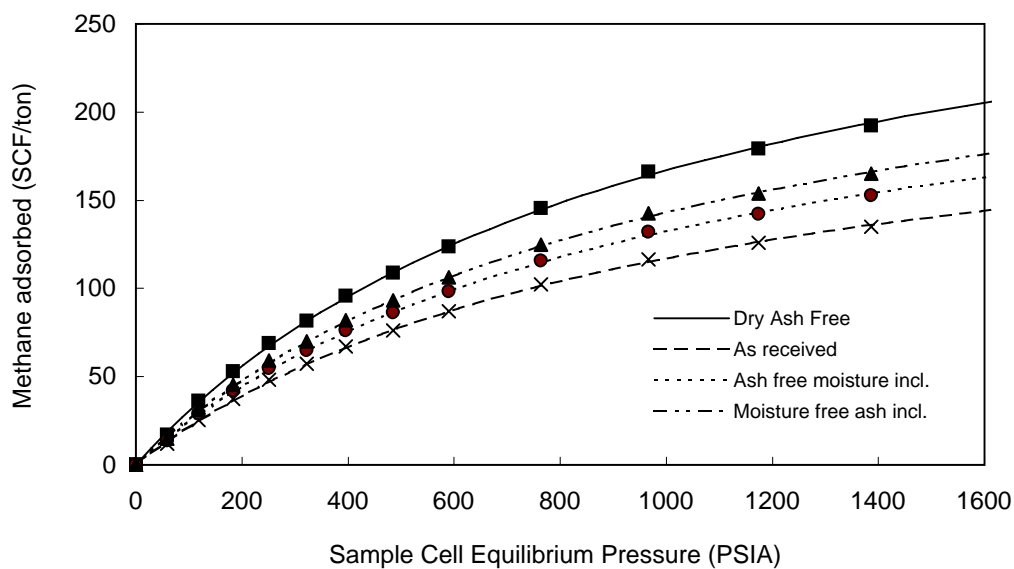


5-1C Methane



Pressure (PSIA)	Adsorbed gas (ft ³ /ton)			
	As Received	moisture free ash incl.	ash free moisture incl.	Dry Ash Free
59	12.1	14.7	13.7	17.2
118	25.5	31.2	28.9	36.4
184	37.3	45.5	42.2	53.1
252	48.3	59.1	54.7	68.9
322	57.3	70.1	64.9	81.7
396	67.2	82.2	76.1	95.8
485	76.3	93.2	86.3	108.7
590	86.9	106.2	98.4	123.8
764	102.2	124.9	115.7	145.7
967	116.6	142.5	132.0	166.2
1174	125.8	153.7	142.3	179.2
1387	135.0	164.9	152.8	192.3

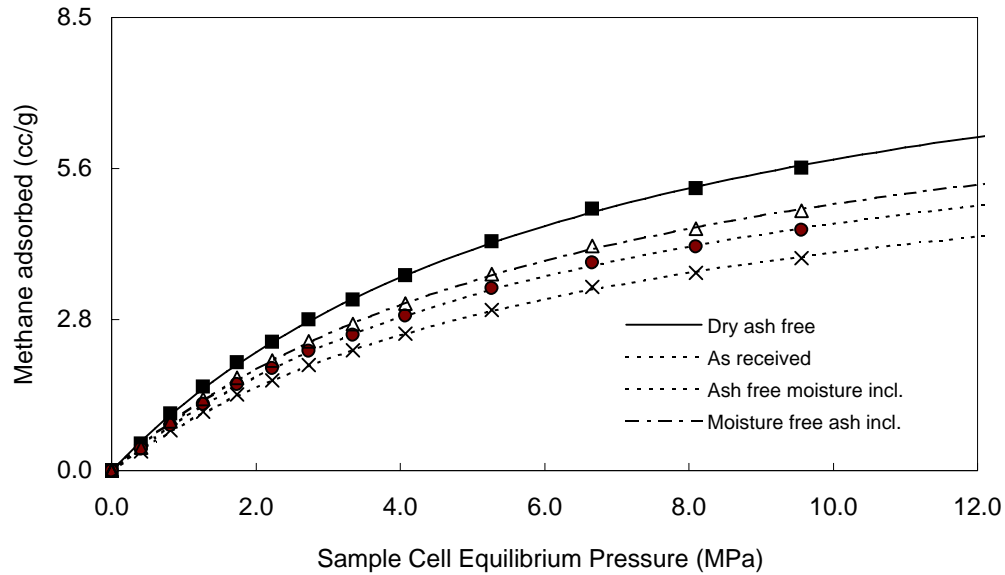
Langmuir Parameters

	As Received	Moisture free ash incl	Ash free moisture incl	Dry Ash Free
Vol. (ft ³ /ton)	233.9	285.8	264.7	333.2
Pressure (PSIA)	995.4	995.4	995.4	995.4

SUMMARY OF ADSORPTION ANALYSES IMP. UNITS

Isotherm Temperature: 118.4 °F
 Goodness of fit of Langmuir regression: 0.99
 % Ash= 11.64 % Moisture= 18.17 Density g/cc 1.350

5-1C Methane



Pressure (MPa)	Adsorbed gas (cc/g)			
	As Received	Moisture free ash incl.	ash free moisture incl	Dry Ash Free
0.410	0.35	0.43	0.40	0.51
0.816	0.75	0.92	0.85	1.07
1.267	1.10	1.34	1.24	1.56
1.734	1.42	1.74	1.61	2.02
2.223	1.69	2.06	1.91	2.40
2.728	1.98	2.41	2.24	2.82
3.346	2.24	2.74	2.54	3.19
4.070	2.55	3.12	2.89	3.64
5.267	3.00	3.67	3.40	4.28
6.664	3.43	4.19	3.88	4.88
8.096	3.70	4.52	4.18	5.27
9.561	3.97	4.85	4.49	5.65

Langmuir Parameters

	As Received	Moisture free ash incl.	Ash free moisture incl	Dry Ash Free
Vol. (cc/g)	6.87	8.40	7.78	9.79
Pressure (MPa)	6.86	6.86	6.86	6.86

