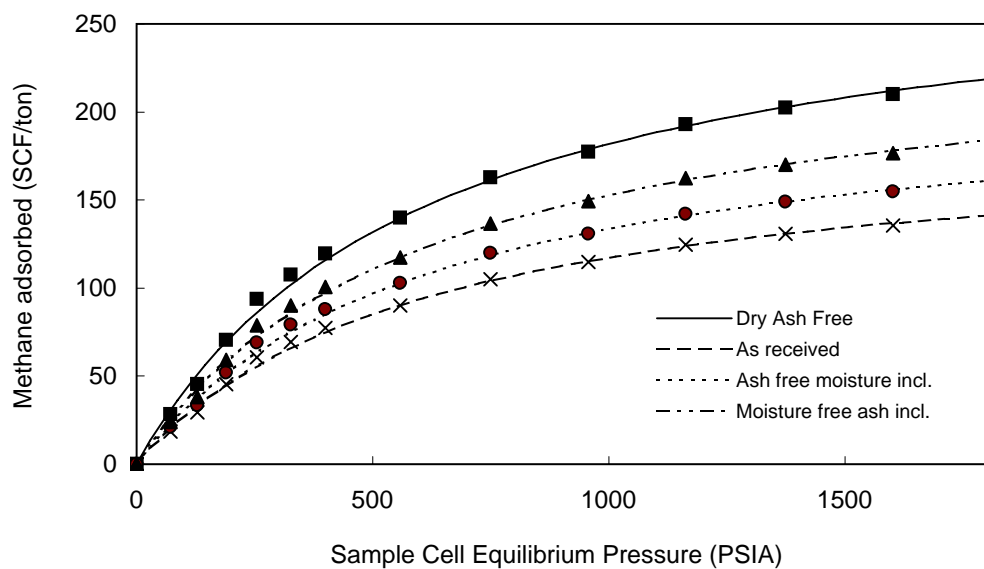


9-1D Methane



Pressure (PSIA)	Adsorbed gas (ft ³ /ton)			
	As Received	moisture free ash incl.	ash free moisture incl.	Dry Ash Free
71	18.4	23.9	20.9	28.4
129	29.4	38.3	33.5	45.5
190	45.5	59.2	51.8	70.4
255	60.5	78.7	69.0	93.7
327	69.4	90.3	79.1	107.4
400	77.3	100.5	88.0	119.6
559	90.3	117.4	102.9	139.7
750	105.1	136.8	119.8	162.7
957	114.7	149.2	130.7	177.5
1163	124.7	162.3	142.1	193.0
1375	130.6	170.0	148.9	202.2
1602	135.7	176.6	154.7	210.1

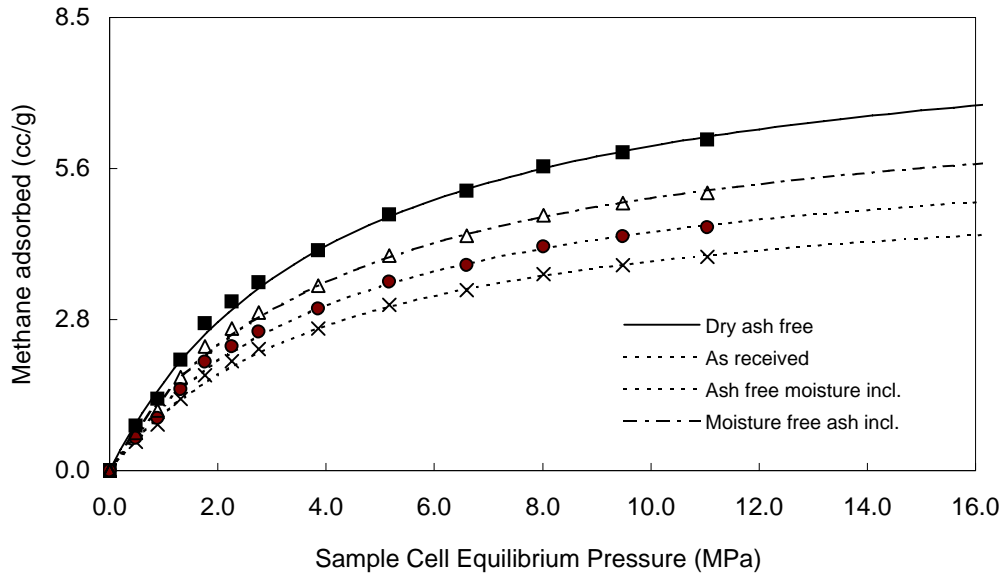
Langmuir Parameters

	As Received	Moisture free ash incl	Ash free moisture incl	Dry Ash Free
Vol. (ft ³ /ton)	189.3	246.3	215.7	293.0
Pressure (PSIA)	611.6	611.6	611.6	611.6

SUMMARY OF ADSORPTION ANALYSES IMP. UNITS

Isotherm Temperature: 118.4 °F
 Goodness of fit of Langmuir regression: 0.99
 % Ash= 12.25 % Moisture= 23.15 Density g/cc 1.344

9-1D Methane



Pressure (MPa)	Adsorbed gas (cc/g)			
	As Received	Moisture free ash incl.	ash free moisture incl	Dry Ash Free
0.491	0.54	0.70	0.62	0.84
0.890	0.86	1.13	0.99	1.34
1.310	1.34	1.74	1.52	2.07
1.760	1.78	2.31	2.03	2.75
2.256	2.04	2.65	2.32	3.16
2.756	2.27	2.95	2.59	3.51
3.851	2.65	3.45	3.02	4.11
5.170	3.09	4.02	3.52	4.78
6.598	3.37	4.39	3.84	5.22
8.016	3.66	4.77	4.18	5.67
9.479	3.84	5.00	4.38	5.94
11.049	3.99	5.19	4.55	6.17

Langmuir Parameters

	As Received	Moisture free ash incl.	Ash free moisture incl	Dry Ash Free
Vol. (cc/g)	5.56	7.24	6.34	8.61
Pressure (MPa)	4.22	4.22	4.22	4.22

