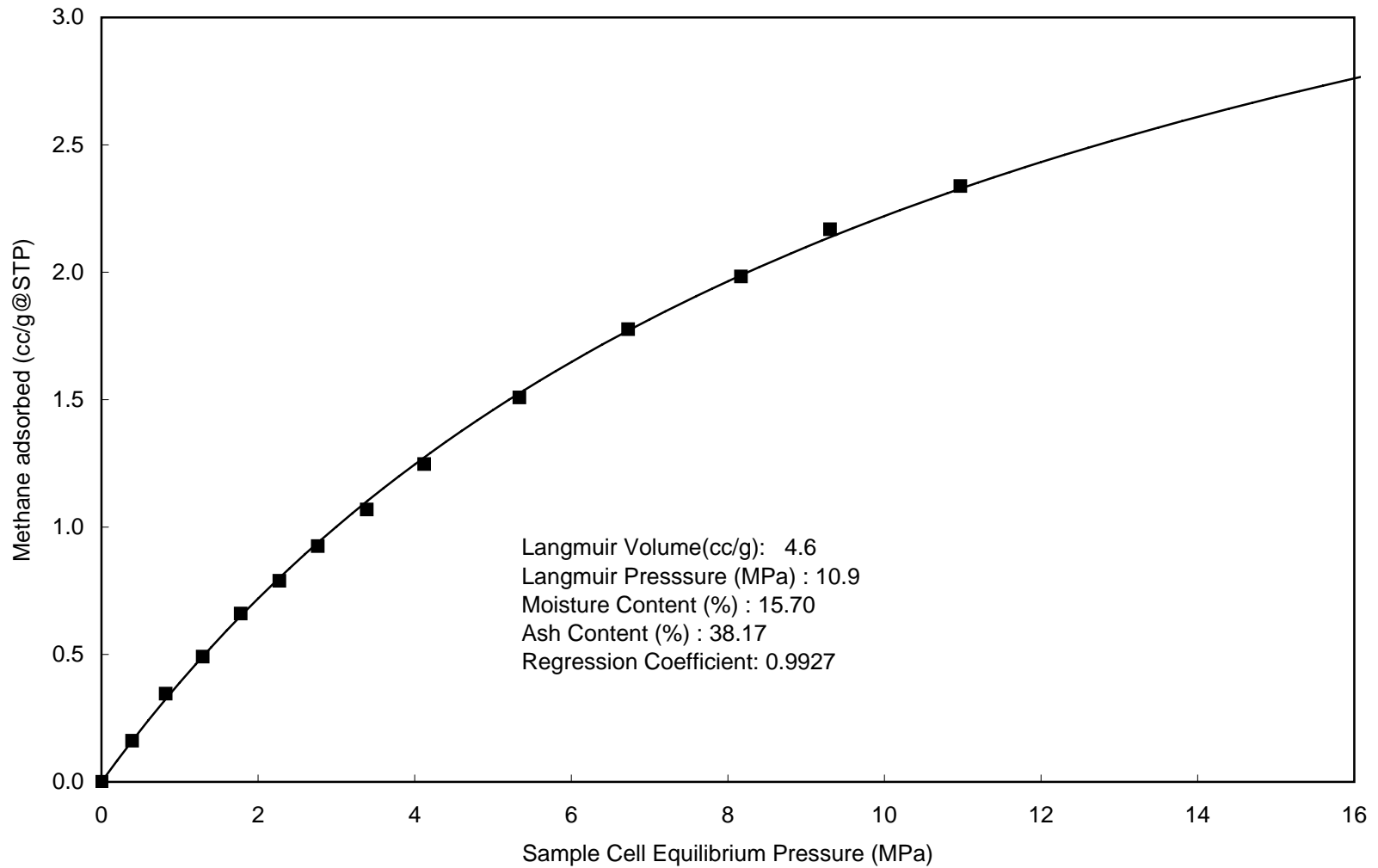
Saturated Monolayer Volume (cc/g):	5.51
Langmuir Pressure (MPa):	10.90