SUMMARY OF ADSORPTION ANALYSES SI UNITS

Isotherm Temperature:

48.0 °C

Goodness of fit of Langmuir regression:

0.99

% Ash= 11.64

% Moisture =

18.17

Density (g/cc)

1.350

5-1C Methane

Methane Adsorption (Imperial Units)

Summary of Analyses

	As Received	DAF basis
Langmuir Volume (SCF)	234	333
Langmuir Pressure (PSIA)	995	995
Goodness of fit Langmuir		
Equation R-squared	0.99	0.99
Ash Content Wt.%	11.64	11.64
Equilibrium Moisture Wt.%	18.17	18.17

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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

5-1C Methane
GAS ADSORPTION ISOTHERM IMPERIAL UNITS

AS RECEIVED BASIS

Moisture Content % :	18.17
Ash Content, % :	11.64
Helium Density g/cc	1.350
Isotherm Temperature ° F:	118.4
Gas used:	Methane

PRESSURE (PSI)	ADSORBED GAS (SCF/ton)	P / V
59	12.07	4.92
118	25.54	4.64
184	37.26	4.93
252	48.33	5.20
322	57.35	5.62
396	67.23	5.88
485	76.29	6.36
590	86.91	6.79
764	102.23	7.47
967	116.64	8.29
1174	125.76	9.34
1387	134.97	10.27

Saturated Monolayer Volume (SCF/ton):	233.9
Langmuir Pressure (PSIA):	995.4
Correlation Coefficient:	0.9935

DRY ASH FREE BASIS

59	17.19	3.45
118	36.39	3.25
184	53.08	3.46
252	68.86	3.65
322	81.70	3.95
396	95.79	4.13
485	108.69	4.46
590	123.83	4.77
764	145.65	5.24
967	166.17	5.82
1174	179.17	6.55
1387	192.30	7.21

Saturated Monolayer Volume (SCF/ton, daf):	333
Langmuir Pressure (PSIA):	995
Correlation Coefficient:	0.9935

5-1C Methane

GAS ADSORPTION ISOTHERM IMPERIAL UNITS

MOISTURE FREE ASH INCLUDED

Isotherm Temperature° F:	118.4	Moisture Content % :	18.17
Gas used:	Methane	Ash Content, % :	11.64
		Helium Density g/cc	1.350

PRESSURE (PSI)	ADSORBED GAS (SCF/ton)	P / V
59	15	4.03
118	31	3.79
184	46	4.04
252	59	4.26
322	70	4.60
396	82	4.82
485	93	5.20
590	106	5.56
764	125	6.11
967	143	6.78
1174	154	7.64
1387	165	8.41

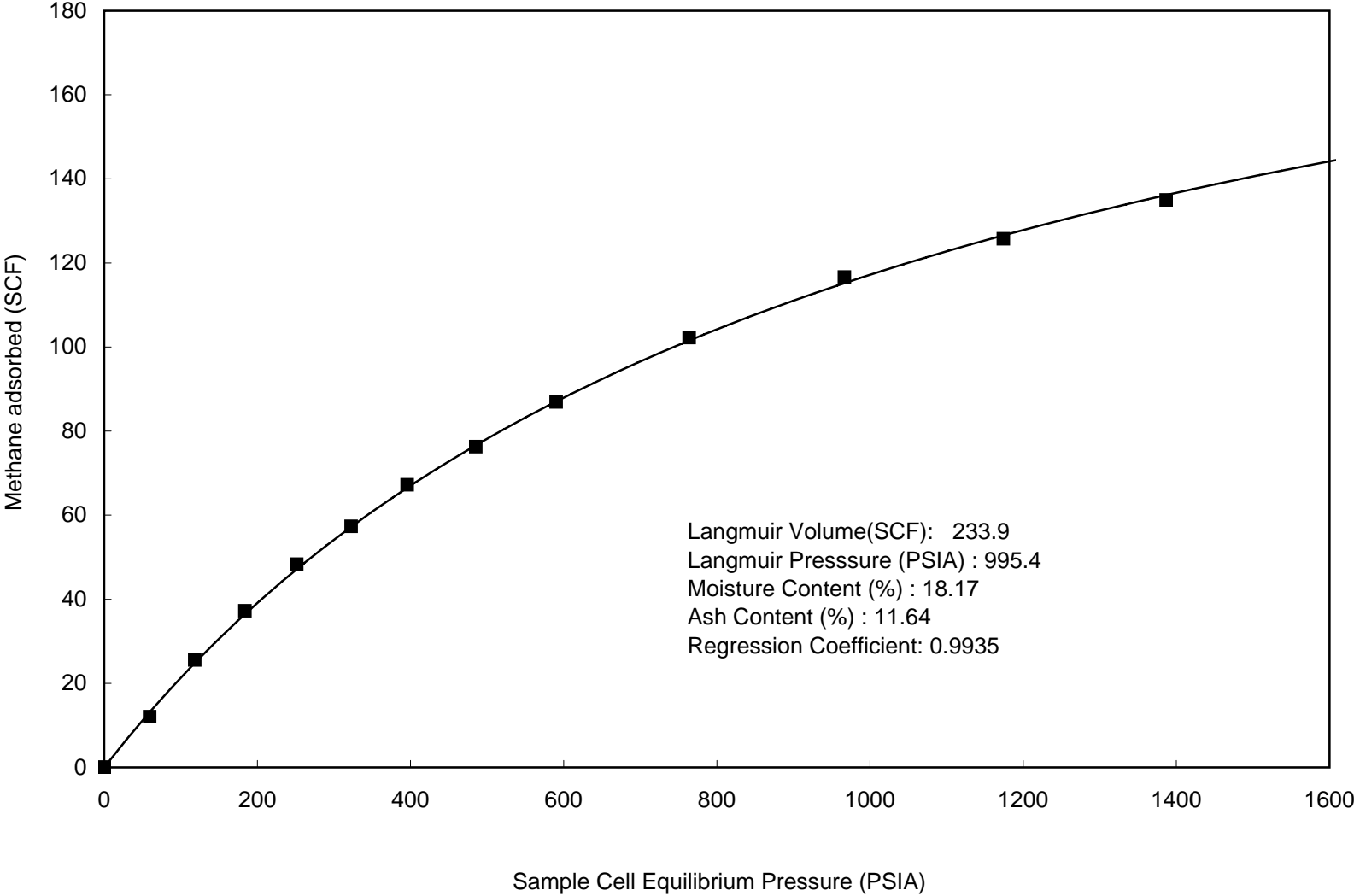
Saturated Monolayer Volume (SCF/ton):	286
Langmuir Pressure (PSIA):	995
Correlation Coefficient:	0.9935