SUMMARY OF ADSORPTION ANALYSES SI UNITS

Isotherm Temperature:

48.0 °C

Goodness of fit of Langmuir regression:

0.99

% Ash= 12.25

% Moisture =

23.15

Density (g/cc)

1.344

9-1D Methane

Methane Adsorption (Imperial Units)

Summary of Analyses

	As Received	DAF basis
Langmuir Volume (SCF)	189	293
Langmuir Pressure (PSIA)	612	612
Goodness of fit Langmuir		
Equation R-squared	0.99	0.99
Ash Content Wt.%	12.25	12.25
Equilibrium Moisture Wt.%	23.15	23.15

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

9-1D Methane
GAS ADSORPTION ISOTHERM IMPERIAL UNITS

AS RECEIVED BASIS

Isotherm Temperature ° F:	118.4	Moisture Content % :	23.15
Gas used:	Methane	Ash Content, % :	12.25
		Helium Density g/cc	1.344

PRESSURE (PSI)	ADSORBED GAS (SCF/ton)	P / V
71	18.37	3.87
129	29.42	4.39
190	45.47	4.18
255	60.51	4.22
327	69.37	4.72
400	77.25	5.17
559	90.26	6.19
750	105.10	7.13
957	114.67	8.35
1163	124.70	9.32
1375	130.64	10.52
1602	135.71	11.81

Saturated Monolayer Volume (SCF/ton):	189.3
Langmuir Pressure (PSIA):	611.6
Correlation Coefficient:	0.9935

DRY ASH FREE BASIS

71	28.43	2.50
129	45.55	2.83
190	70.39	2.70
255	93.67	2.72
327	107.38	3.05
400	119.59	3.34
559	139.72	4.00
750	162.70	4.61
957	177.50	5.39
1163	193.04	6.02
1375	202.23	6.80
1602	210.08	7.63

Saturated Monolayer Volume (SCF/ton, daf):	293
Langmuir Pressure (PSIA):	612
Correlation Coefficient:	0.9935

9-1D Methane

GAS ADSORPTION ISOTHERM IMPERIAL UNITS

MOISTURE FREE ASH INCLUDED

Isotherm Temperature° F:	118.4	Moisture Content % :	23.15
Gas used:	Methane	Ash Content, % :	12.25
		Helium Density g/cc	1.344

PRESSURE (PSI)	ADSORBED GAS (SCF/ton)	P / V
71	24	2.98
129	38	3.37
190	59	3.21
255	79	3.24
327	90	3.62
400	101	3.98
559	117	4.76
750	137	5.48
957	149	6.41
1163	162	7.17
1375	170	8.09
1602	177	9.07

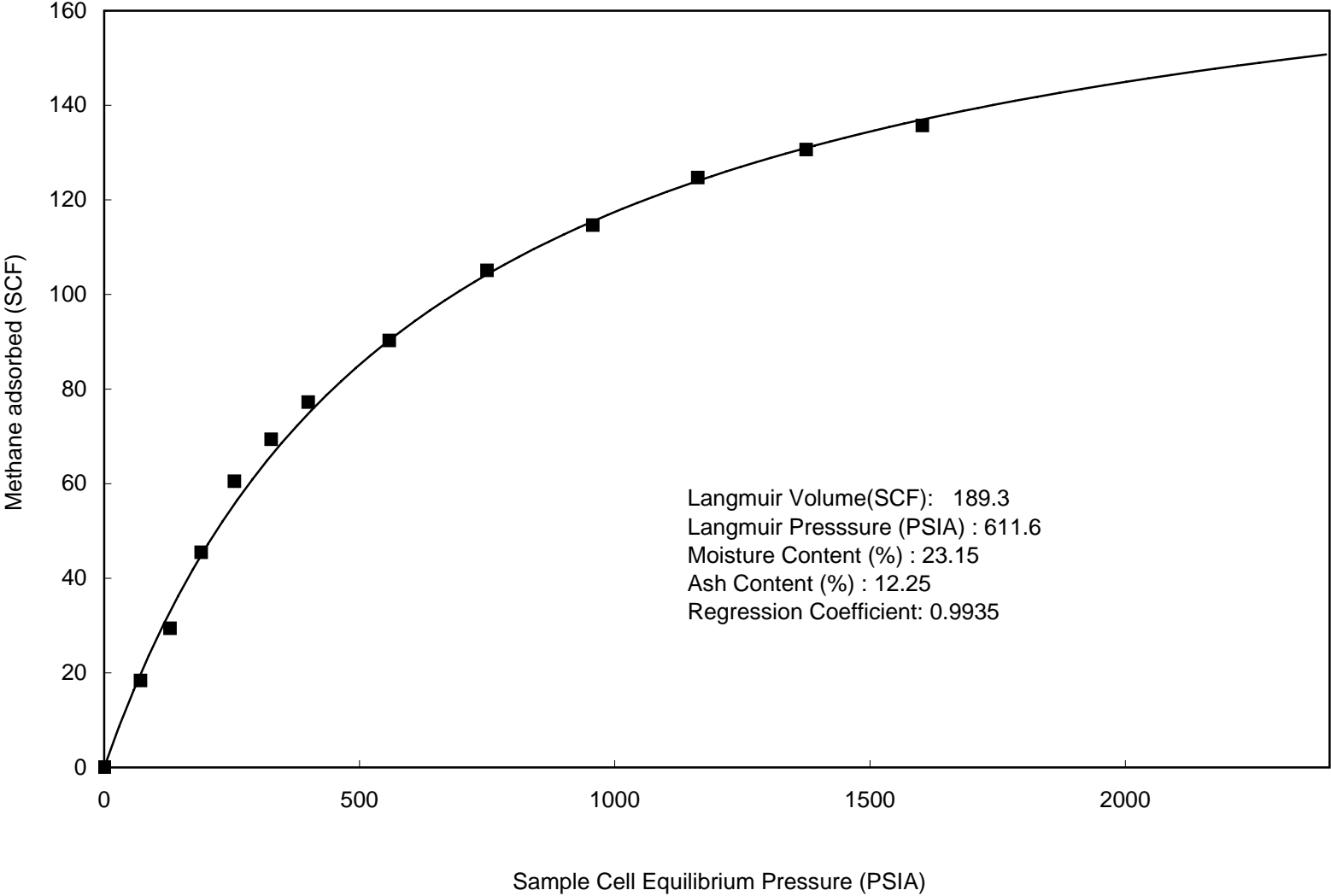
Saturated Monolayer Volume (SCF/ton):	246
Langmuir Pressure (PSIA):	612
Correlation Coefficient:	0.9935

