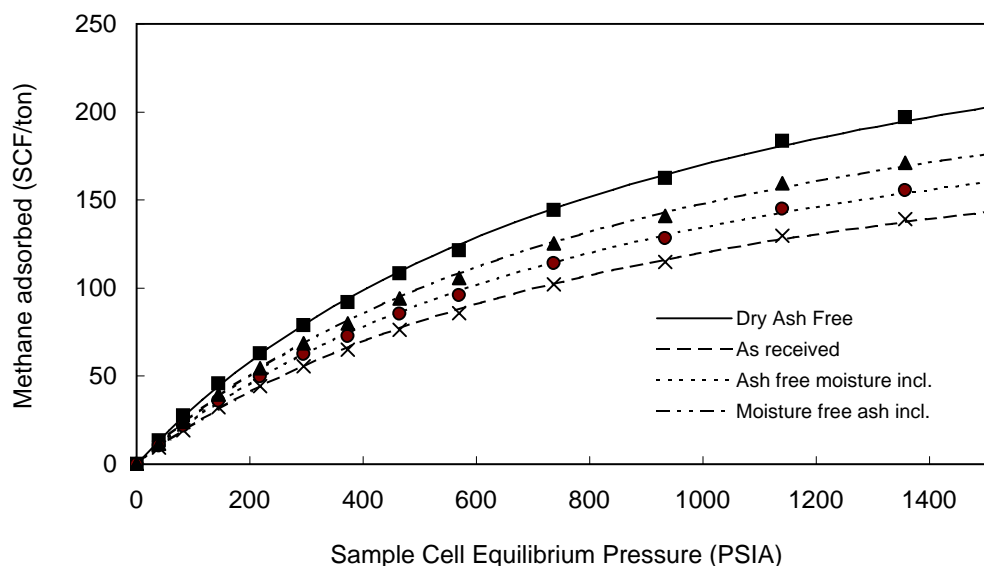


4-LA-2 Methane



Pressure (PSIA)	Adsorbed gas (ft ³ /ton)			
	As Received	moisture free ash incl.	ash free moisture incl.	Dry Ash Free
39	9.5	11.7	10.7	13.5
82	19.4	23.9	21.7	27.5
144	32.2	39.7	36.1	45.6
218	44.4	54.7	49.7	62.9
295	55.7	68.5	62.3	78.8
373	65.0	79.9	72.6	91.9
464	76.5	94.1	85.5	108.2
570	85.9	105.7	96.1	121.5
737	102.0	125.5	114.1	144.3
933	114.7	141.1	128.3	162.3
1140	129.7	159.5	145.1	183.4
1356	139.2	171.2	155.7	196.8

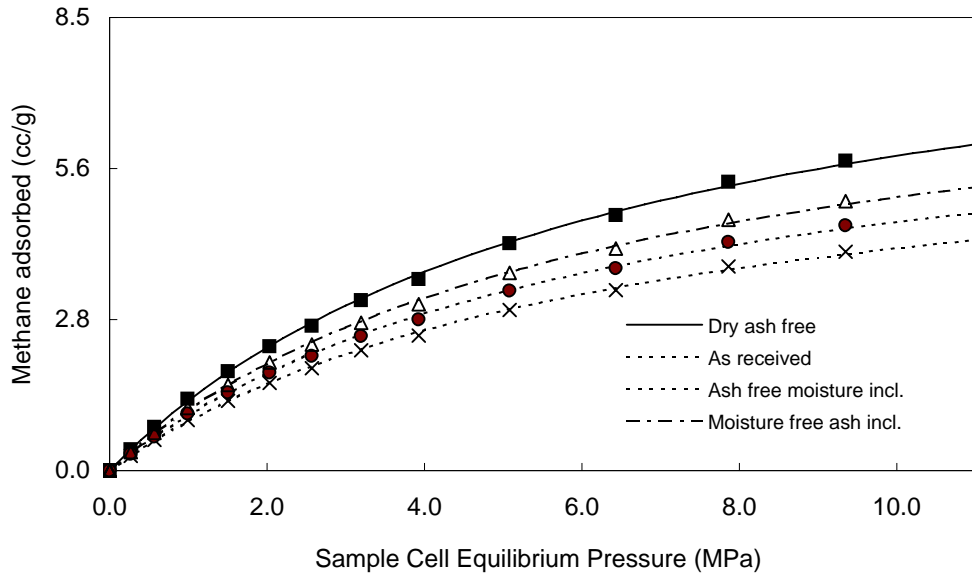
Langmuir Parameters

	As Received	Moisture free ash incl	Ash free moisture incl	Dry Ash Free
Vol. (ft ³ /ton)	231.4	284.6	258.8	327.2
Pressure (PSIA)	923.4	923.4	923.4	923.4

SUMMARY OF ADSORPTION ANALYSES IMP. UNITS

Isotherm Temperature: 118.4 °F
 Goodness of fit of Langmuir regression: 1.00
 % Ash= 10.59 % Moisture= 18.70 Density g/cc 1.362

4-LA-2 Methane



Pressure (MPa)	Adsorbed gas (cc/g)			
	As Received	Moisture free ash incl.	ash free moisture incl	Dry Ash Free
0.271	0.28	0.34	0.31	0.40
0.566	0.57	0.70	0.64	0.81
0.994	0.95	1.17	1.06	1.34
1.505	1.31	1.61	1.46	1.85
2.031	1.64	2.01	1.83	2.32
2.572	1.91	2.35	2.13	2.70
3.199	2.25	2.76	2.51	3.18
3.928	2.52	3.11	2.82	3.57
5.079	3.00	3.69	3.35	4.24
6.432	3.37	4.15	3.77	4.77
7.859	3.81	4.69	4.26	5.39
9.351	4.09	5.03	4.57	5.78

Langmuir Parameters

	As Received	Moisture free ash incl.	Ash free moisture incl	Dry Ash Free
Vol. (cc/g)	6.80	8.36	7.61	9.62
Pressure (MPa)	6.37	6.37	6.37	6.37