ASH FREE MOISTURE INCLUDED

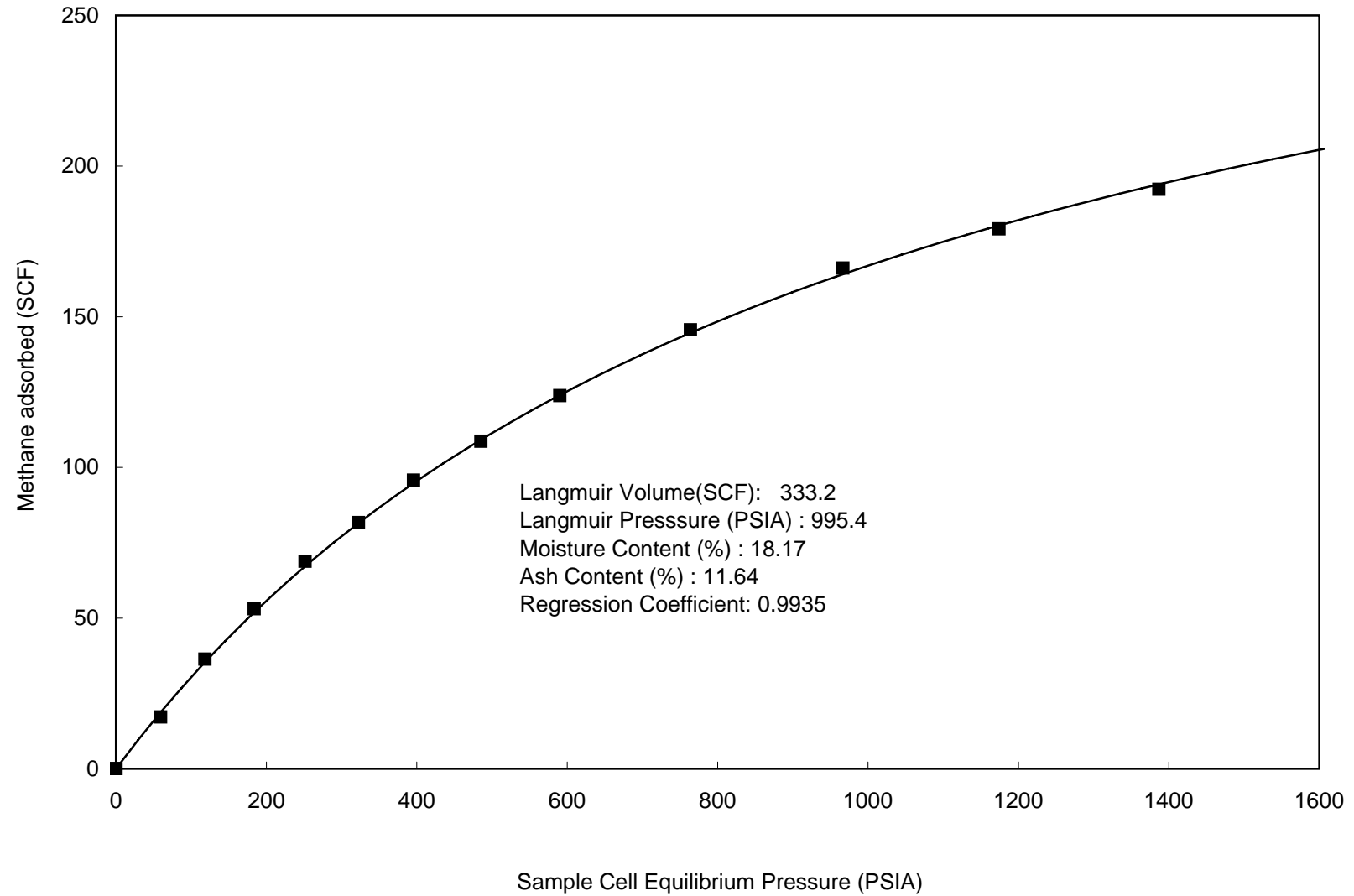
59	14	4.35
118	29	4.10
184	42	4.36
252	55	4.60
322	65	4.97
396	76	5.20
485	86	5.62
590	98	6.00
764	116	6.60
967	132	7.32
1174	142	8.25
1387	153	9.08

Saturated Monolayer Volume (SCF/ton):	265
Langmuir Pressure (PSIA):	995
Correlation Coefficient:	0.9935

