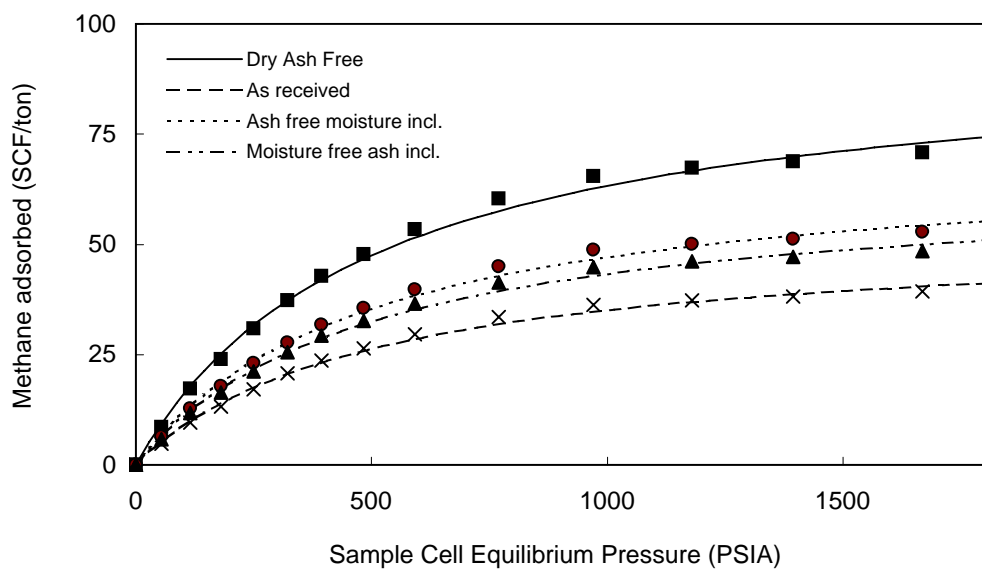


## 9-1B Methane



Pressure (PSIA)	Adsorbed gas (ft <sup>3</sup> /ton)			
	As Received	moisture free ash incl.	ash free moisture incl.	Dry Ash Free
54	4.8	5.9	6.4	8.6
116	9.6	11.8	12.8	17.2
181	13.3	16.4	17.8	23.9
249	17.2	21.2	23.1	30.9
322	20.7	25.5	27.8	37.3
394	23.7	29.3	31.9	42.8
484	26.5	32.7	35.5	47.7
591	29.6	36.6	39.8	53.4
769	33.5	41.4	45.0	60.4
970	36.3	44.8	48.8	65.5
1180	37.3	46.1	50.1	67.3
1394	38.2	47.1	51.3	68.8
1668	39.3	48.5	52.8	70.8

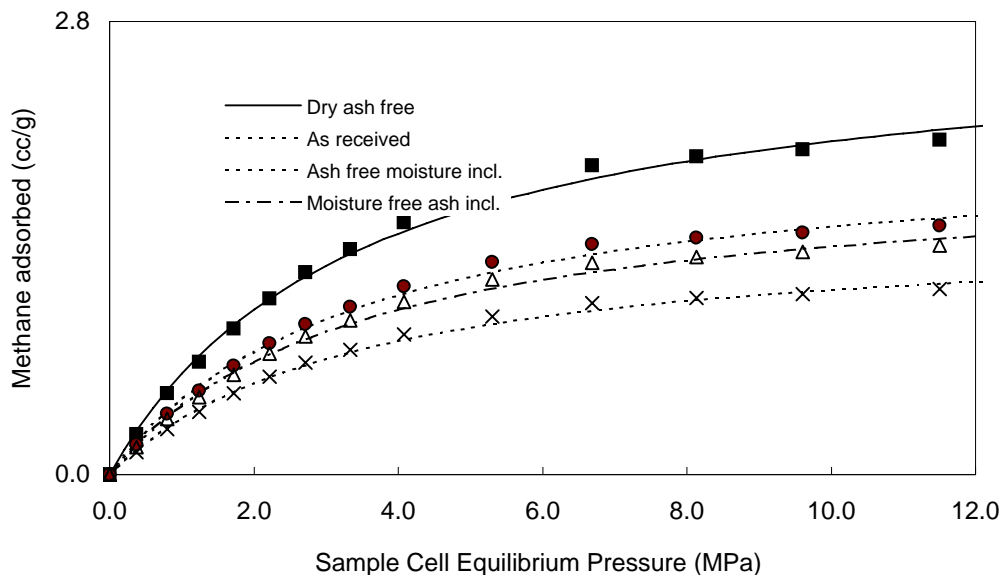
### Langmuir Parameters

	As Received	Moisture free ash incl	Ash free moisture incl	Dry Ash Free
Vol. (ft <sup>3</sup> /ton)	52.6	64.9	70.6	94.8
Pressure (PSIA)	497.3	497.3	497.3	497.3

### SUMMARY OF ADSORPTION ANALYSES IMP. UNITS

Isotherm Temperature: 107.6 °F  
 Goodness of fit of Langmuir regression: 0.99  
 % Ash= 25.52      % Moisture= 18.99      Density g/cc 1.737

## 9-1B Methane



Pressure (MPa)	Adsorbed gas (cc/g)			
	As Received	Moisture free ash incl.	ash free moisture incl	Dry Ash Free
0.371	0.14	0.17	0.19	0.25
0.797	0.28	0.35	0.38	0.51
1.245	0.39	0.48	0.52	0.70
1.720	0.50	0.62	0.68	0.91
2.220	0.61	0.75	0.82	1.10
2.714	0.70	0.86	0.94	1.26
3.336	0.78	0.96	1.04	1.40
4.076	0.87	1.08	1.17	1.57
5.305	0.98	1.22	1.32	1.77
6.690	1.07	1.32	1.43	1.92
8.137	1.10	1.35	1.47	1.98
9.608	1.12	1.39	1.51	2.02
11.499	1.15	1.43	1.55	2.08

### Langmuir Parameters

	As Received	Moisture free ash incl.	Ash free moisture incl	Dry Ash Free
Vol. (cc/g)	1.55	1.91	2.07	2.78
Pressure (MPa)	3.43	3.43	3.43	3.43