ASH FREE MOISTURE INCLUDED

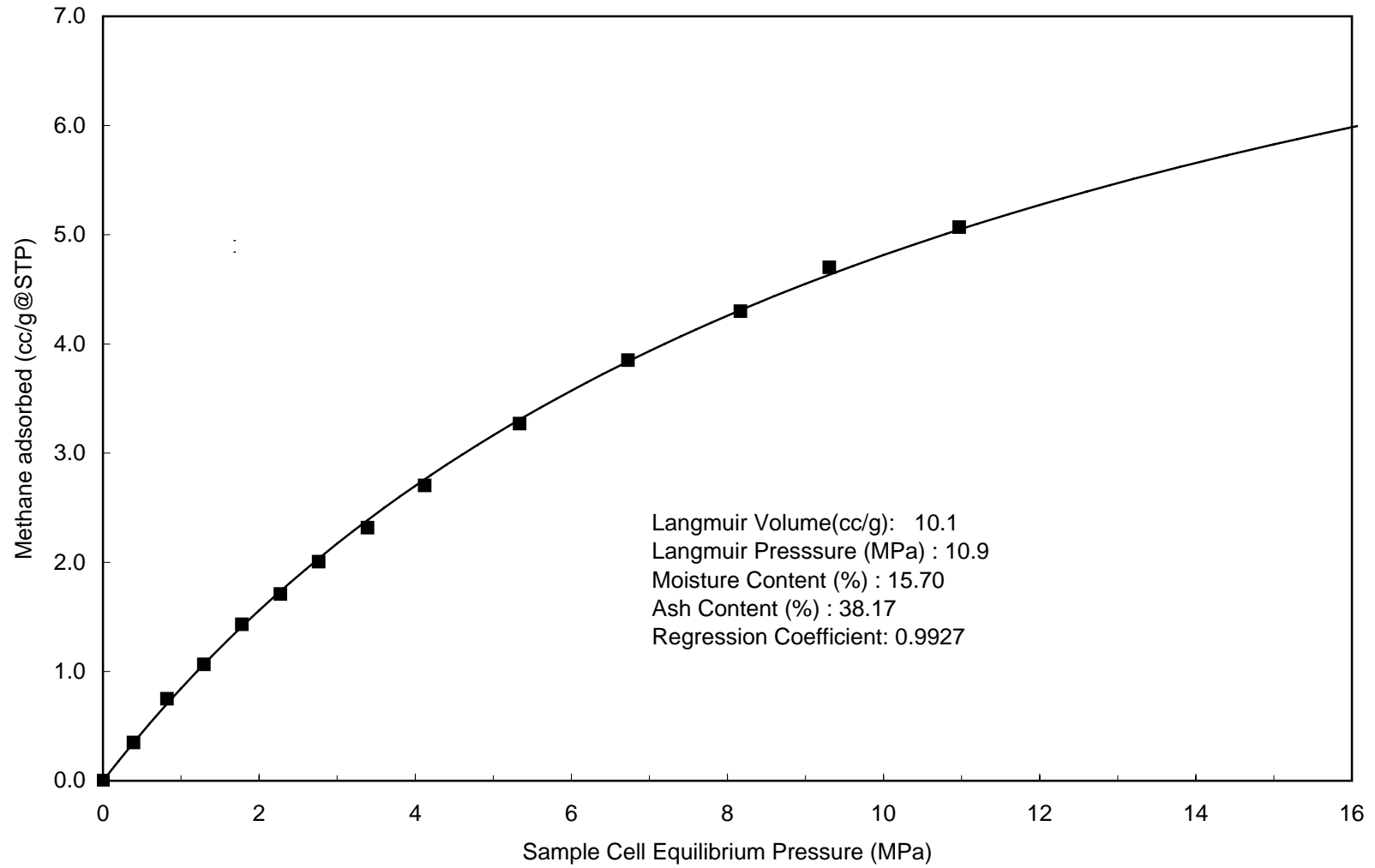
0.392	0.26	0.00
0.821	0.56	1.47
1.294	0.80	1.63
1.779	1.07	1.66
2.273	1.28	1.78
2.764	1.50	1.85
3.389	1.73	1.96
4.122	2.02	2.04
5.338	2.44	2.19
6.726	2.87	2.34
8.168	3.21	2.55
9.305	3.51	2.65
10.969	3.78	2.90