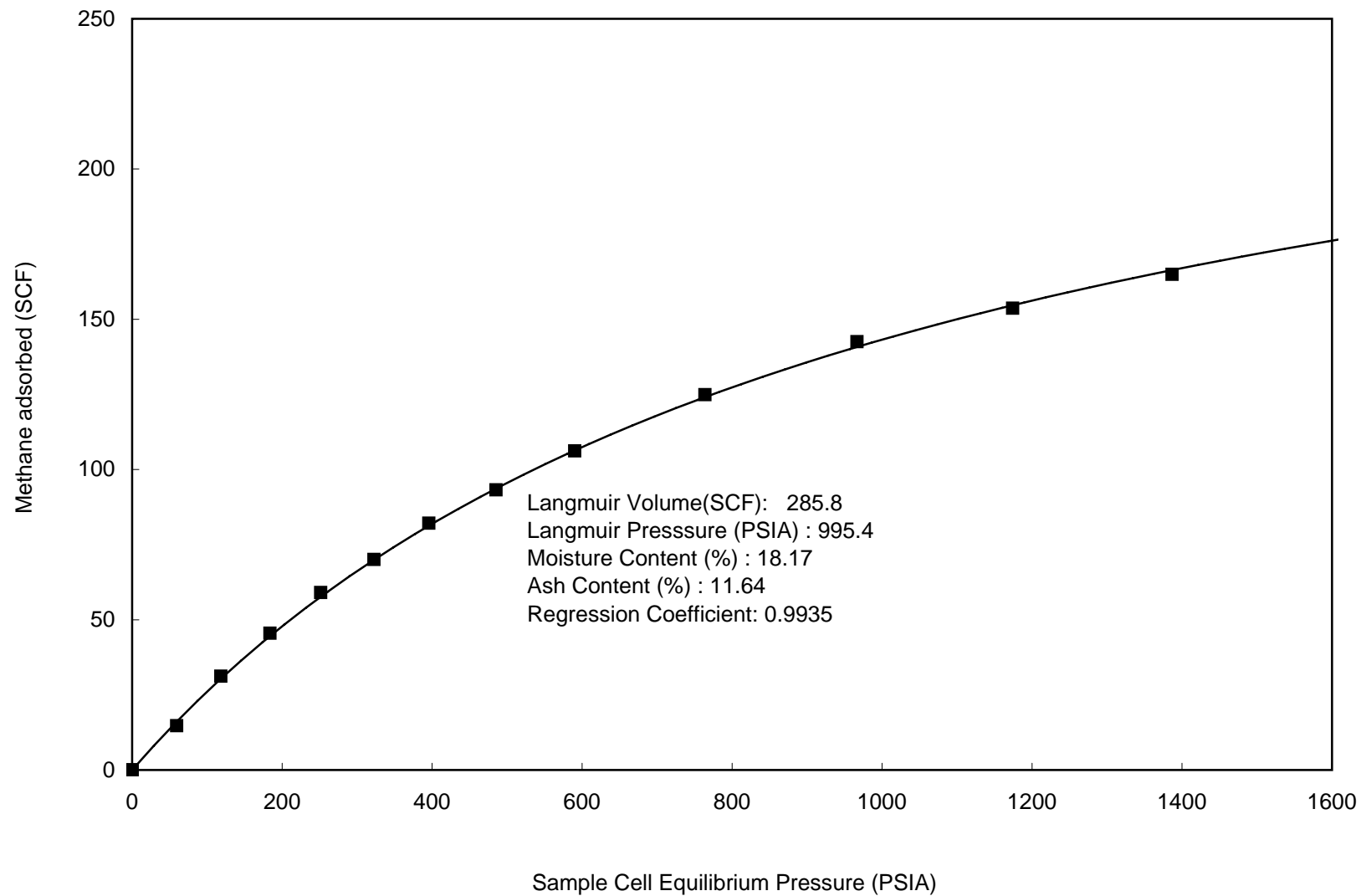
5-1C Methane (as received basis)



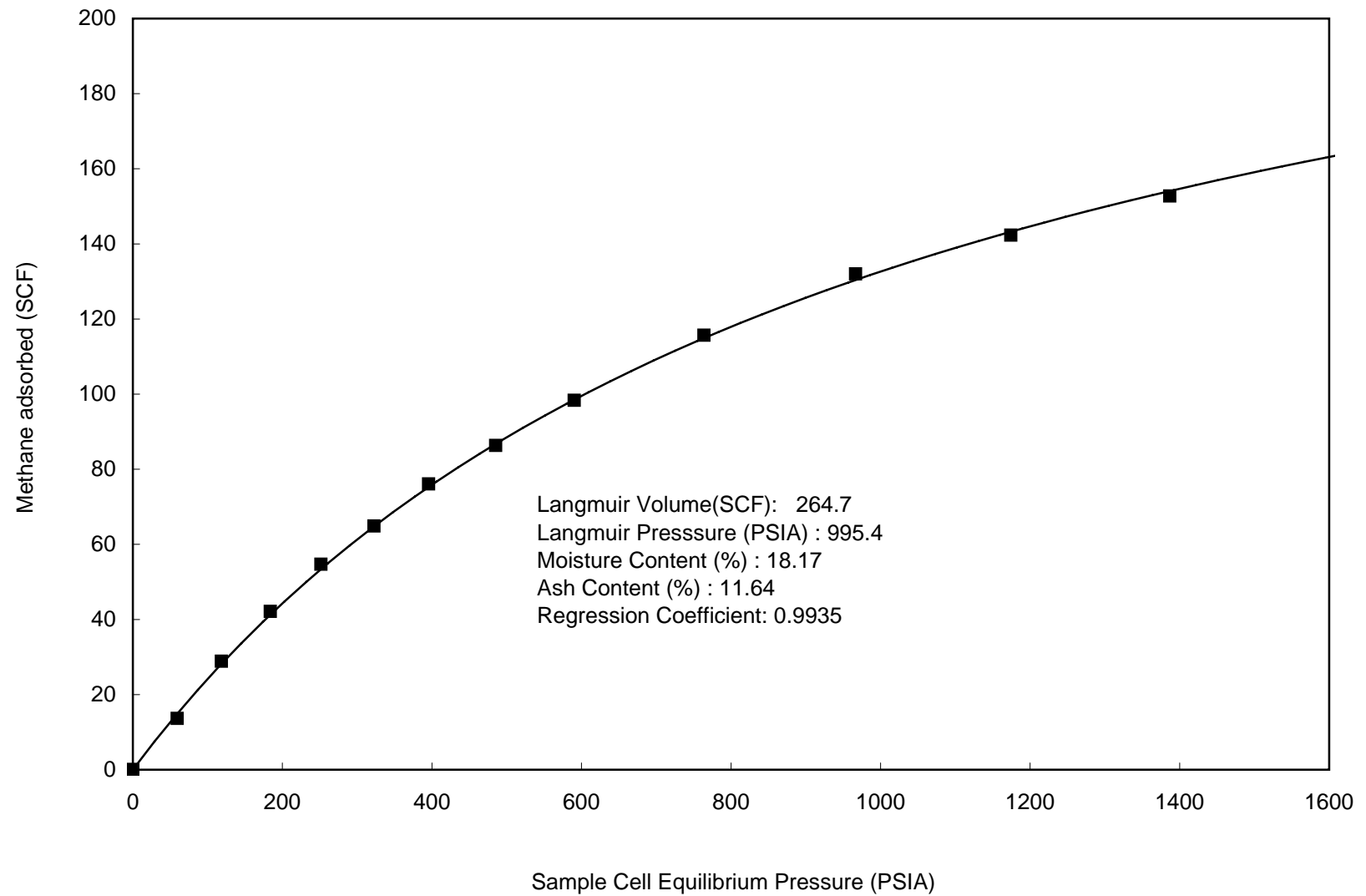
5-1C Methane (dry & ash free basis)