### SUMMARY OF ADSORPTION ANALYSES SI UNITS

Isotherm Temperature:

42.0 °C

Goodness of fit of Langmuir regression:

0.99

% Ash= 25.52

% Moisture =

18.99

Density (g/cc)

**1.737**

## 9-1B Methane

### Methane Adsorption (Imperial Units)

#### ***Summary of Analyses***

	As Received	DAF basis
Langmuir Volume (SCF)	53	95
Langmuir Pressure (PSIA)	497	497
Goodness of fit Langmuir		
Equation R-squared	0.99	0.99
Ash Content Wt.%	25.52	25.52
Equilibrium Moisture Wt.%	18.99	18.99

#### **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

**9-1B Methane**  
**GAS ADSORPTION ISOTHERM IMPERIAL UNITS**

**AS RECEIVED BASIS**

Isotherm Temperature ° F:	107.6	Moisture Content % :	18.99
Gas used:	Methane	Ash Content, % :	25.52
		Helium Density g/cc	1.737

PRESSURE (PSI)	ADSORBED GAS (SCF/ton)	P / V
54	4.75	11.33
116	9.56	12.09
181	13.25	13.63
249	17.17	14.53
322	20.70	15.56
394	23.73	16.59
484	26.47	18.28
591	29.64	19.95
769	33.51	22.96
970	36.33	26.71
1180	37.35	31.60
1394	38.18	36.50
1668	39.30	42.44

Saturated Monolayer Volume (SCF/ton):	52.6
Langmuir Pressure (PSIA):	497.3
Correlation Coefficient:	0.9939

**DRY ASH FREE BASIS**

54	8.56	6.29
116	17.23	6.71
181	23.88	7.56
249	30.94	8.06
322	37.30	8.63
394	42.76	9.21
484	47.70	10.14
591	53.42	11.07
769	60.38	12.74
970	65.47	14.82
1180	67.30	17.54
1394	68.80	20.25
1668	70.82	23.55

Saturated Monolayer Volume (SCF/ton, daf):	95
Langmuir Pressure (PSIA):	497
Correlation Coefficient:	0.9939

## 9-1B Methane

### GAS ADSORPTION ISOTHERM IMPERIAL UNITS

#### MOISTURE FREE ASH INCLUDED

Isotherm Temperature° F:	107.6	Moisture Content % :	18.99
Gas used:	Methane	Ash Content, % :	25.52
		Helium Density g/cc	1.737

PRESSURE (PSI)	ADSORBED GAS (SCF/ton)	P / V
54	6	9.18
116	12	9.80
181	16	11.04
249	21	11.77
322	26	12.60
394	29	13.44
484	33	14.81
591	37	16.16
769	41	18.60
970	45	21.63
1180	46	25.60
1394	47	29.57
1668	49	34.38

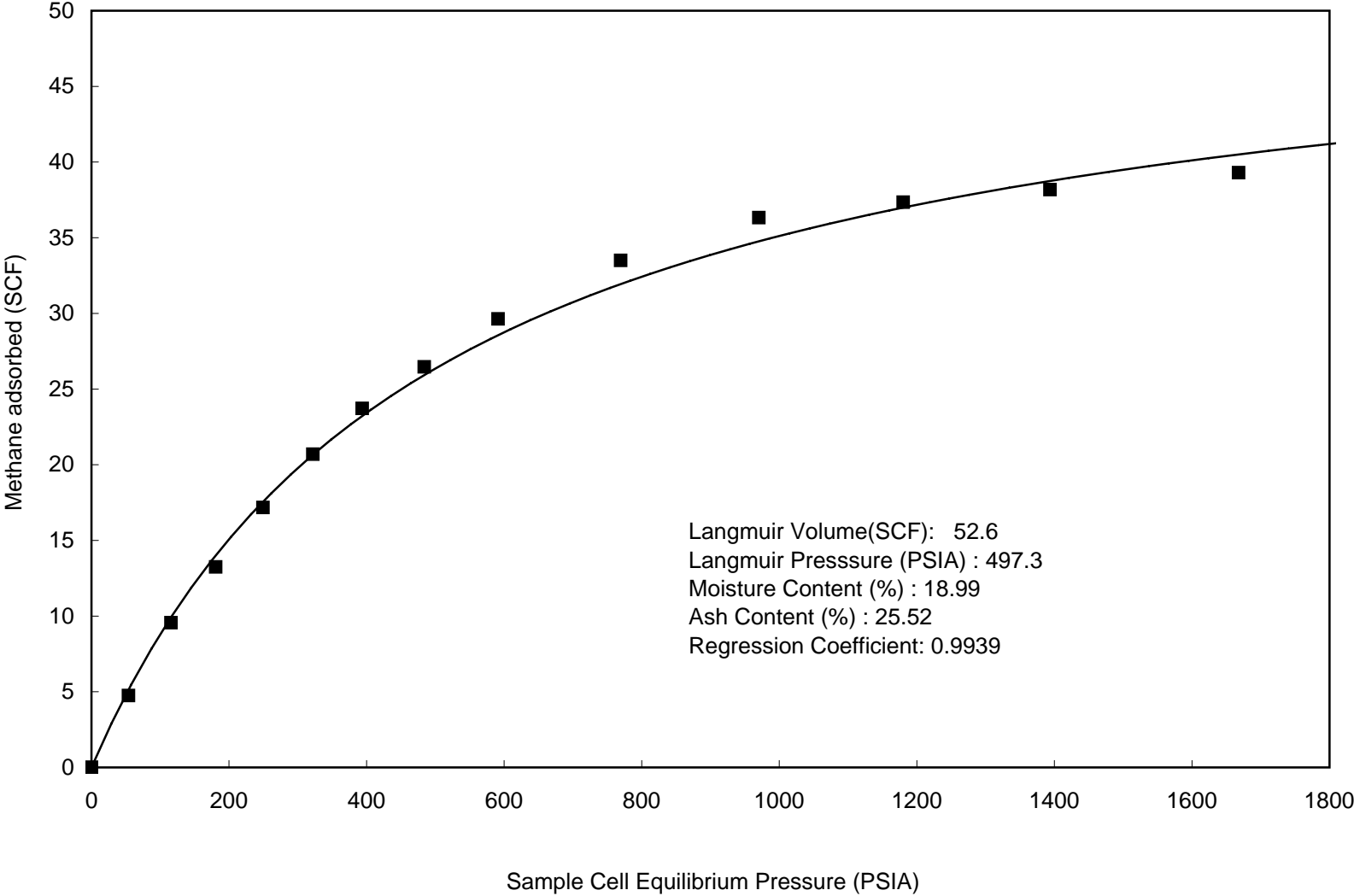
Saturated Monolayer Volume (SCF/ton):	65
Langmuir Pressure (PSIA):	497
Correlation Coefficient:	0.9939