ASH FREE MOISTURE INCLUDED

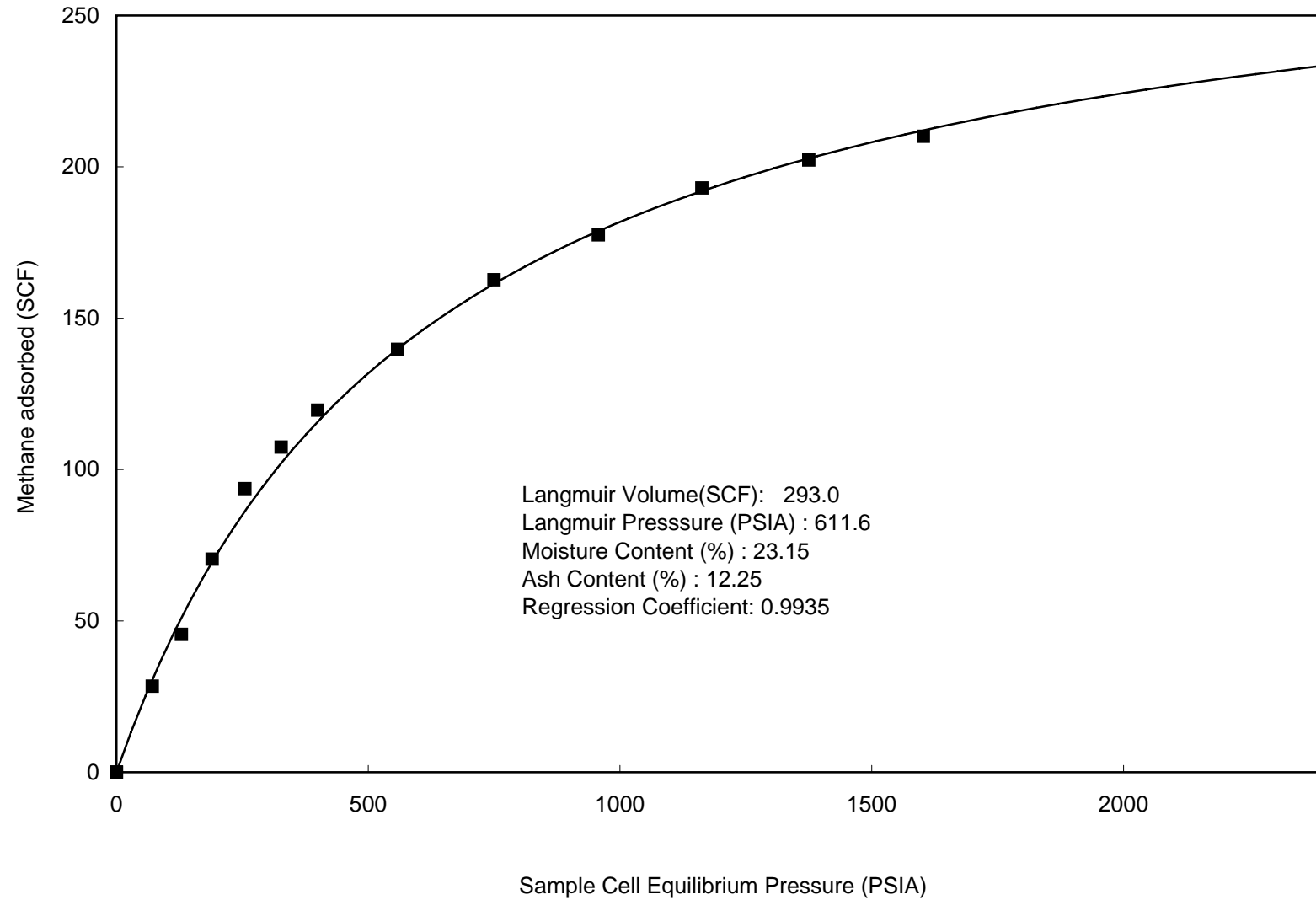
71	21	3.40
129	34	3.85
190	52	3.67
255	69	3.70
327	79	4.14
400	88	4.54
559	103	5.43
750	120	6.26
957	131	7.32
1163	142	8.18
1375	149	9.24
1602	155	10.36

Saturated Monolayer Volume (SCF/ton):	216
Langmuir Pressure (PSIA):	612
Correlation Coefficient:	0.9935