SUMMARY OF ADSORPTION ANALYSES SI UNITS

Isotherm Temperature:

48.0 °C

Goodness of fit of Langmuir regression:

1.00

% Ash= 10.59

% Moisture =

18.70

Density (g/cc)

1.362

4-LA-2 Methane

Methane Adsorption (Imperial Units)

Summary of Analyses

	As Received	DAF basis
Langmuir Volume (SCF)	231	327
Langmuir Pressure (PSIA)	923	923
Goodness of fit Langmuir		
Equation R-squared	1.00	1.00
Ash Content Wt.%	10.59	10.59
Equilibrium Moisture Wt.%	18.70	18.70

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-2 Methane

GAS ADSORPTION ISOTHERM IMPERIAL UNITS

AS RECEIVED BASIS

Isotherm Temperature ° F:	118.4	Moisture Content % :	18.70
Gas used:	Methane	Ash Content, % :	10.59
		Helium Density g/cc	1.362

PRESSURE (PSI)	ADSORBED GAS (SCF/ton)	P / V
39	9.53	4.12
82	19.42	4.23
144	32.25	4.47
218	44.45	4.91
295	55.72	5.29
373	64.95	5.74
464	76.47	6.07
570	85.91	6.63
737	102.05	7.22
933	114.73	8.13
1140	129.70	8.79
1356	139.17	9.75

Saturated Monolayer Volume (SCF/ton):	231.4
Langmuir Pressure (PSIA):	923.4
Correlation Coefficient:	0.9964

DRY ASH FREE BASIS

39	13.48	2.91
82	27.47	2.99
144	45.61	3.16
218	62.86	3.47
295	78.80	3.74
373	91.86	4.06
464	108.15	4.29
570	121.50	4.69
737	144.32	5.10
933	162.26	5.75
1140	183.42	6.21
1356	196.82	6.89

Saturated Monolayer Volume (SCF/ton, daf):	327
Langmuir Pressure (PSIA):	923
Correlation Coefficient:	0.9964

4-LA-2 Methane

GAS ADSORPTION ISOTHERM IMPERIAL UNITS

MOISTURE FREE ASH INCLUDED

Isotherm Temperature° F:	118.4	Moisture Content % :	18.70
Gas used:	Methane	Ash Content, % :	10.59
		Helium Density g/cc	1.362

PRESSURE (PSI)	ADSORBED GAS (SCF/ton)	P / V
39	12	3.35
82	24	3.44
144	40	3.63
218	55	3.99
295	69	4.30
373	80	4.67
464	94	4.93
570	106	5.39
737	126	5.87
933	141	6.61
1140	160	7.15
1356	171	7.92

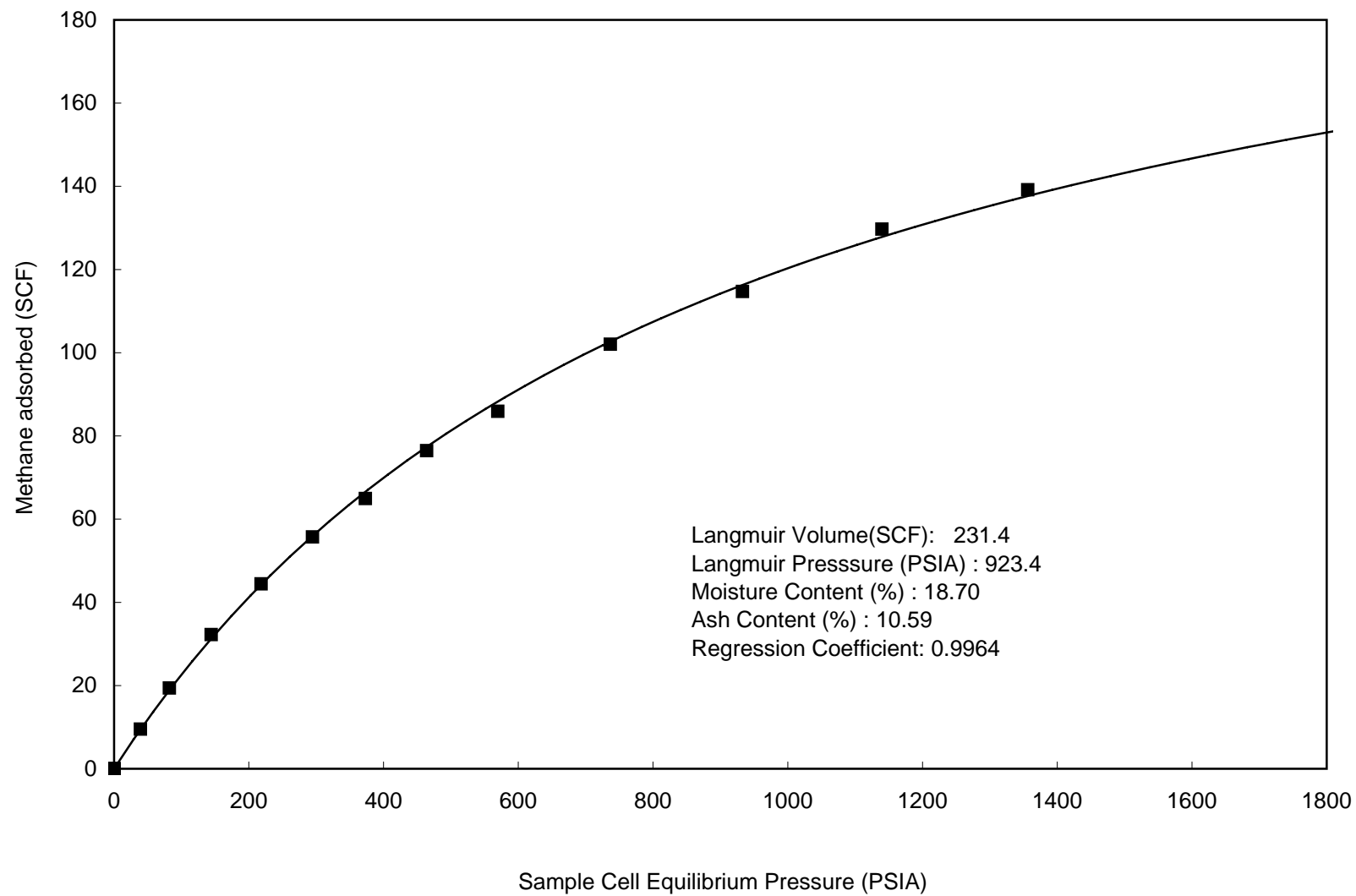
Saturated Monolayer Volume (SCF/ton):	285
Langmuir Pressure (PSIA):	923
Correlation Coefficient:	0.9964