#### ASH FREE MOISTURE INCLUDED

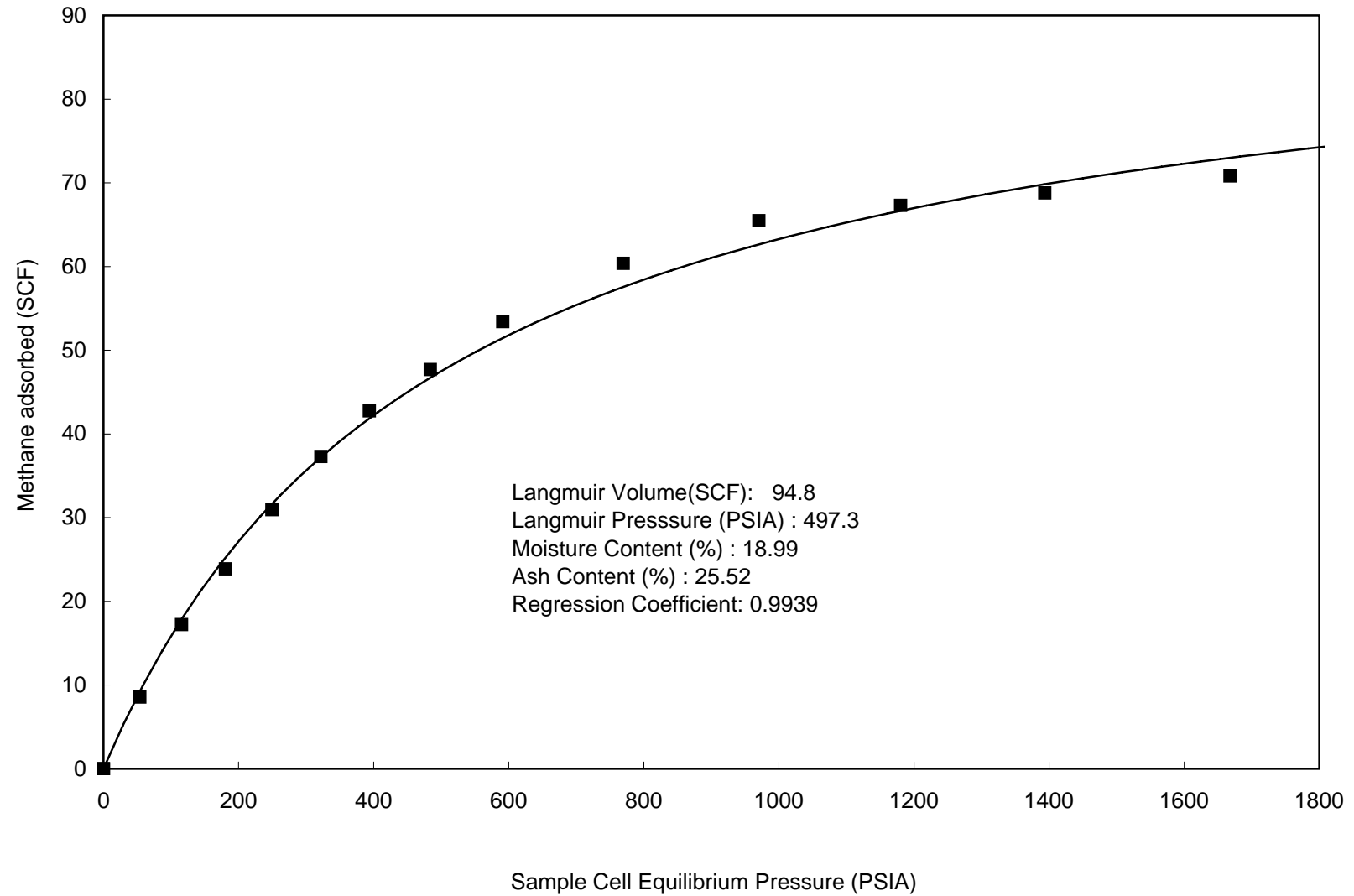
54	6	8.44
116	13	9.01
181	18	10.15
249	23	10.82
322	28	11.59
394	32	12.36
484	36	13.62
591	40	14.86
769	45	17.10
970	49	19.89
1180	50	23.54
1394	51	27.19
1668	53	31.61

Saturated Monolayer Volume (SCF/ton):	71
Langmuir Pressure (PSIA):	497
Correlation Coefficient:	0.9939