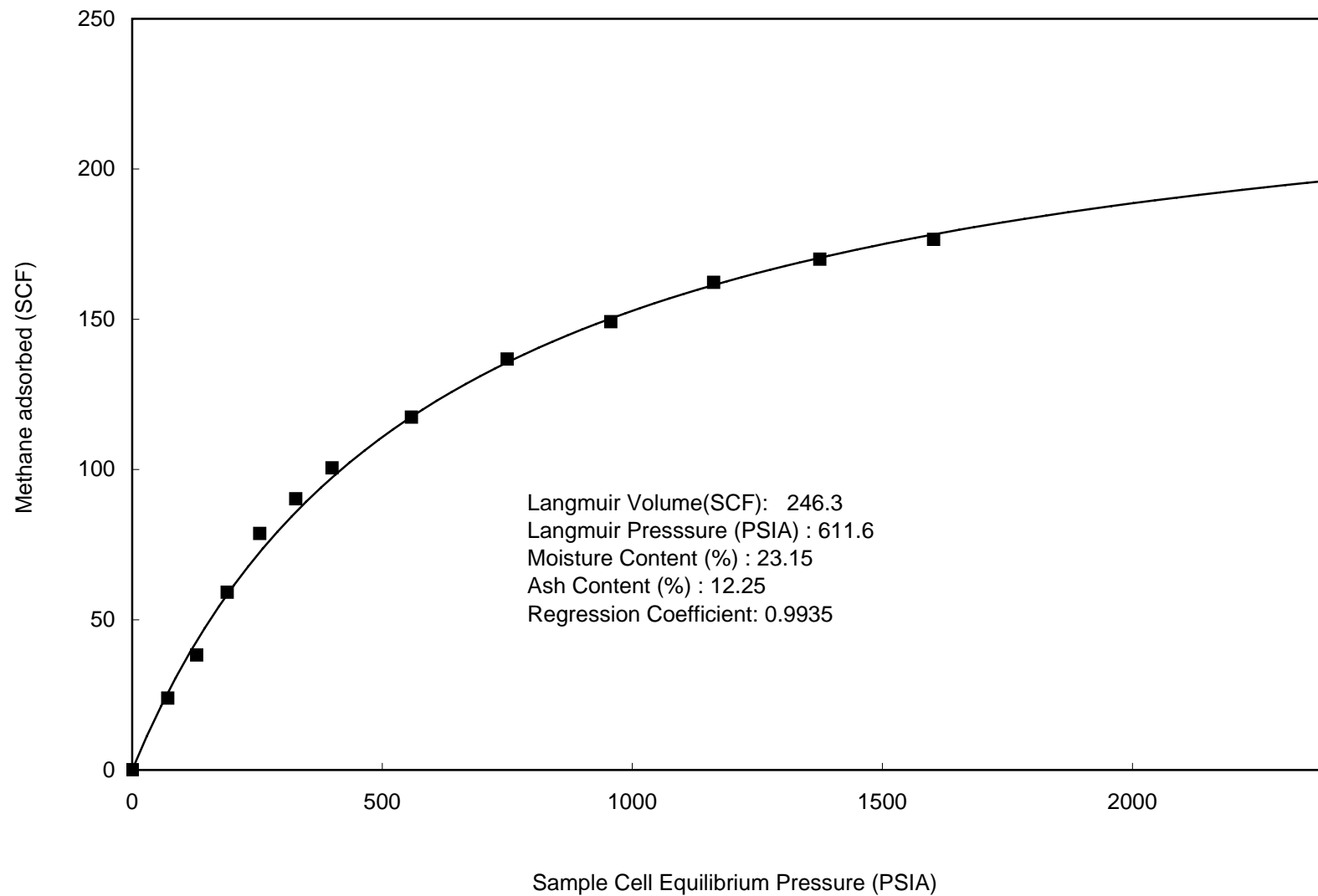
9-1D Methane (as received basis)



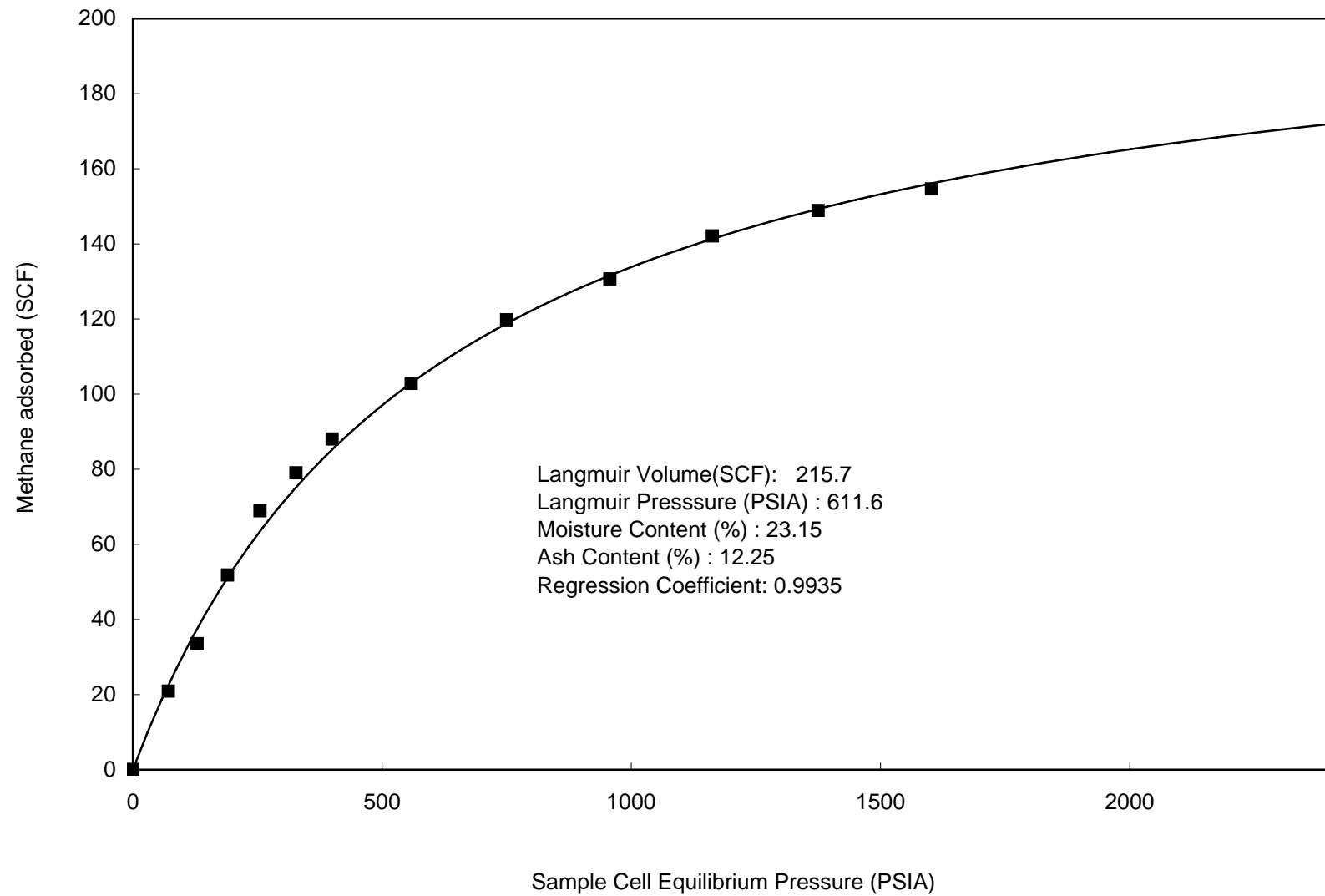
9-1D Methane (dry & ash free basis)