Saturated Monolayer Volume (cc/g, ash free):	7.51
Langmuir Pressure (MPa):	10.90
Correlation Coefficient:	0.9927

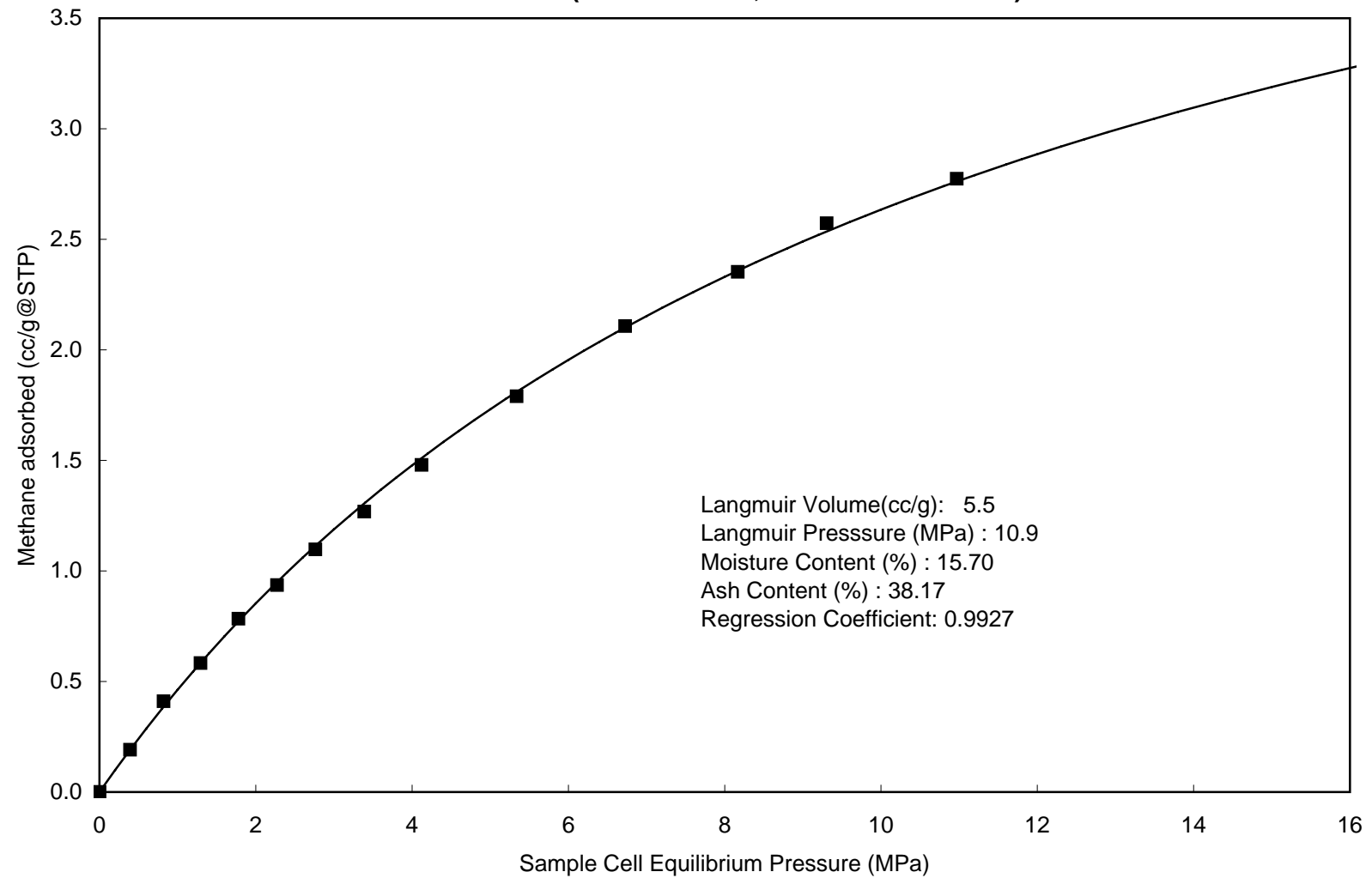
4-LA-1 Methane (as received basis)