ASH FREE MOISTURE INCLUDED

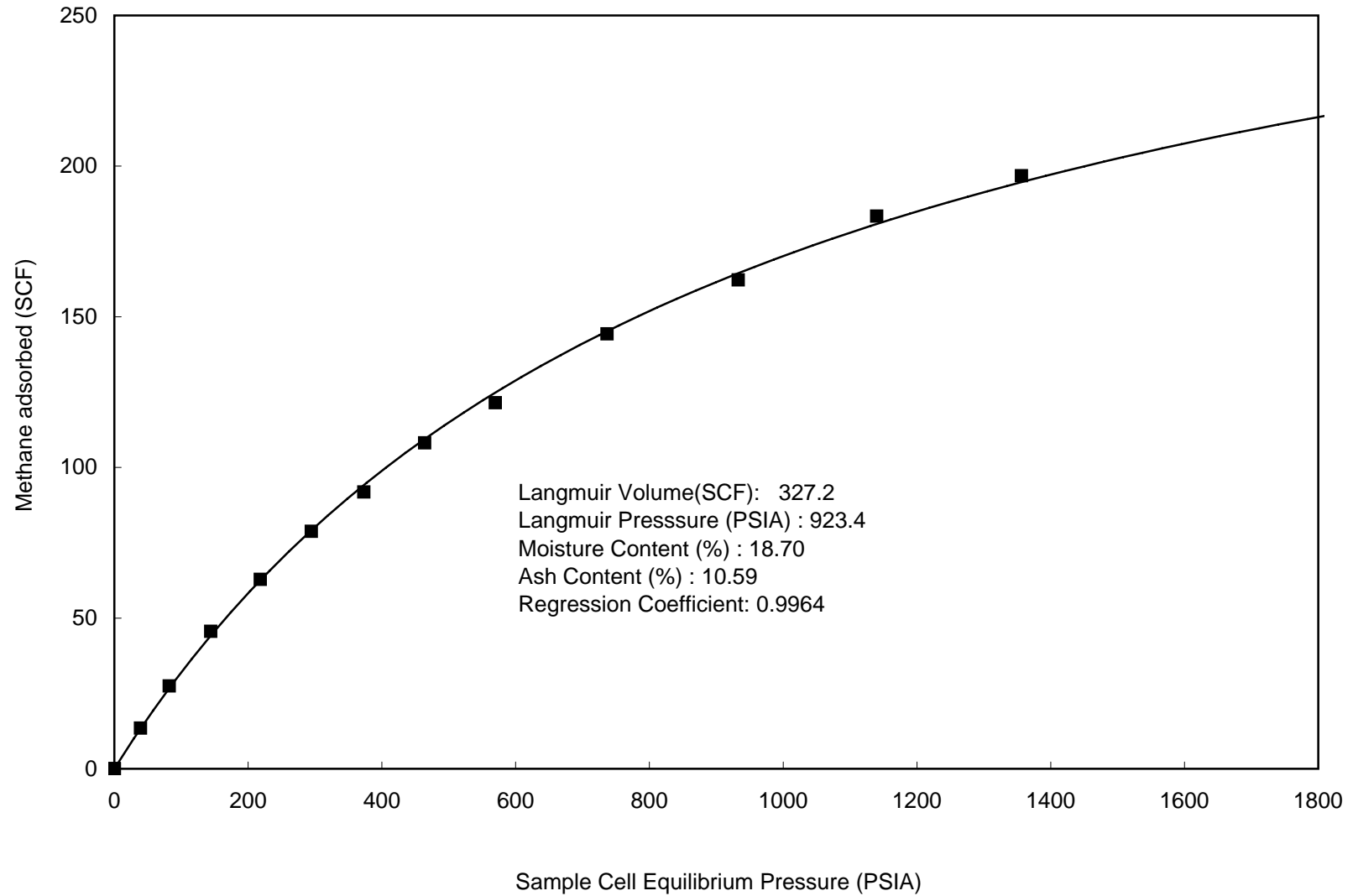
39	11	3.68
82	22	3.78
144	36	4.00
218	50	4.39
295	62	4.73
373	73	5.14
464	86	5.42
570	96	5.93
737	114	6.45
933	128	7.27
1140	145	7.86
1356	156	8.71

Saturated Monolayer Volume (SCF/ton):	259
Langmuir Pressure (PSIA):	923
Correlation Coefficient:	0.9964