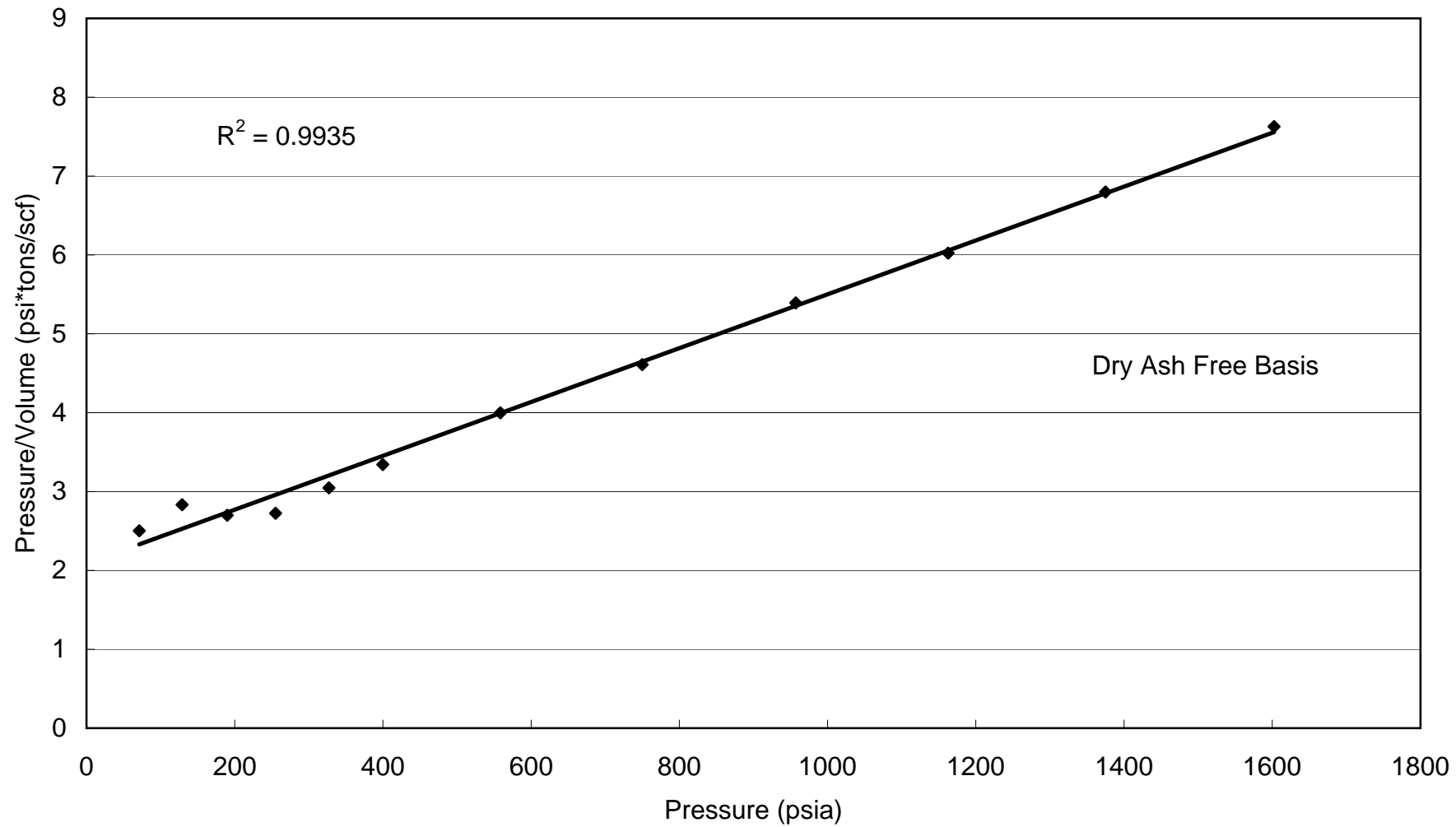
9-1D Methane (moisture free, ash included basis)



9-1D Methane (ash free, moisture included basis)



Adsorption Langmuir Plot



9-1D Methane

Methane Adsorption (SI Units)

Summary of Analyses

	As Received	DAF basis
Langmuir Volume cc/g	5.56	8.61
Langmuir Pressure MPa	4.22	4.22
Goodness of fit Langmuir Equation R-squared	0.99	0.99
Ash Content Wt.%	12.25	12.25
Equilibrium Moisture Wt.%	23.15	23.15

Contents of Appendix

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As Received
Dry Ash Free
Dry Ash Included
Moist Ash Free

Charts

As Received
Dry Ash Free
Dry Ash Included
Moist Ash Free

9-1D Methane
GAS ADSORPTION ISOTHERM SI UNITS

AS RECEIVED BASIS

Sample I.D. :	9-1D Methane	Moisture Content (EQ) % :	23.15
Isotherm Temperature ° C: 48		Ash Content % :	12.25
Gas used:	Methane	Helium Density g/cc	1.344

PRESSURE (MPa)	ADSORBED GAS (cc/g @STP)	P / V
0.491	0.54	0.909
0.890	0.86	1.029
1.310	1.34	0.980
1.760	1.78	0.990
2.256	2.04	1.107
2.756	2.27	1.214
3.851	2.65	1.452
5.170	3.09	1.674
6.598	3.37	1.958
8.016	3.66	2.187
9.479	3.84	2.469
11.049	3.99	2.770