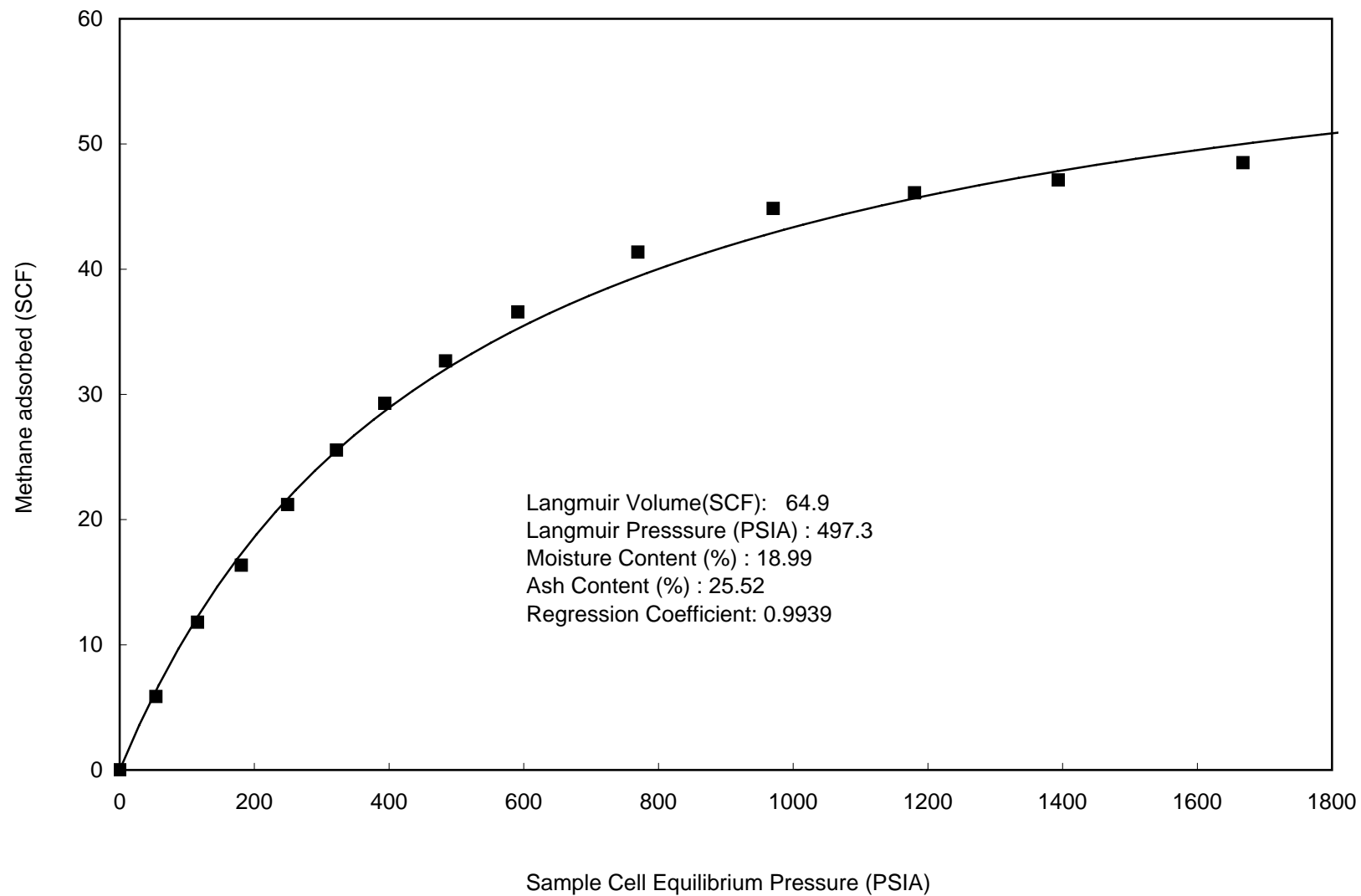
9-1B Methane (as received basis)