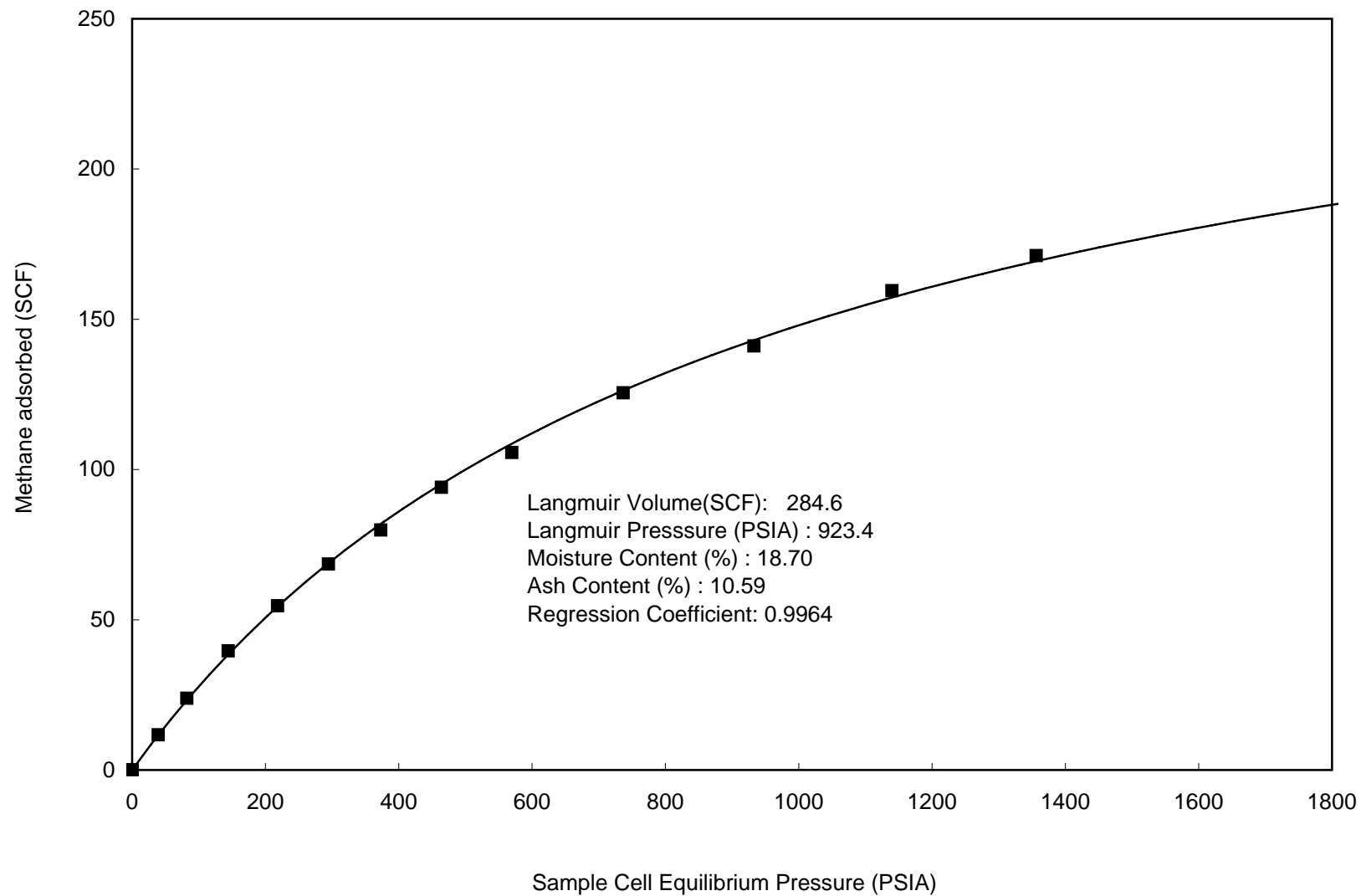
4-LA-2 Methane (as received basis)



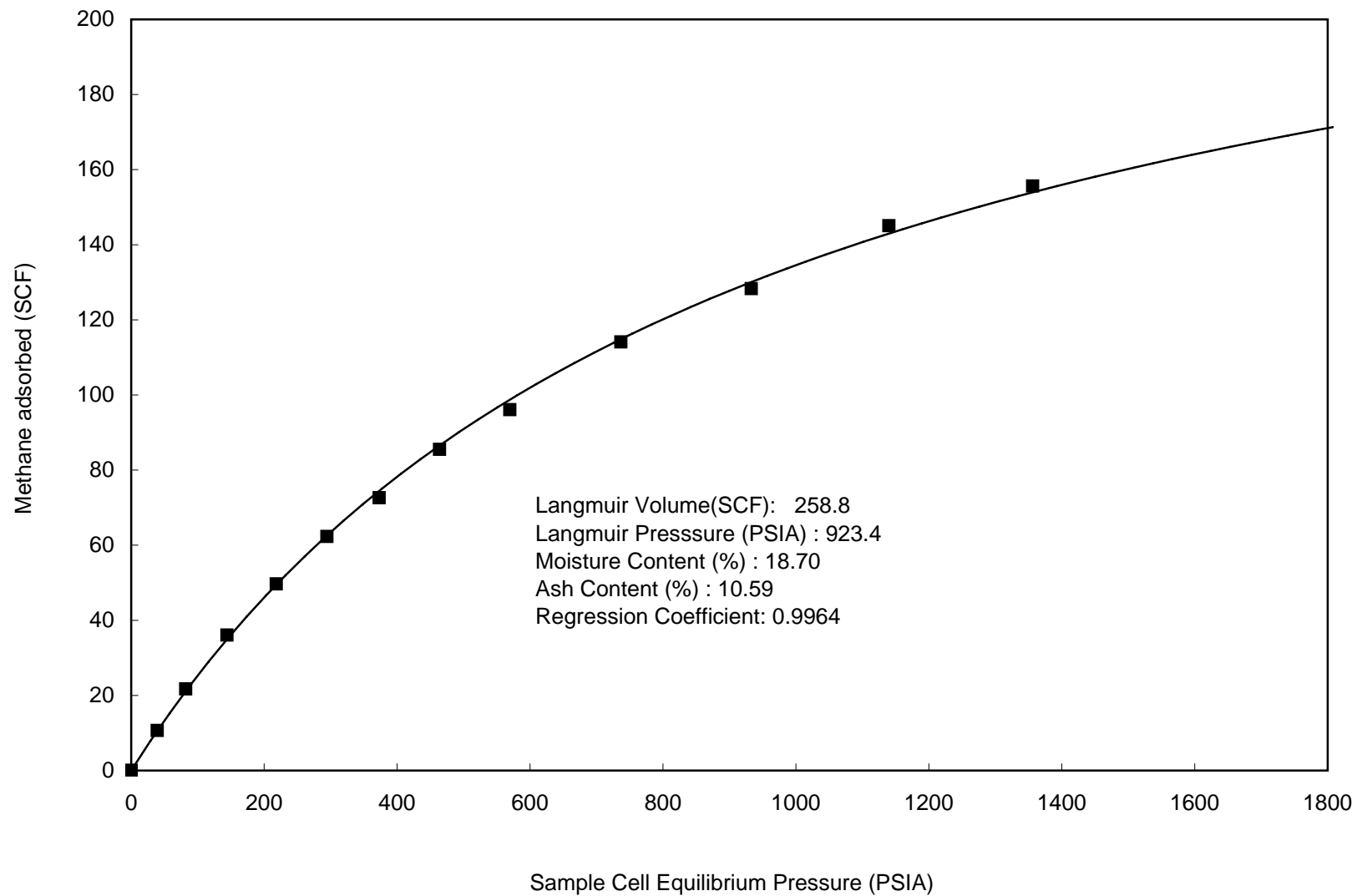
4-LA-2 Methane (dry & ash free basis)