Saturated Monolayer Volume (cc/g @ STP):	5.56
Langmuir Pressure (MPa):	4.22

DRY ASH FREE BASIS

0.491	0.84	0.587
0.890	1.34	0.665
1.310	2.07	0.633
1.760	2.75	0.639
2.256	3.16	0.715
2.756	3.51	0.784
3.851	4.11	0.938
5.170	4.78	1.081
6.598	5.22	1.265
8.016	5.67	1.413
9.479	5.94	1.595
11.049	6.17	1.790

Saturated Monolayer Volume (cc/g @ STP, daf):	8.61
Langmuir Pressure (MPa):	4.22
Correlation Coefficient:	0.9935

9-1D Methane

GAS ADSORPTION ISOTHERM SI UNITS

MOISTURE FREE ASH INCLUDED

Isotherm Temperature ° C:	48	Moisture Content (EQ) % :	23.15
Gas used:	Methane	Ash Content % :	12.25
		Helium Density g/cc	1.344

PRESSURE (MPa)	ADSORBED GAS (cc/g@STP)	P / V
0.491	0.70	0.70
0.890	1.13	0.79
1.310	1.74	0.75
1.760	2.31	0.76
2.256	2.65	0.85
2.756	2.95	0.93
3.851	3.45	1.12
5.170	4.02	1.29
6.598	4.39	1.50
8.016	4.77	1.68
9.479	5.00	1.90
11.049	5.19	2.13

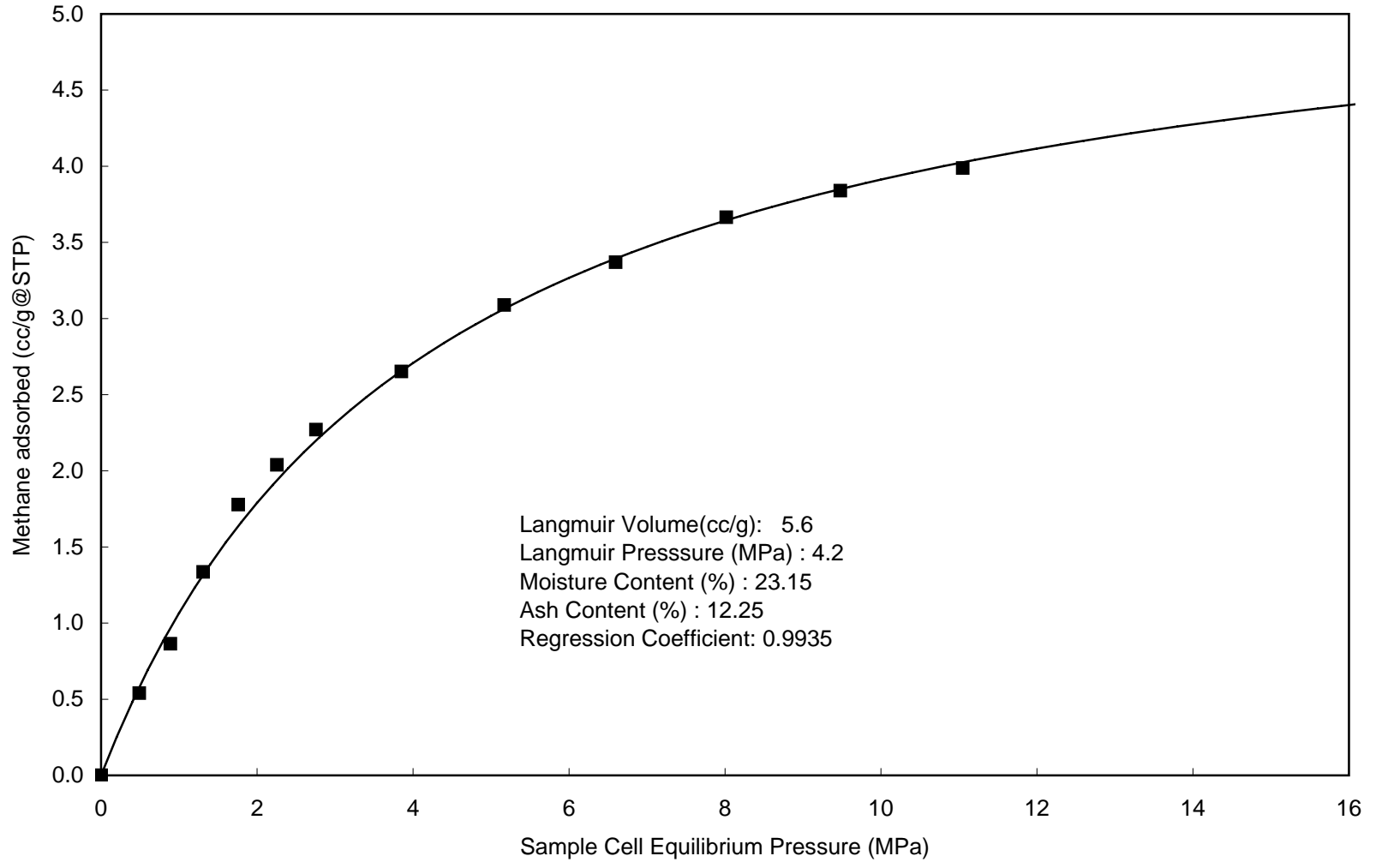
Saturated Monolayer Volume (cc/g):	7.24
Langmuir Pressure (MPa):	4.22