### 9-1B Methane (dry & ash free basis)

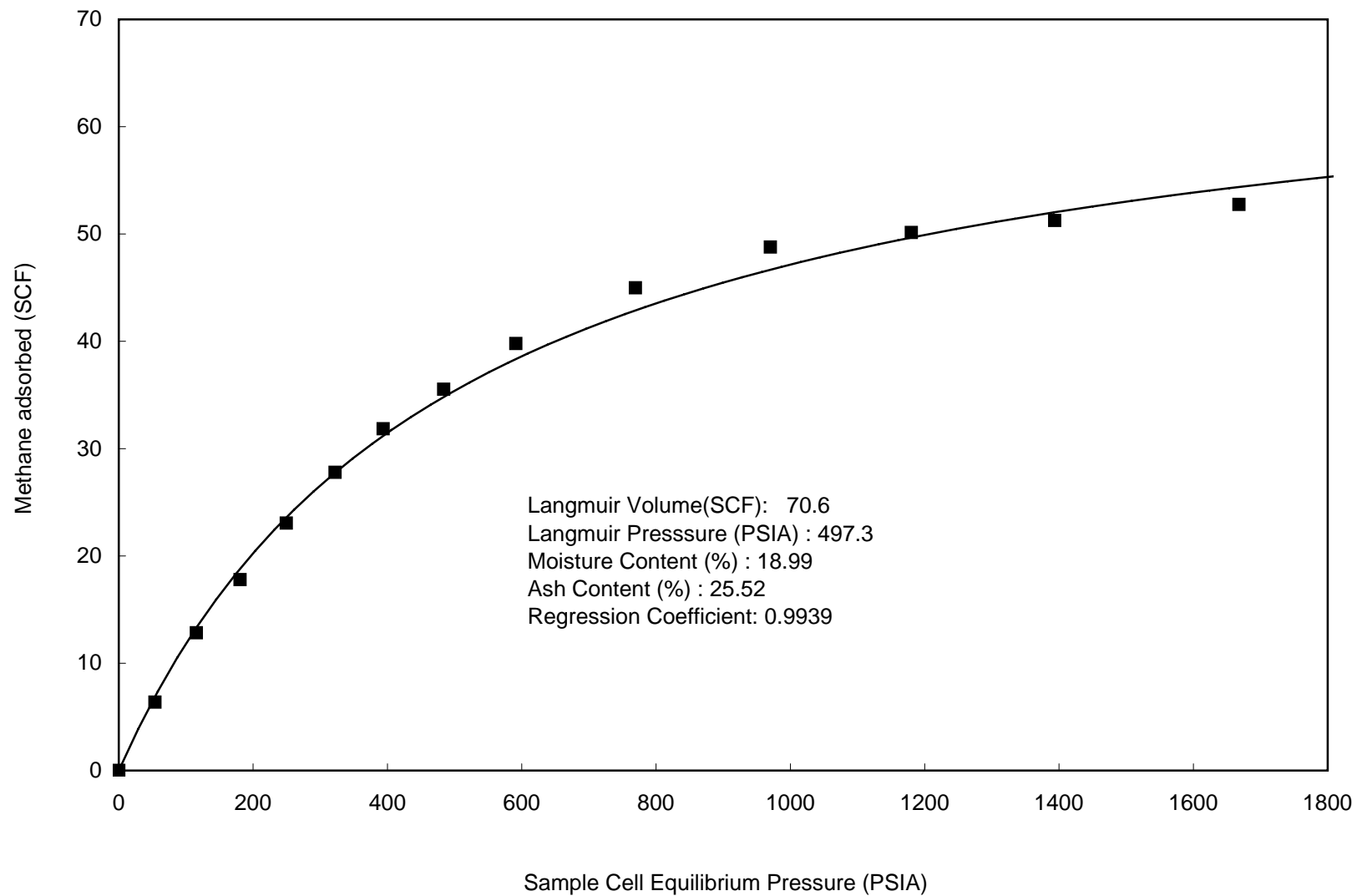


### 9-1B Methane (moisture free, ash included basis)

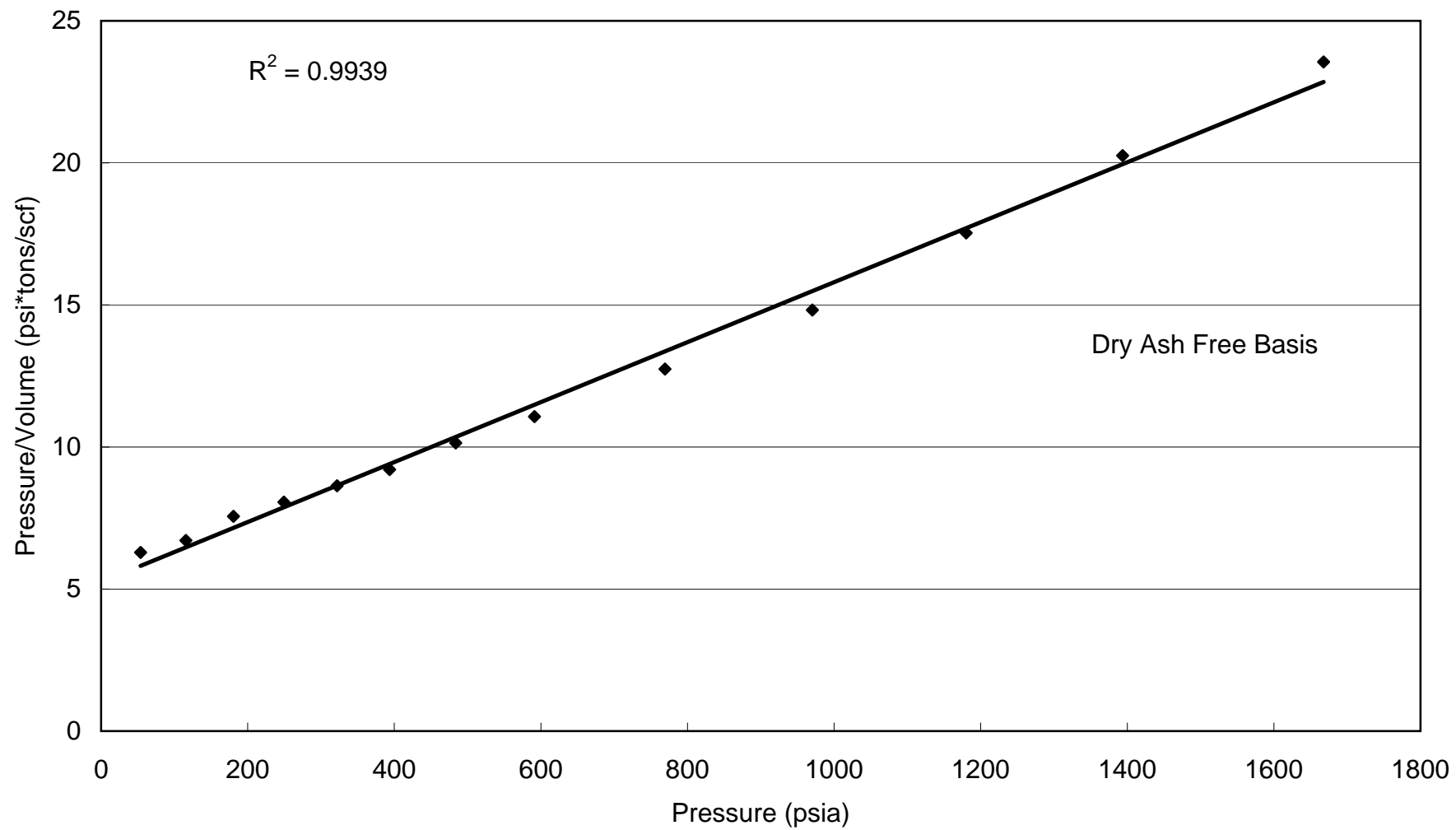




### 9-1B Methane (ash free, moisture included basis)



## Adsorption Langmuir Plot



## 9-1B Methane

### Methane Adsorption (SI Units)

#### ***Summary of Analyses***

	As Received	DAF basis
Langmuir Volume cc/g	1.55	2.78
Langmuir Pressure MPa	3.43	3.43
Goodness of fit Langmuir Equation R-squared	0.99	0.99
Ash Content Wt.%	25.52	25.52
Equilibrium Moisture Wt.%	18.99	18.99

#### **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

**9-1B Methane**  
**GAS ADSORPTION ISOTHERM SI UNITS**

**AS RECEIVED BASIS**

Sample I.D. :	9-1B Methane	Moisture Content (EQ) % :	18.99
Isotherm Temperature ° C: 42		Ash Content % :	25.52
Gas used:	Methane	Helium Density g/cc	1.737

PRESSURE (MPa)	ADSORBED GAS (cc/g @STP)	P / V
0.371	0.14	2.659
0.797	0.28	2.837
1.245	0.39	3.197
1.720	0.50	3.408
2.220	0.61	3.650
2.714	0.70	3.892
3.336	0.78	4.289
4.076	0.87	4.680
5.305	0.98	5.387
6.690	1.07	6.265
8.137	1.10	7.414
9.608	1.12	8.563
11.499	1.15	9.957