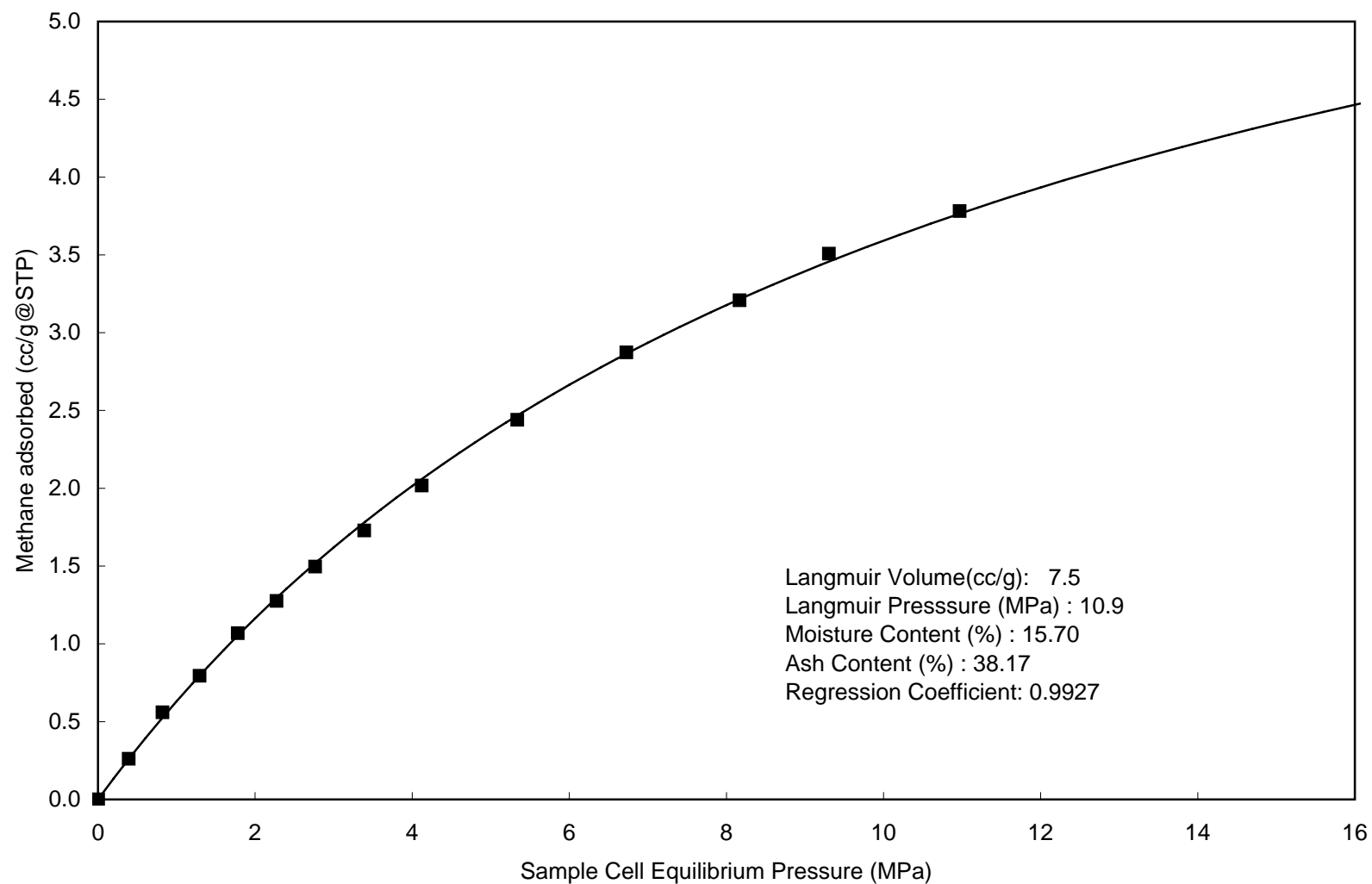
4-LA-1 Methane (dry & ash free basis)



4-LA-1 Methane (moisture free, ash included basis)



4-LA-1 Methane (ash free, moisture included basis)



Adsorption Langmuir Plot