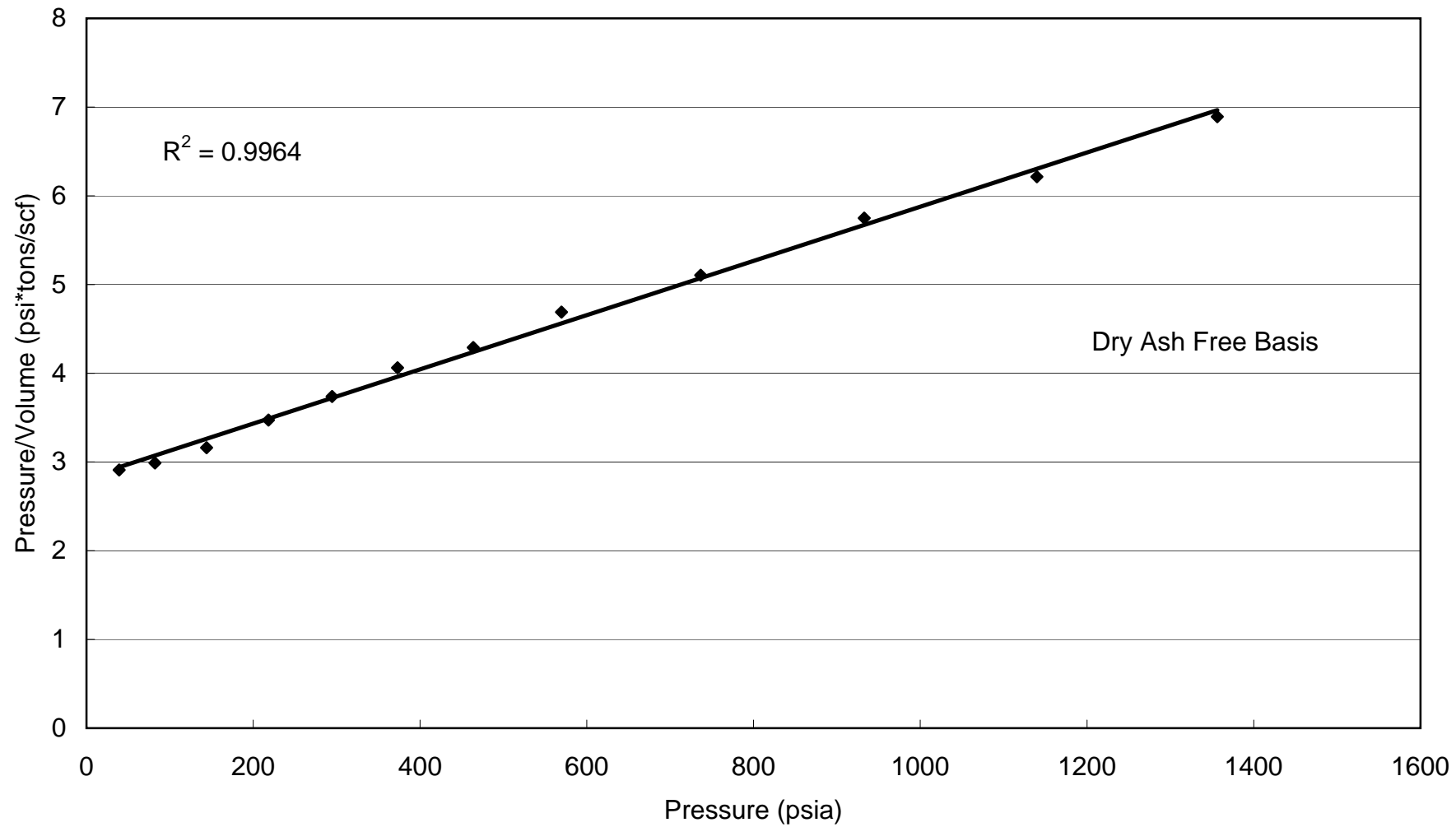
4-LA-2 Methane (moisture free, ash included basis)



4-LA-2 Methane (ash free, moisture included basis)



Adsorption Langmuir Plot



4-LA-2 Methane

Methane Adsorption (SI Units)

Summary of Analyses

	As Received	DAF basis
Langmuir Volume cc/g	6.80	9.62
Langmuir Pressure MPa	6.37	6.37
Goodness of fit Langmuir Equation R-squared	1.00	1.00
Ash Content Wt.%	10.59	10.59
Equilibrium Moisture Wt.%	18.70	18.70

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-2 Methane

GAS ADSORPTION ISOTHERM SI UNITS

AS RECEIVED BASIS

Sample I.D. :	4-LA-2 Methane	Moisture Content (EQ) % :	18.70
Isotherm Temperature ° C:	48	Ash Content % :	10.59
Gas used:	Methane	Helium Density g/cc	1.362

PRESSURE (MPa)	ADSORBED GAS (cc/g @STP)	P / V
0.271	0.28	0.965
0.566	0.57	0.992
0.994	0.95	1.048
1.505	1.31	1.152
2.031	1.64	1.240
2.572	1.91	1.348
3.199	2.25	1.423
3.928	2.52	1.556
5.079	3.00	1.694
6.432	3.37	1.908
7.859	3.81	2.062
9.351	4.09	2.286