Saturated Monolayer Volume (cc/g @ STP):	1.55
Langmuir Pressure (MPa):	3.43

**DRY ASH FREE BASIS**

0.371	0.25	1.475
0.797	0.51	1.574
1.245	0.70	1.774
1.720	0.91	1.891
2.220	1.10	2.025
2.714	1.26	2.160
3.336	1.40	2.380
4.076	1.57	2.597
5.305	1.77	2.989
6.690	1.92	3.477
8.137	1.98	4.114
9.608	2.02	4.752
11.499	2.08	5.525

Saturated Monolayer Volume (cc/g @ STP, daf):	2.78
Langmuir Pressure (MPa):	3.43
Correlation Coefficient:	0.9939

## 9-1B Methane

### GAS ADSORPTION ISOTHERM SI UNITS

#### MOISTURE FREE ASH INCLUDED

Isotherm Temperature ° C:	42	Moisture Content (EQ) % :	18.99
Gas used:	Methane	Ash Content % :	25.52
		Helium Density g/cc	1.737

PRESSURE (MPa)	ADSORBED GAS (cc/g@STP)	P / V
0.371	0.17	2.15
0.797	0.35	2.30
1.245	0.48	2.59
1.720	0.62	2.76
2.220	0.75	2.96
2.714	0.86	3.15
3.336	0.96	3.47
4.076	1.08	3.79
5.305	1.22	4.36
6.690	1.32	5.08
8.137	1.35	6.01
9.608	1.39	6.94
11.499	1.43	8.07

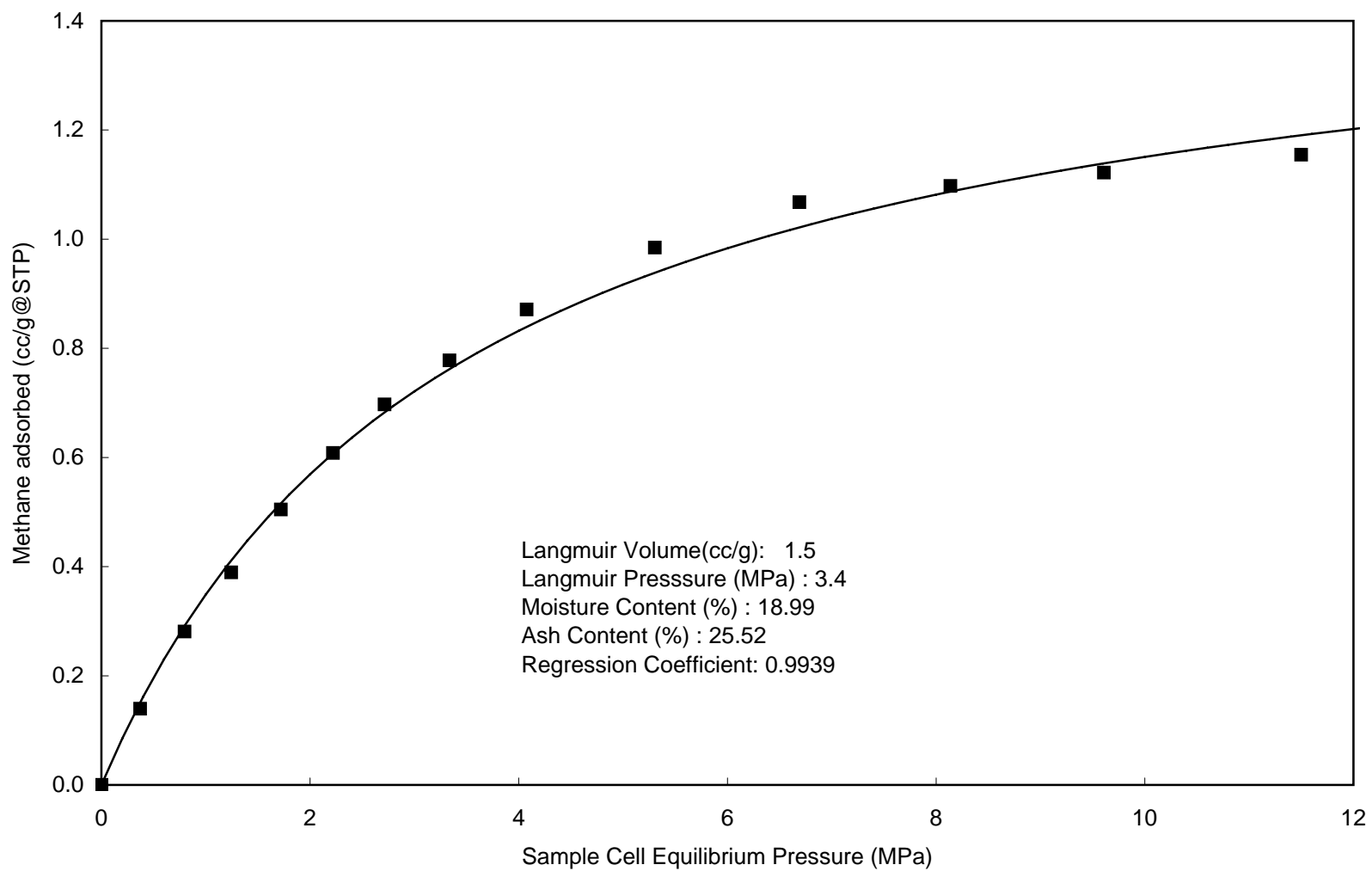
Saturated Monolayer Volume (cc/g):	1.91
Langmuir Pressure (MPa):	3.43