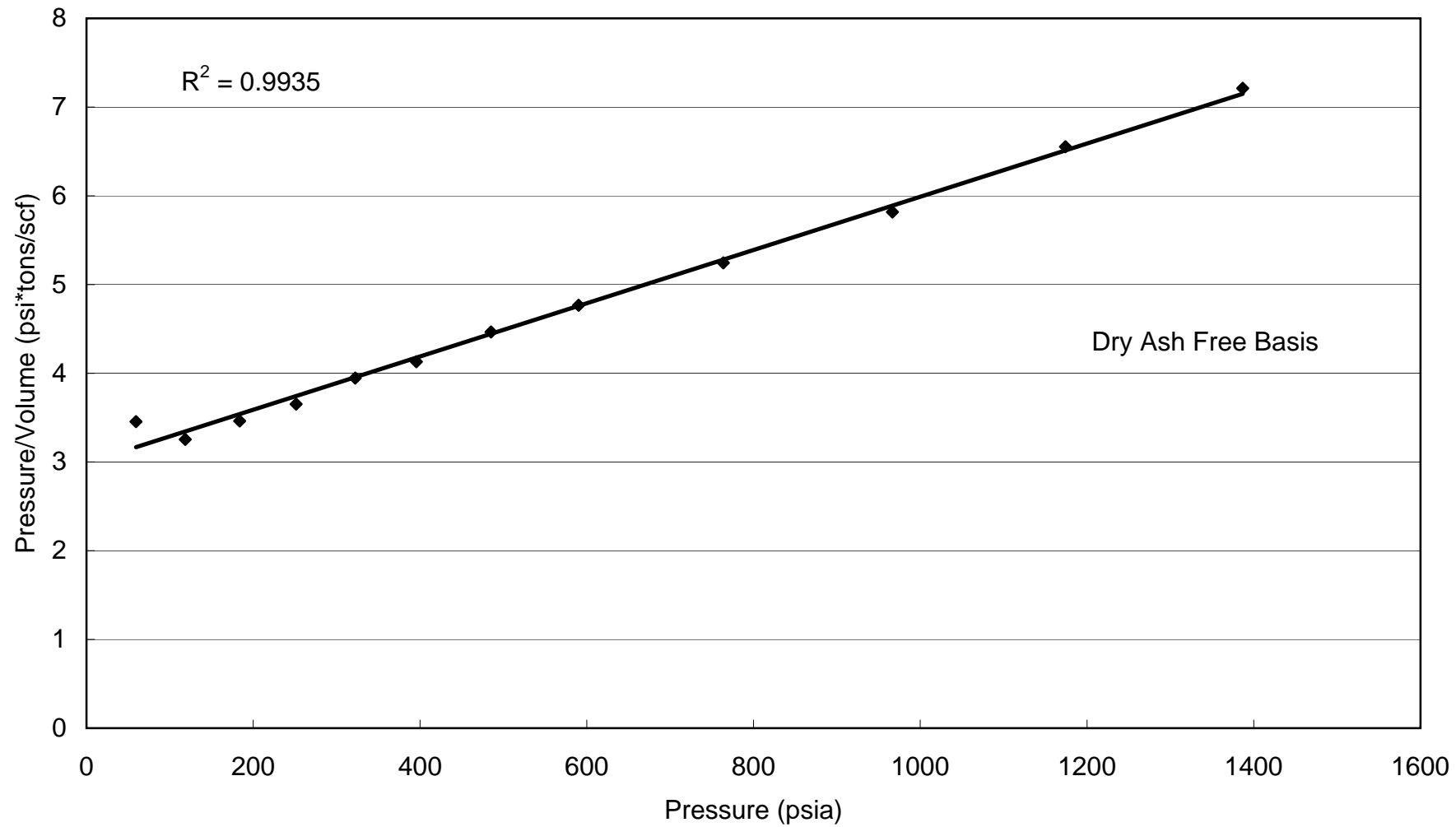
5-1C Methane (moisture free, ash included basis)



5-1C Methane (ash free, moisture included basis)



Adsorption Langmuir Plot



5-1C Methane

Methane Adsorption (SI Units)

Summary of Analyses

	As Received	DAF basis
Langmuir Volume cc/g	6.87	9.79
Langmuir Pressure MPa	6.86	6.86
Goodness of fit Langmuir		
Equation R-squared	0.99	0.99
Ash Content Wt.%	11.64	11.64
Equilibrium Moisture Wt.%	18.17	18.17

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Dry Ash Free
Dry Ash Included
Moist Ash Free

Charts

As Received
Dry Ash Free
Dry Ash Included
Moist Ash Free

5-1C Methane
GAS ADSORPTION ISOTHERM SI UNITS

AS RECEIVED BASIS

Sample I.D. :	5-1C Methane	Moisture Content (EQ) % :	18.17
Isotherm Temperature ° C: 48		Ash Content % :	11.64
Gas used:	Methane	Helium Density g/cc	1.350

PRESSURE (MPa)	ADSORBED GAS (cc/g @STP)	P / V
0.410	0.35	1.155
0.816	0.75	1.088
1.267	1.10	1.157
1.734	1.42	1.221
2.223	1.69	1.319
2.728	1.98	1.381
3.346	2.24	1.492
4.070	2.55	1.593
5.267	3.00	1.753
6.664	3.43	1.944
8.096	3.70	2.190
9.561	3.97	2.410