Saturated Monolayer Volume (cc/g @ STP): 6.80

Langmuir Pressure (MPa): 6.37

DRY ASH FREE BASIS

0.271	0.40	0.683
0.566	0.81	0.701
0.994	1.34	0.741
1.505	1.85	0.815
2.031	2.32	0.877
2.572	2.70	0.953
3.199	3.18	1.006
3.928	3.57	1.100
5.079	4.24	1.197
6.432	4.77	1.349
7.859	5.39	1.458
9.351	5.78	1.617

Saturated Monolayer Volume (cc/g @ STP, daf): 9.62

Langmuir Pressure (MPa): 6.37

Correlation Coefficient: 0.9964

4-LA-2 Methane

GAS ADSORPTION ISOTHERM SI UNITS

MOISTURE FREE ASH INCLUDED

Isotherm Temperature ° C:	48	Moisture Content (EQ) % :	18.70
Gas used:	Methane	Ash Content % :	10.59
		Helium Density g/cc	1.362

PRESSURE (MPa)	ADSORBED GAS (cc/g@STP)	P / V
0.271	0.34	0.78
0.566	0.70	0.81
0.994	1.17	0.85
1.505	1.61	0.94
2.031	2.01	1.01
2.572	2.35	1.10
3.199	2.76	1.16
3.928	3.11	1.26
5.079	3.69	1.38
6.432	4.15	1.55
7.859	4.69	1.68
9.351	5.03	1.86

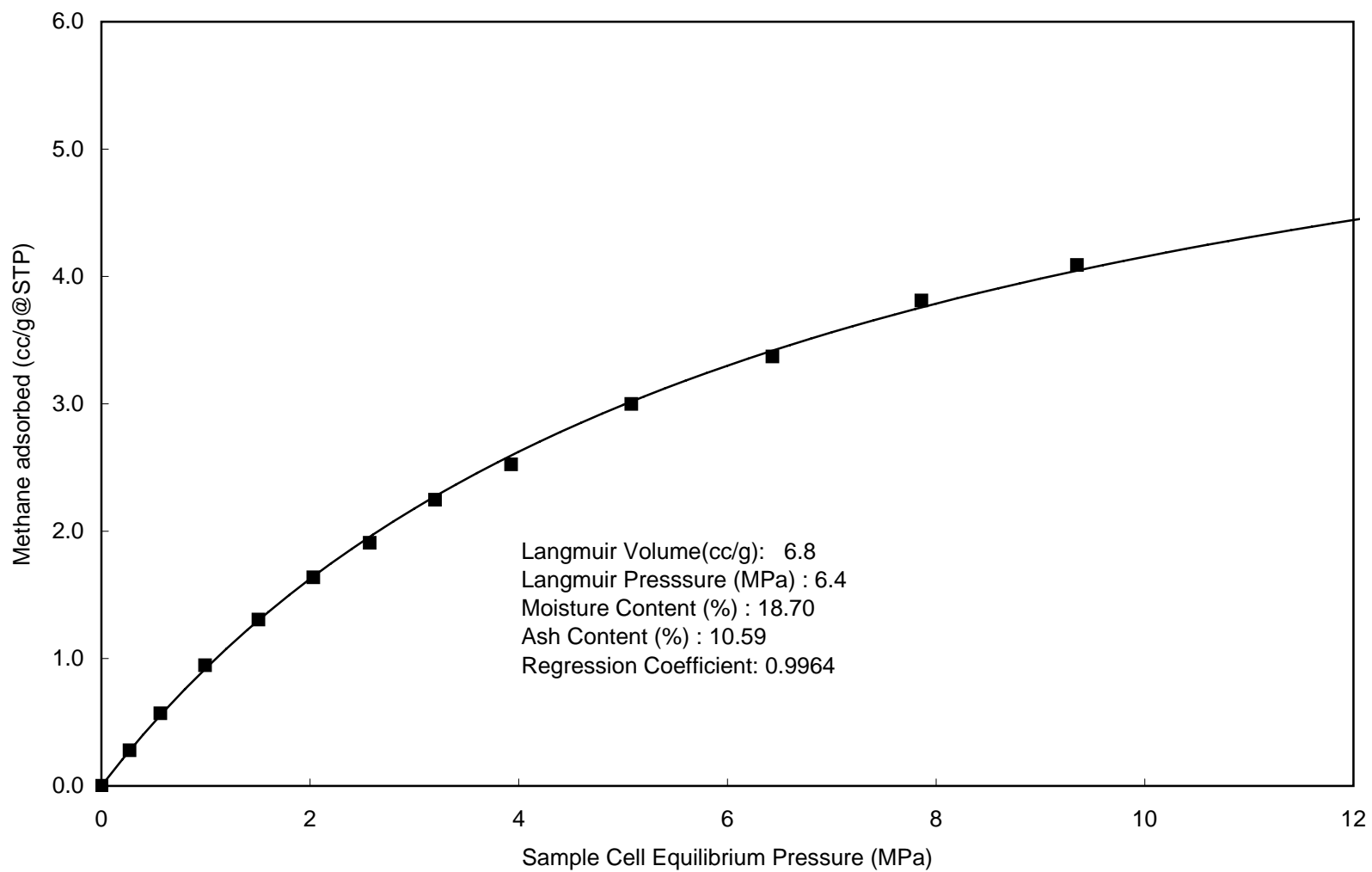
Saturated Monolayer Volume (cc/g):	8.36
Langmuir Pressure (MPa):	6.37