#### ASH FREE MOISTURE INCLUDED

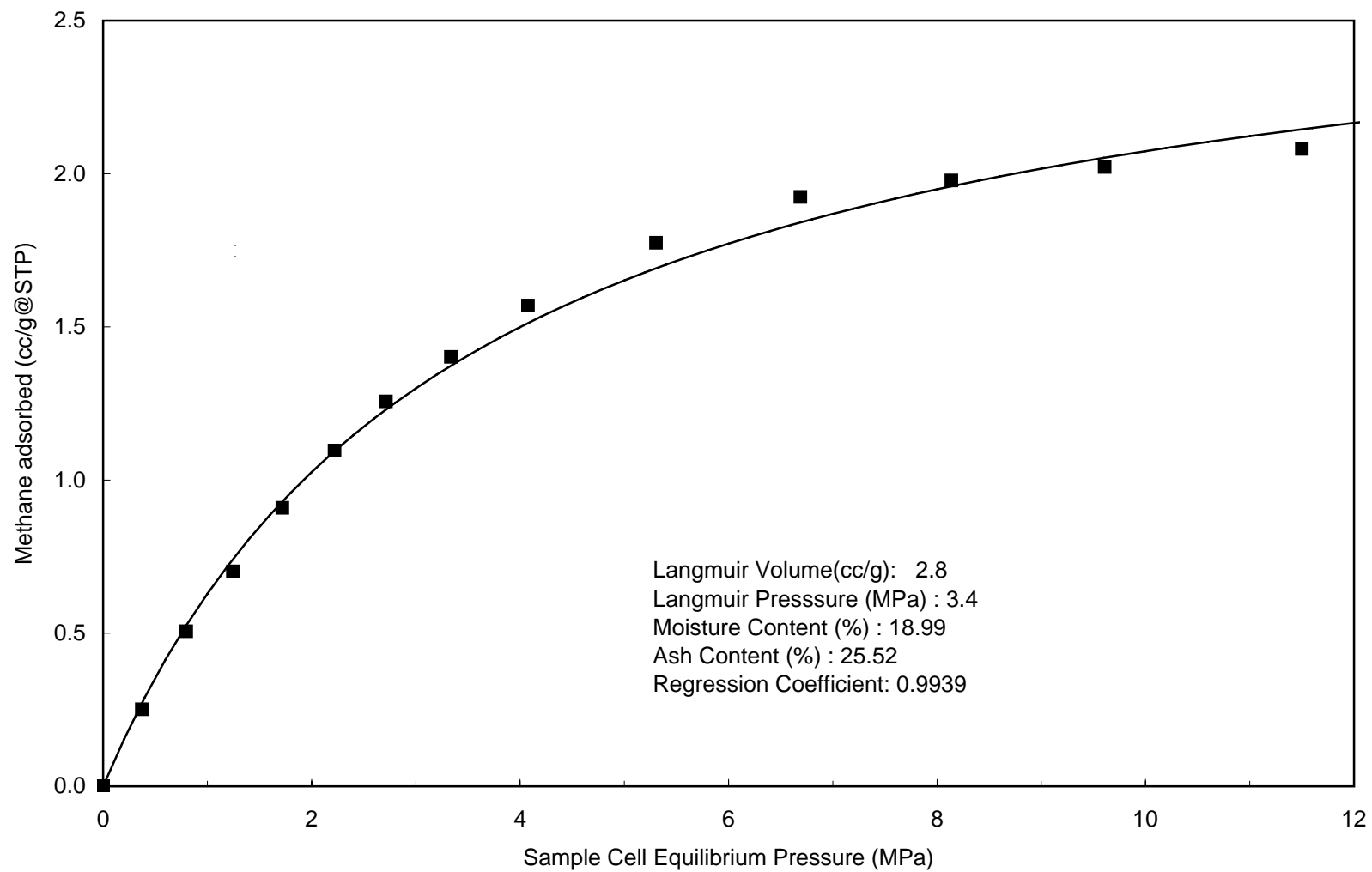
0.371	0.19	0.00
0.797	0.38	2.11
1.245	0.52	2.38
1.720	0.68	2.54
2.220	0.82	2.72
2.714	0.94	2.90
3.336	1.04	3.19
4.076	1.17	3.49
5.305	1.32	4.01
6.690	1.43	4.67
8.137	1.47	5.52
9.608	1.51	6.38
11.499	1.55	7.42

Saturated Monolayer Volume (cc/g, ash free):	2.07
Langmuir Pressure (MPa):	3.43
Correlation Coefficient:	0.9939