Saturated Monolayer Volume (cc/g @ STP):	6.87
Langmuir Pressure (MPa):	6.86

DRY ASH FREE BASIS

0.410	0.51	0.810
0.816	1.07	0.763
1.267	1.56	0.812
1.734	2.02	0.857
2.223	2.40	0.926
2.728	2.82	0.969
3.346	3.19	1.047
4.070	3.64	1.118
5.267	4.28	1.230
6.664	4.88	1.365
8.096	5.27	1.537
9.561	5.65	1.692

Saturated Monolayer Volume (cc/g @ STP, daf):	9.79
Langmuir Pressure (MPa):	6.86
Correlation Coefficient:	0.9935

5-1C Methane

GAS ADSORPTION ISOTHERM SI UNITS

MOISTURE FREE ASH INCLUDED

Isotherm Temperature ° C:	48	Moisture Content (EQ) % :	18.17
Gas used:	Methane	Ash Content % :	11.64
		Helium Density g/cc	1.350

PRESSURE (MPa)	ADSORBED GAS (cc/g@STP)	P / V
0.410	0.43	0.94
0.816	0.92	0.89
1.267	1.34	0.95
1.734	1.74	1.00
2.223	2.06	1.08
2.728	2.41	1.13
3.346	2.74	1.22
4.070	3.12	1.30
5.267	3.67	1.43
6.664	4.19	1.59
8.096	4.52	1.79
9.561	4.85	1.97

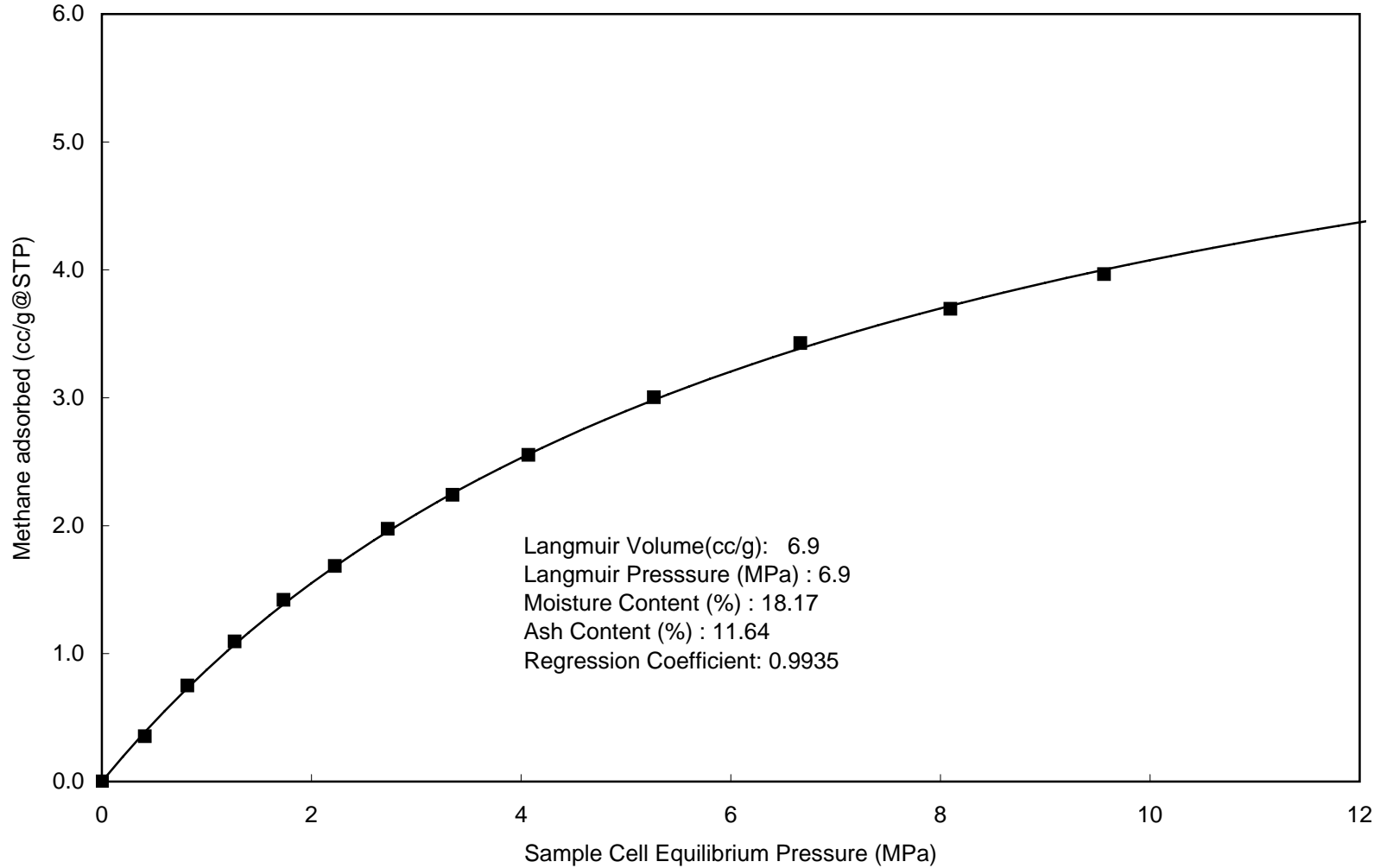
Saturated Monolayer Volume (cc/g):	8.40
Langmuir Pressure (MPa):	6.86