ASH FREE MOISTURE INCLUDED

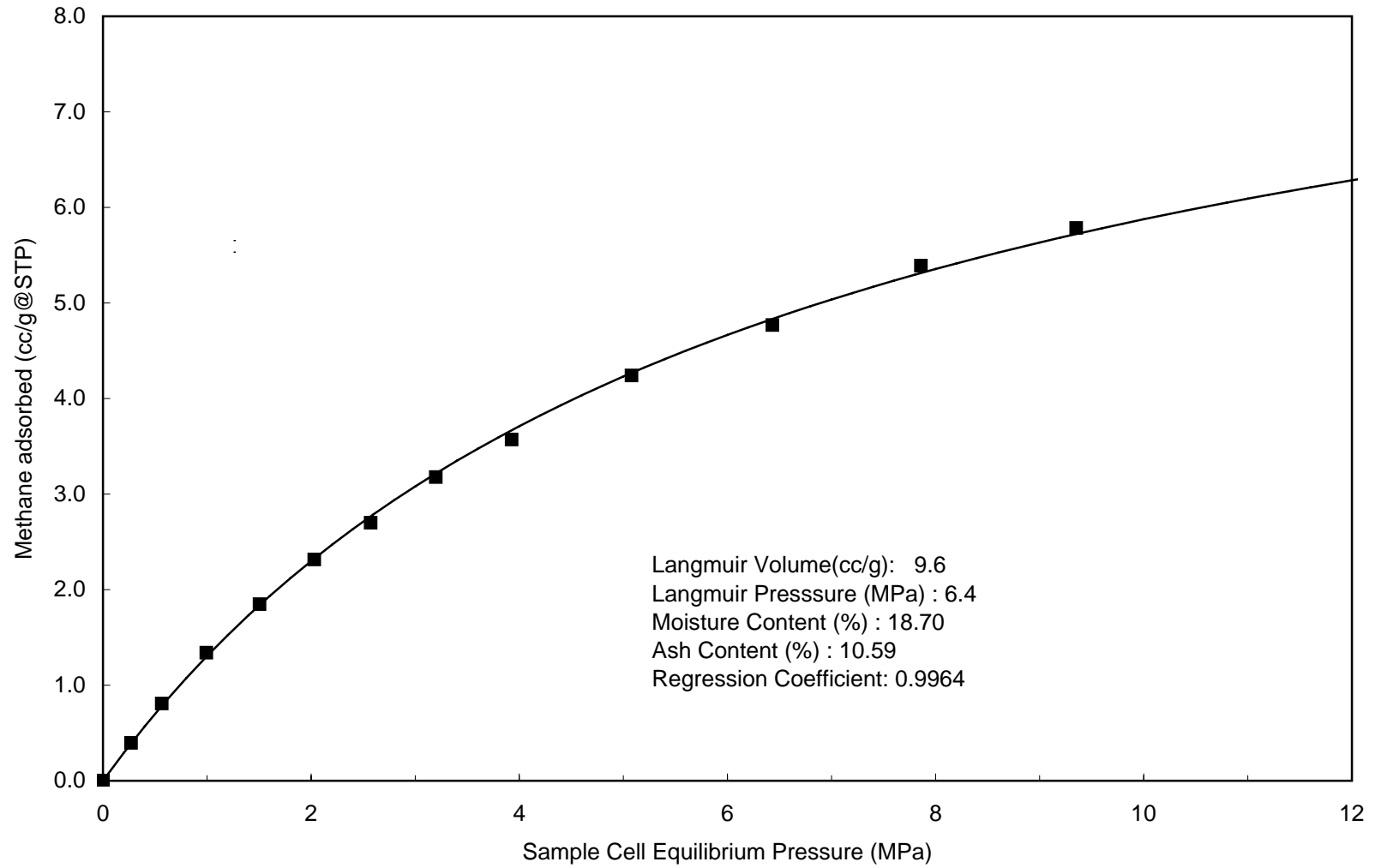
0.271	0.31	0.00
0.566	0.64	0.89
0.994	1.06	0.94
1.505	1.46	1.03
2.031	1.83	1.11
2.572	2.13	1.20
3.199	2.51	1.27
3.928	2.82	1.39
5.079	3.35	1.51
6.432	3.77	1.71
7.859	4.26	1.84
9.351	4.57	2.04

Saturated Monolayer Volume (cc/g, ash free):	7.61
Langmuir Pressure (MPa):	6.37
Correlation Coefficient:	0.9964

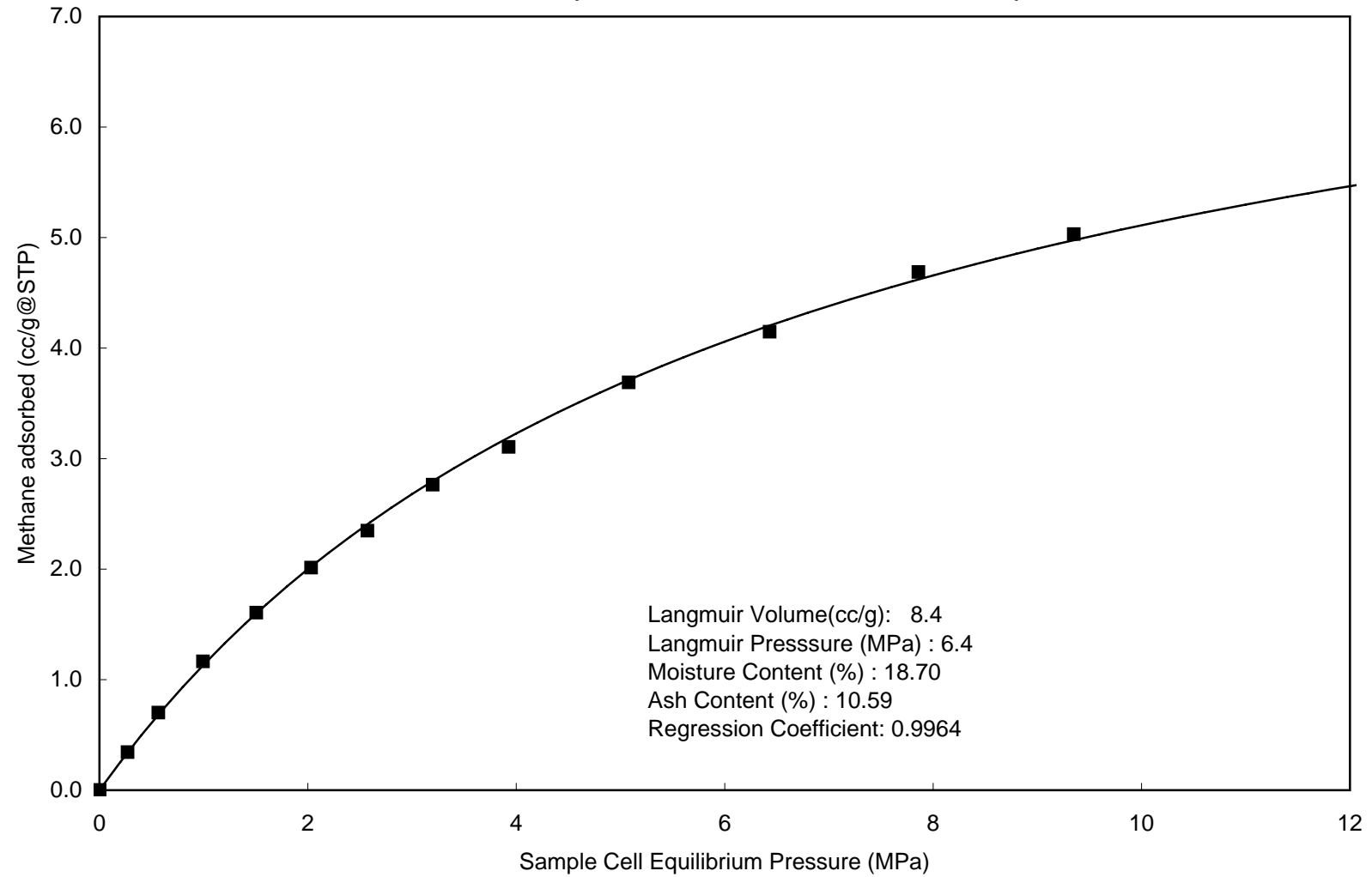
4-LA-2 Methane (as received basis)