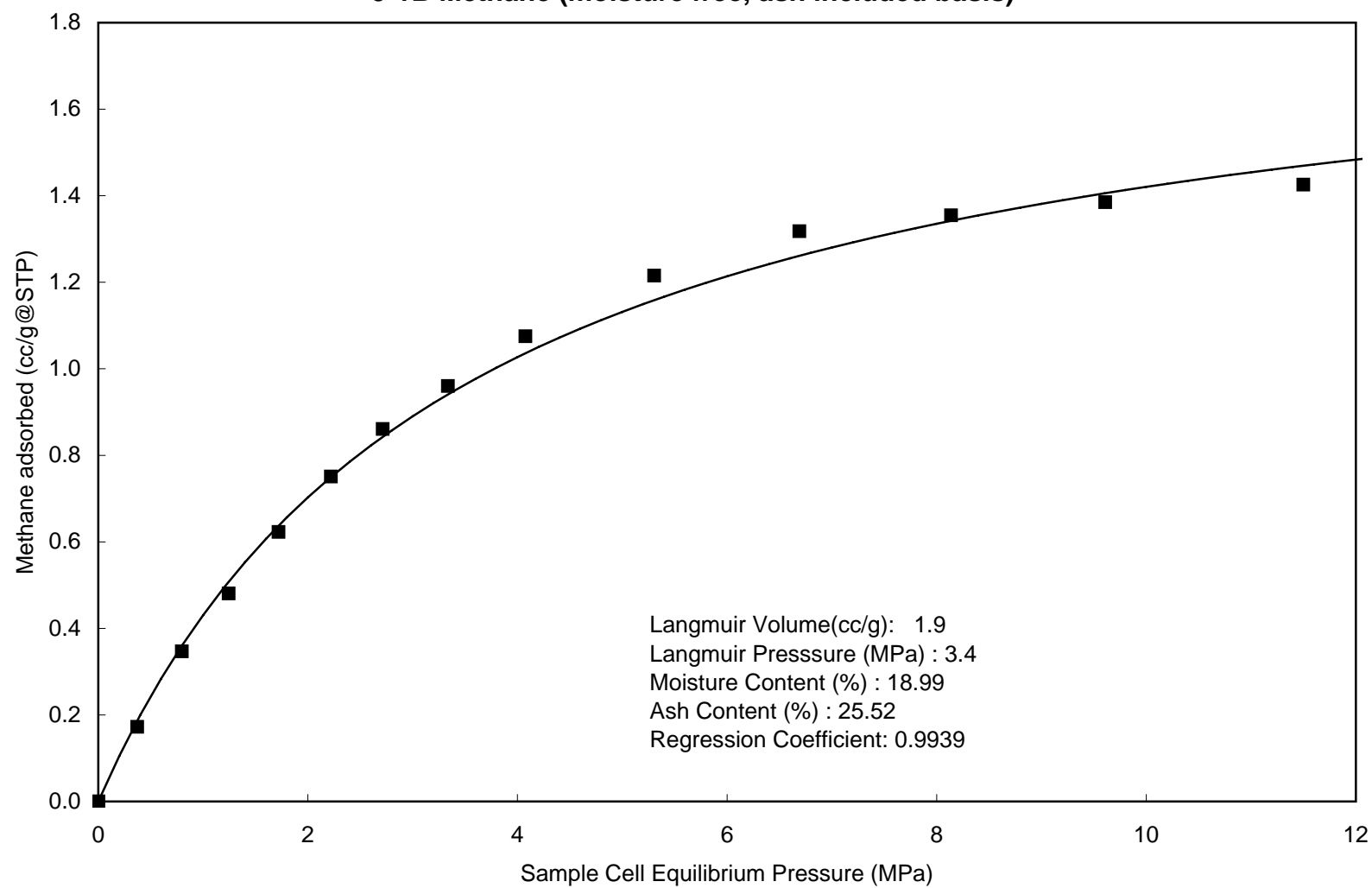
### 9-1B Methane (as received basis)



### 9-1B Methane (dry & ash free basis)

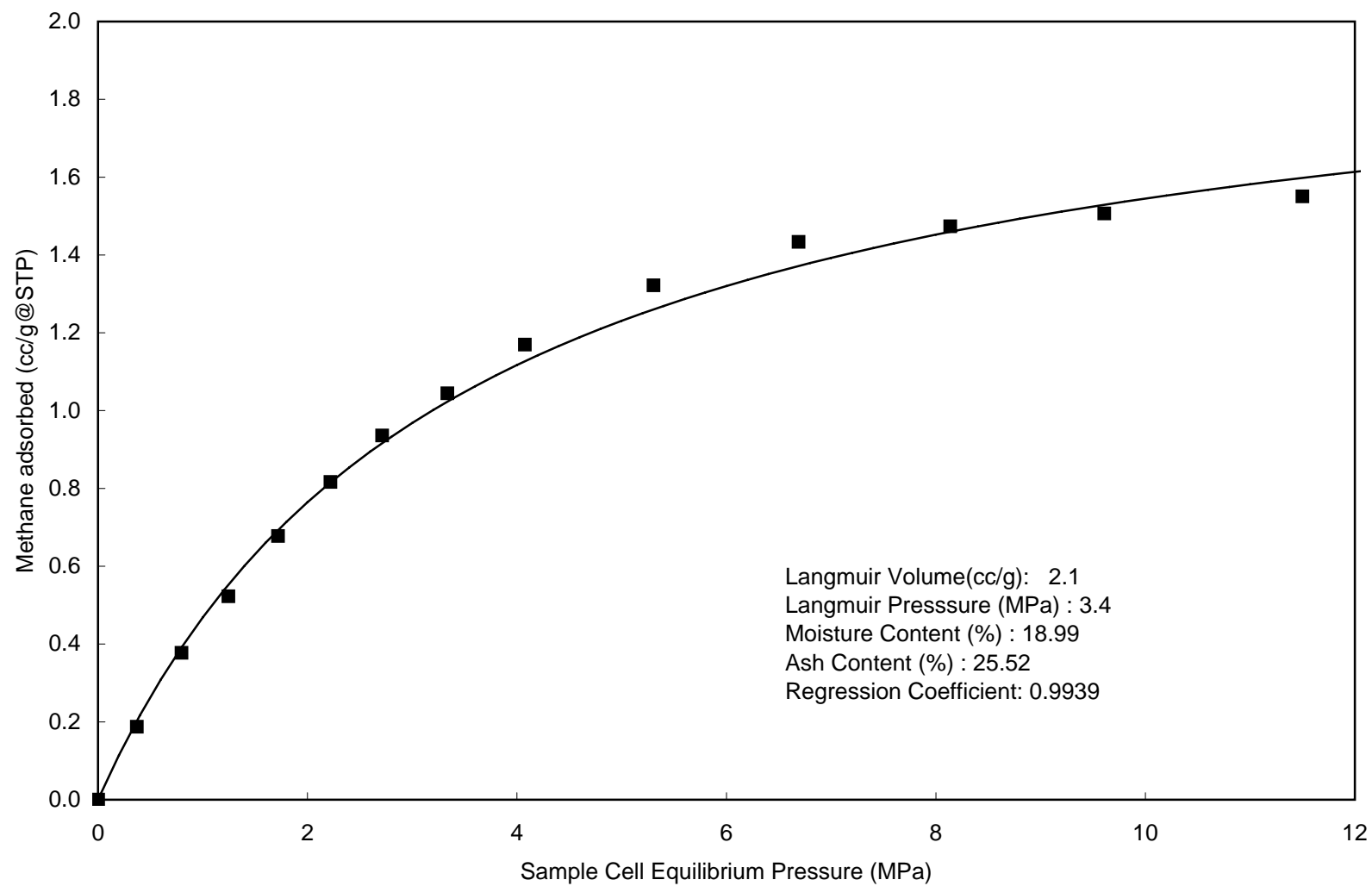


### 9-1B Methane (moisture free, ash included basis)





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



## Adsorption Langmuir Plot