ASH FREE MOISTURE INCLUDED

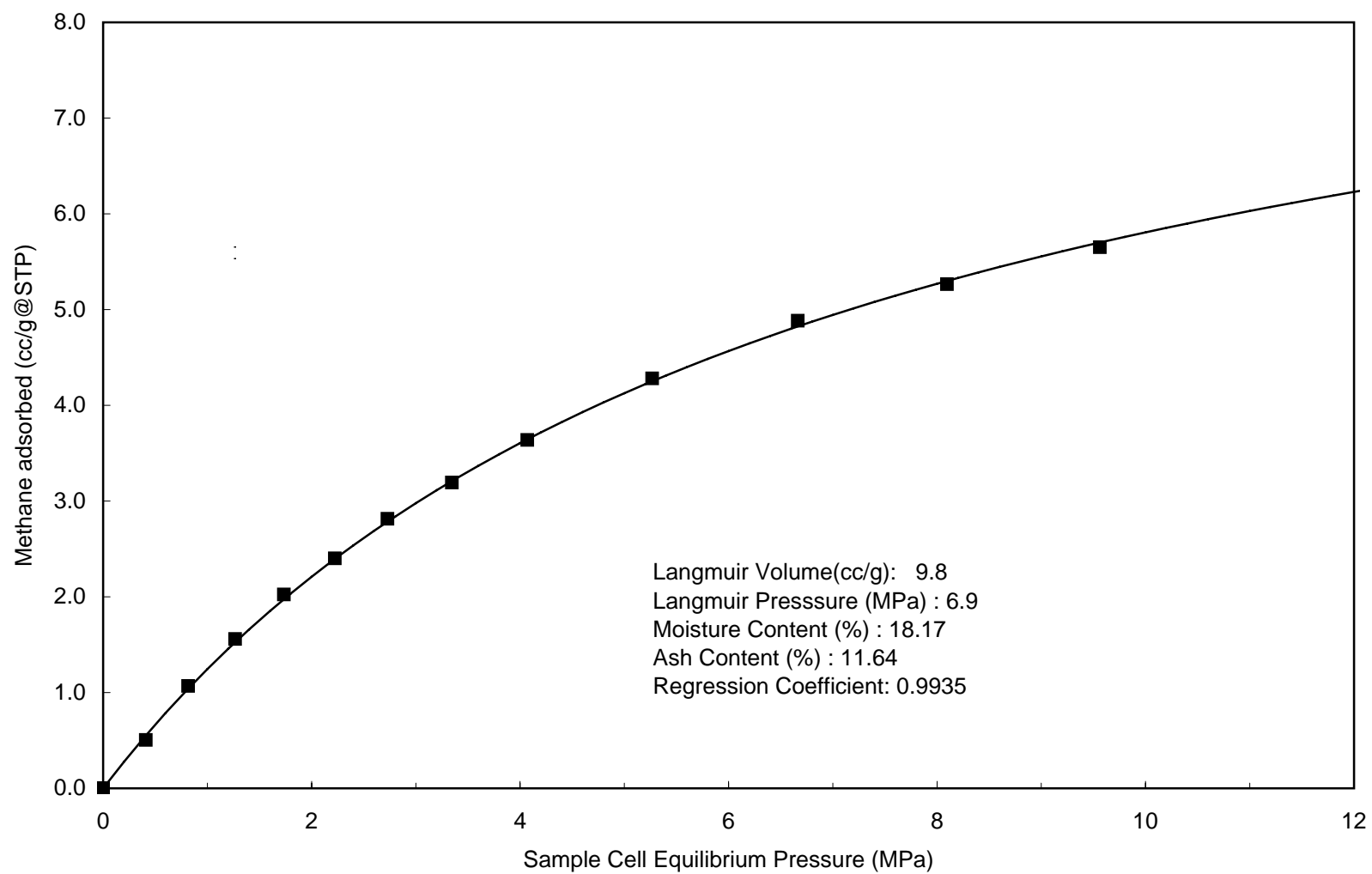
0.410	0.40	0.00
0.816	0.85	0.96
1.267	1.24	1.02
1.734	1.61	1.08
2.223	1.91	1.17
2.728	2.24	1.22
3.346	2.54	1.32
4.070	2.89	1.41
5.267	3.40	1.55
6.664	3.88	1.72
8.096	4.18	1.94
9.561	4.49	2.13

Saturated Monolayer Volume (cc/g, ash free):	7.78
Langmuir Pressure (MPa):	6.86
Correlation Coefficient:	0.9935

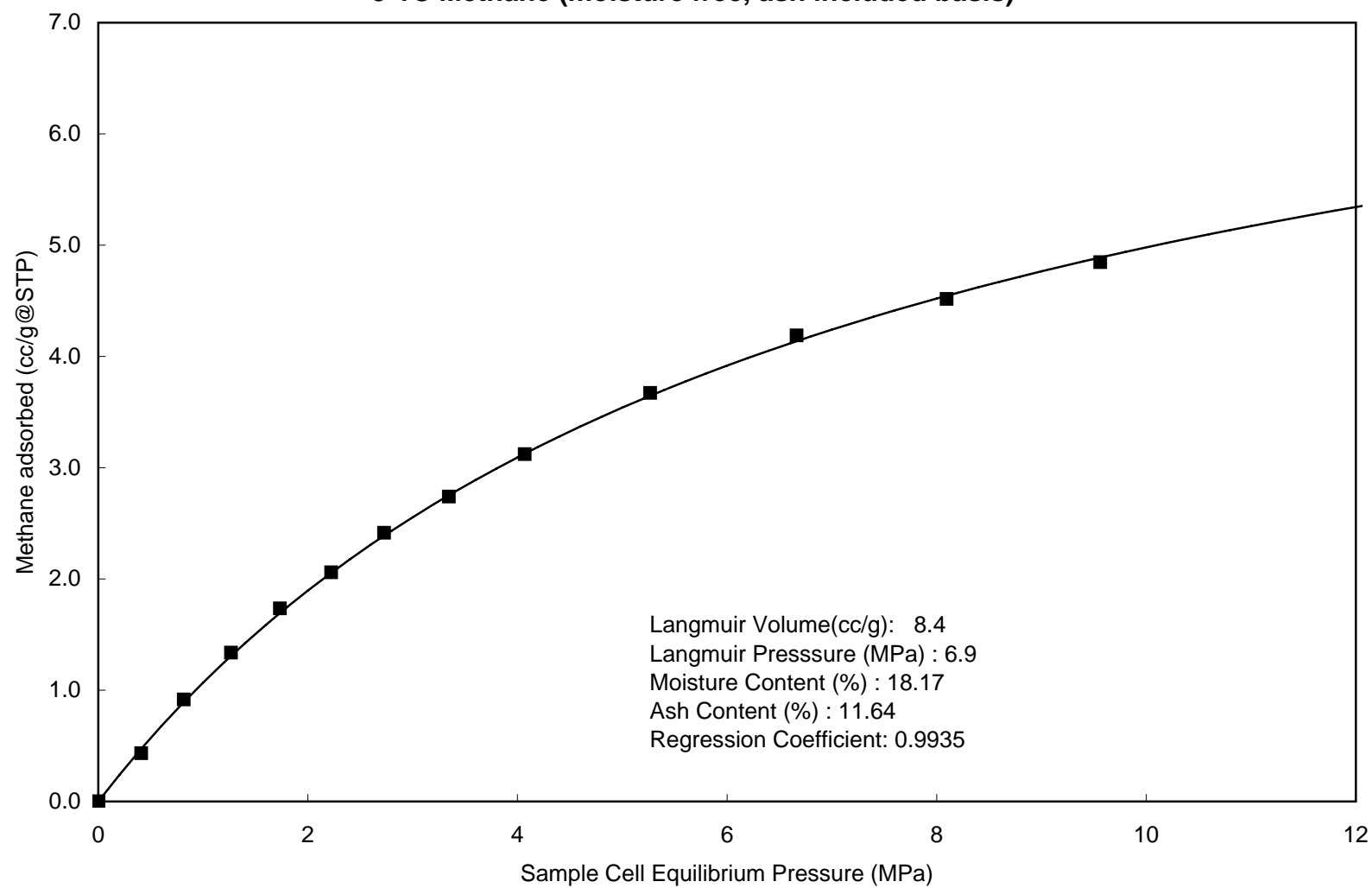
5-1C Methane (as received basis)