ASH FREE MOISTURE INCLUDED

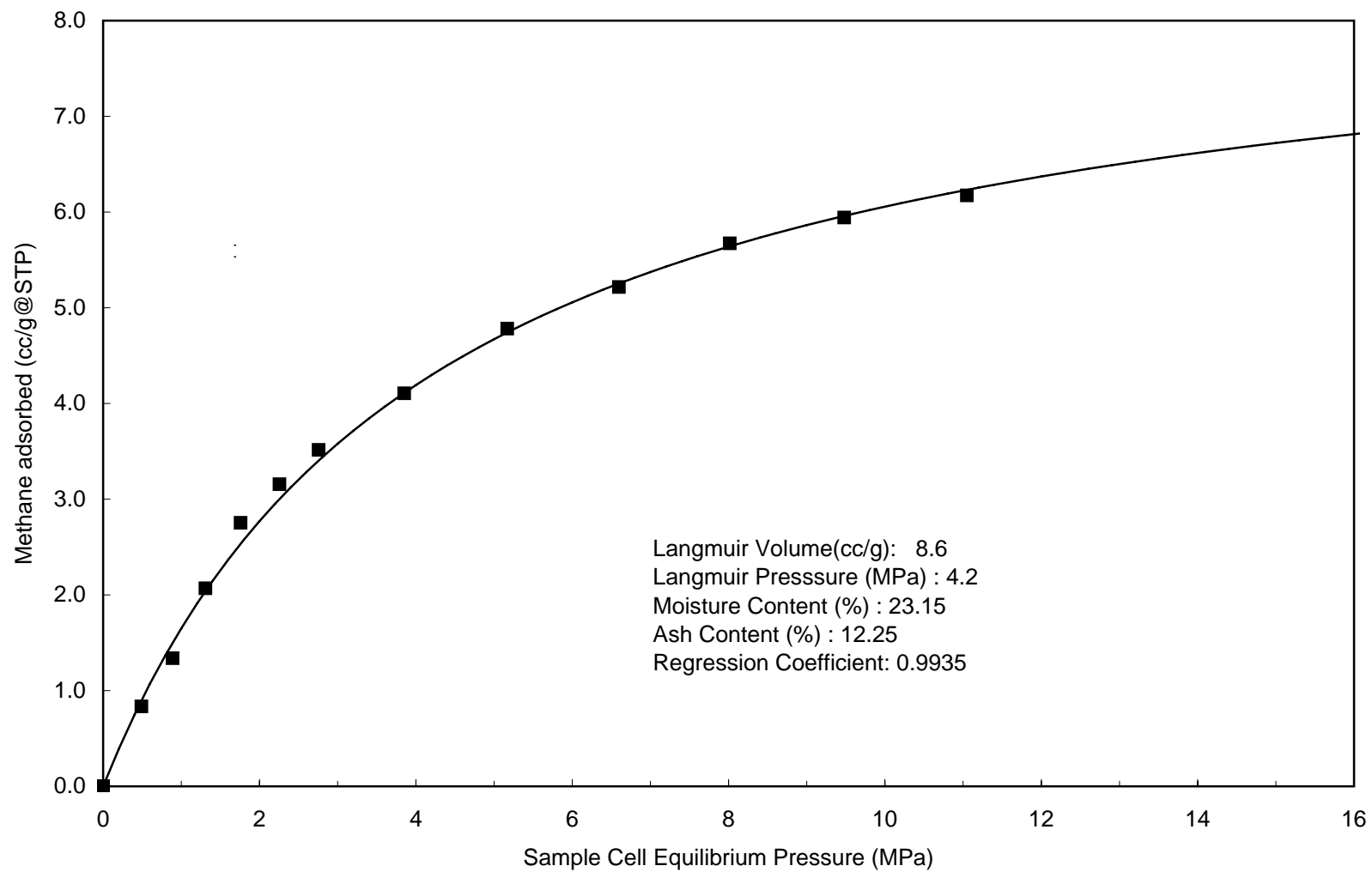
0.491	0.62	0.00
0.890	0.99	0.90
1.310	1.52	0.86
1.760	2.03	0.87
2.256	2.32	0.97
2.756	2.59	1.07
3.851	3.02	1.27
5.170	3.52	1.47
6.598	3.84	1.72
8.016	4.18	1.92
9.479	4.38	2.17
11.049	4.55	2.43

Saturated Monolayer Volume (cc/g, ash free):	6.34
Langmuir Pressure (MPa):	4.22
Correlation Coefficient:	0.9935

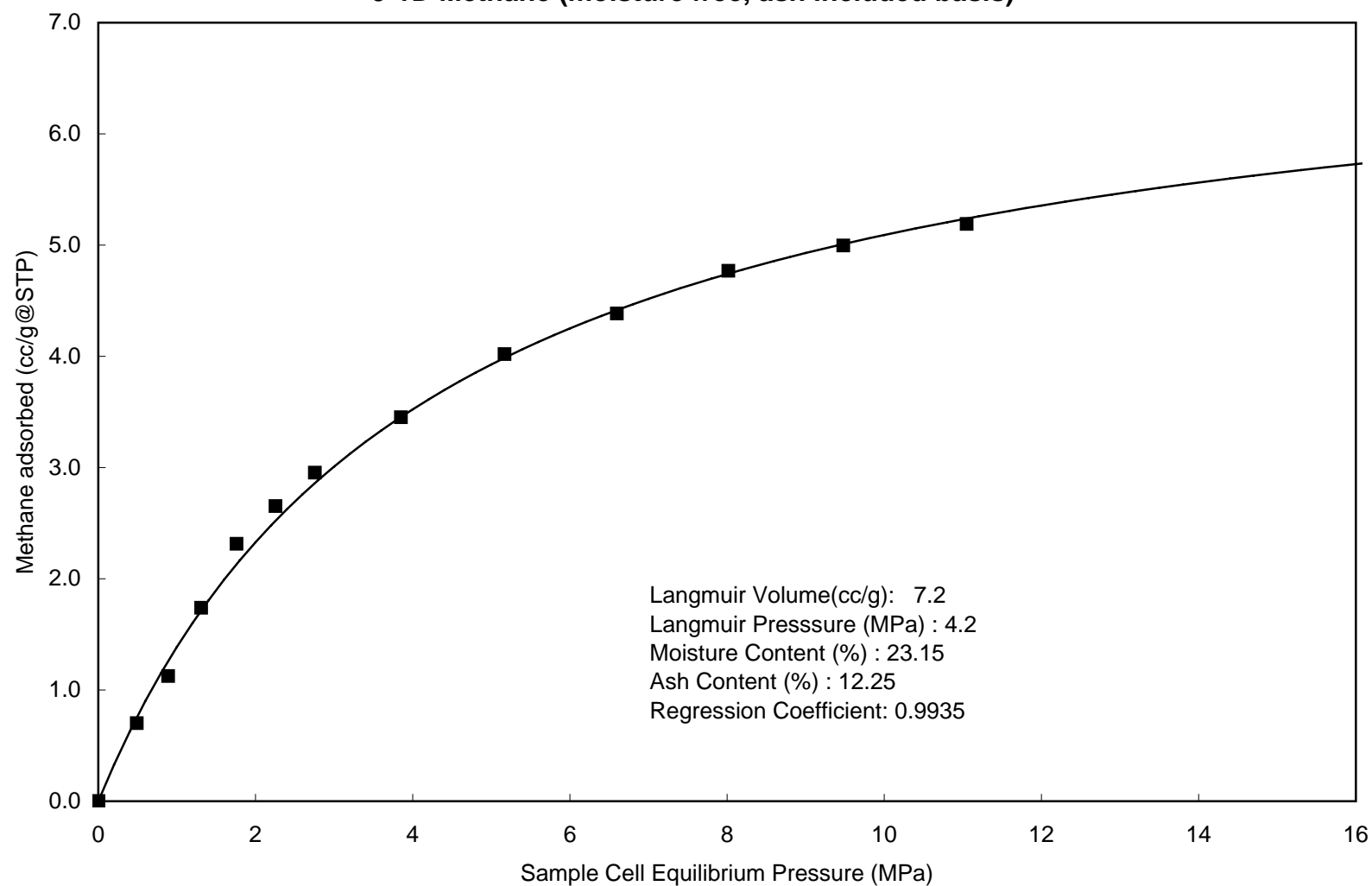
9-1D Methane (as received basis)