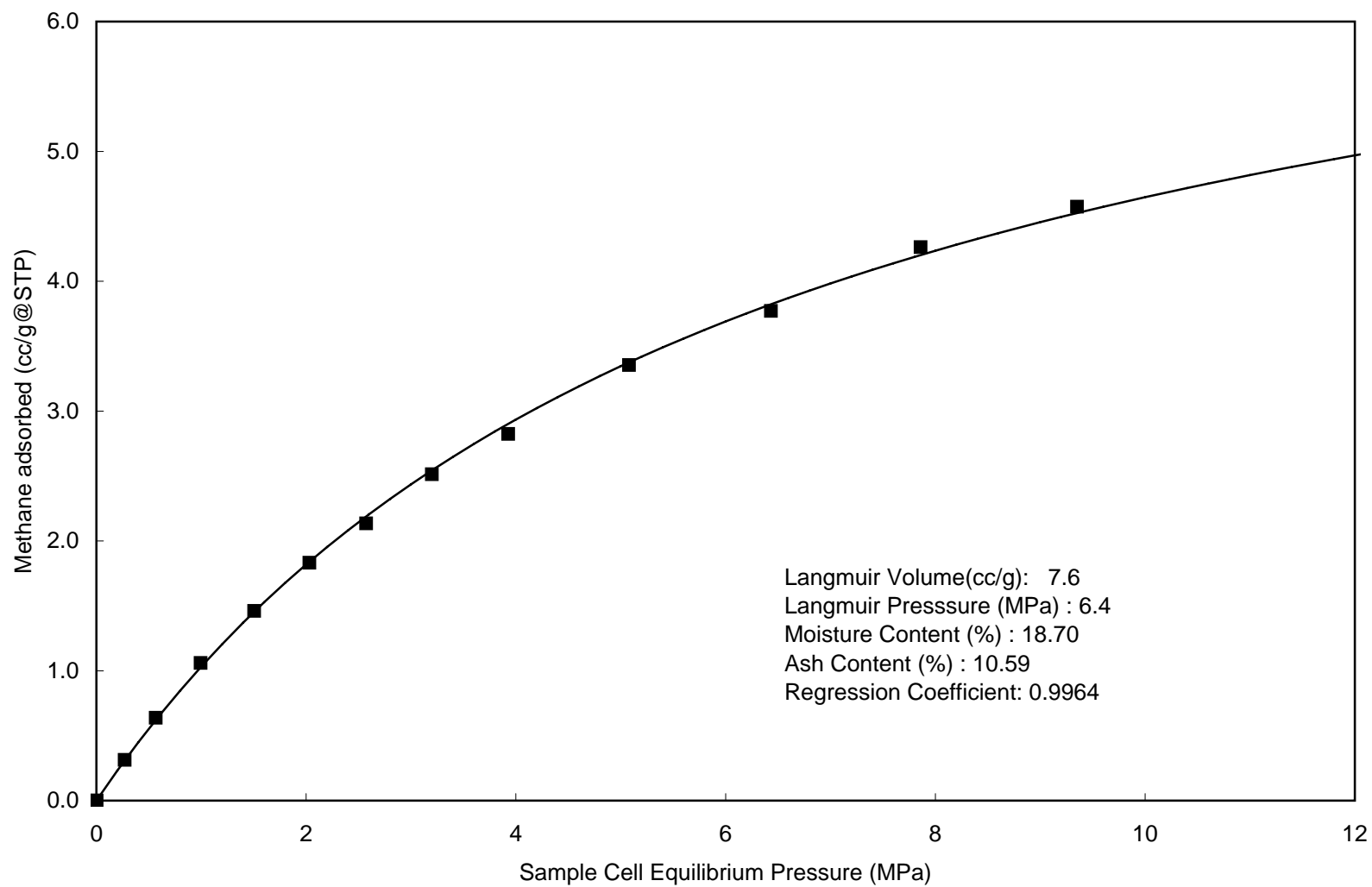
4-LA-2 Methane (dry & ash free basis)



4-LA-2 Methane (moisture free, ash included basis)



4-LA-2 Methane (ash free, moisture included basis)



Adsorption Langmuir Plot