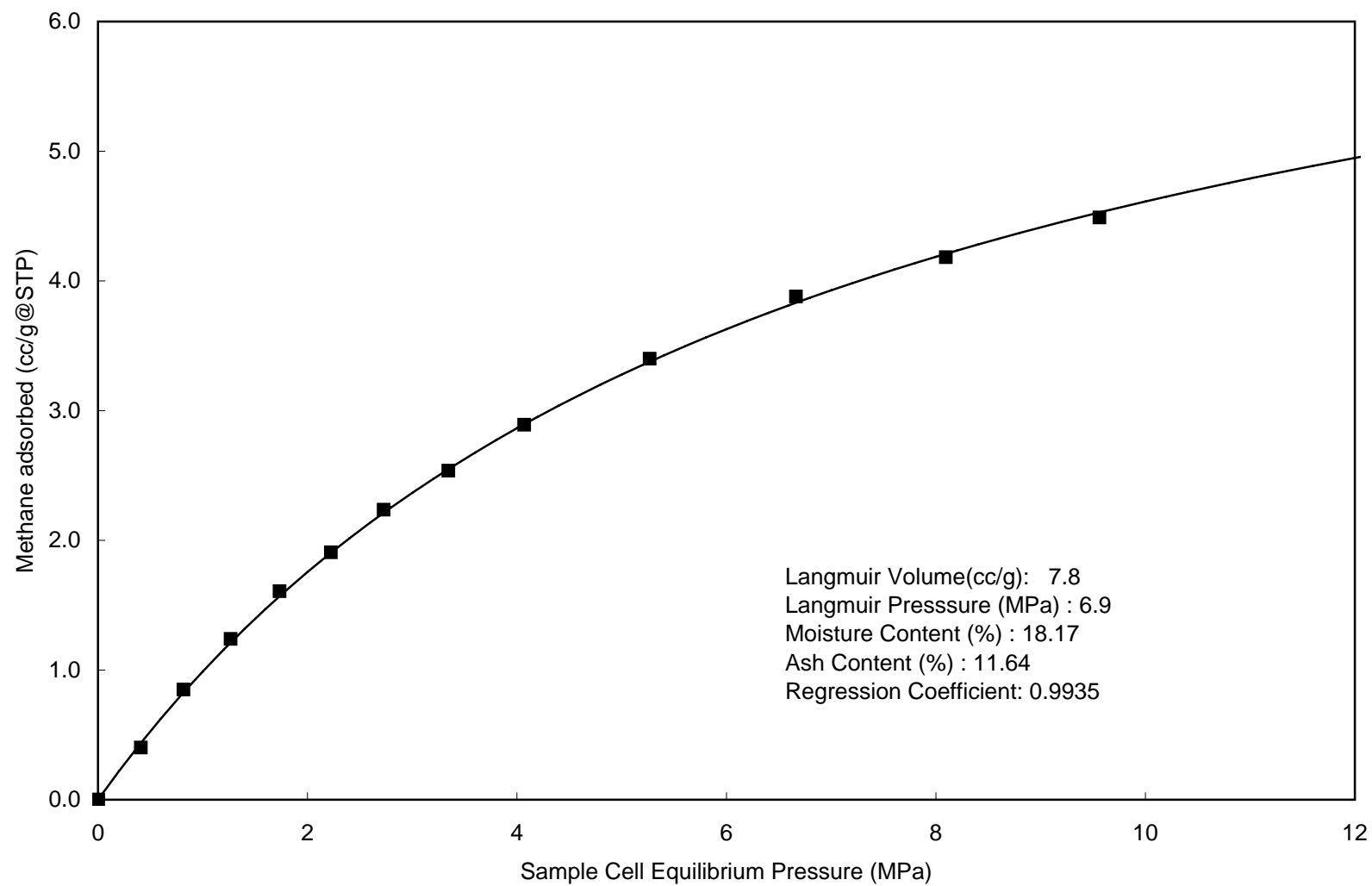
5-1C Methane (dry & ash free basis)



5-1C Methane (moisture free, ash included basis)



5-1C Methane (ash free, moisture included basis)



Adsorption Langmuir Plot