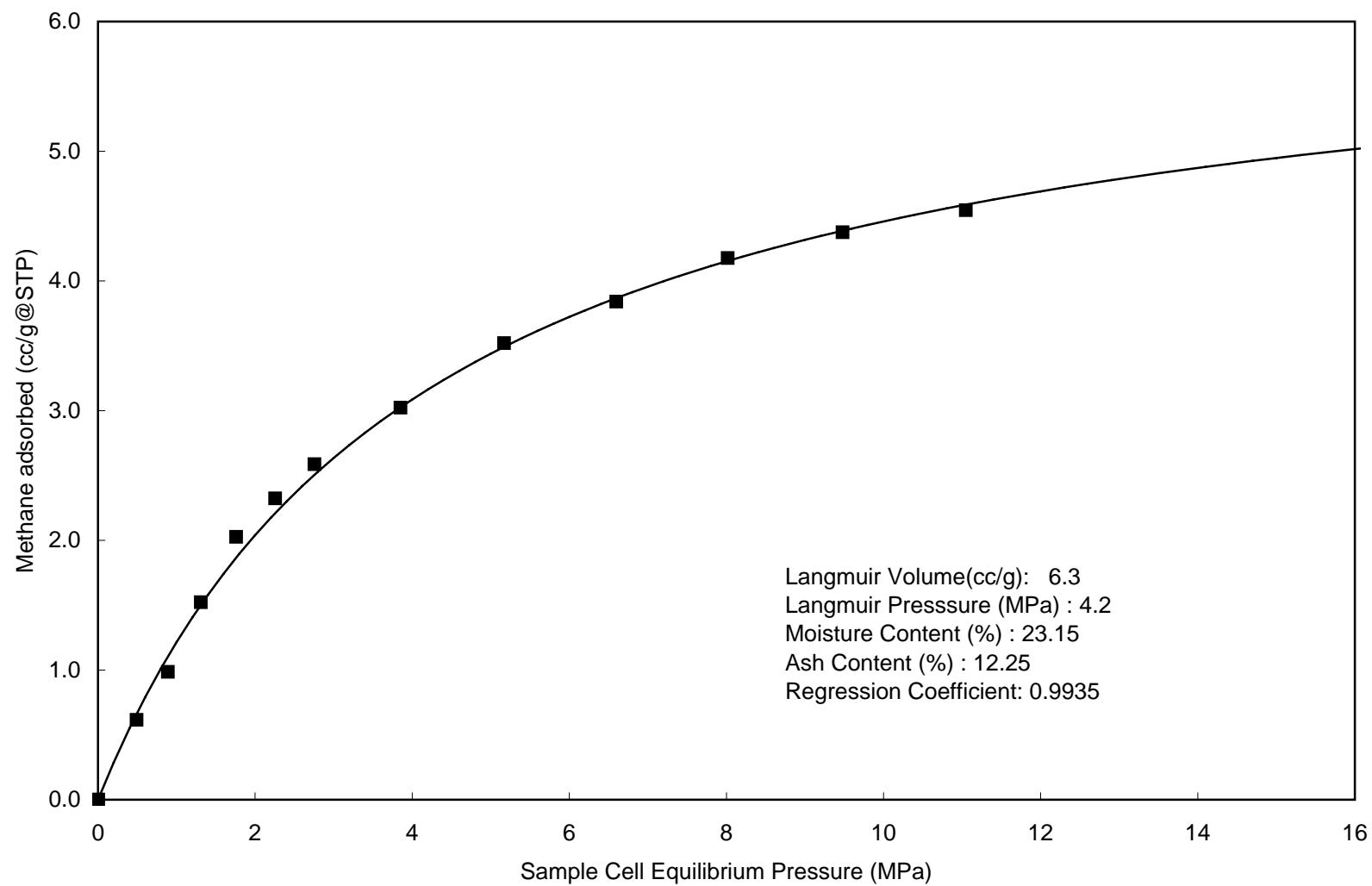
9-1D Methane (dry & ash free basis)



9-1D Methane (moisture free, ash included basis)



9-1D Methane (ash free, moisture included basis)



Adsorption Langmuir Plot

