

LAMPIRAN 1



Lampiran 1. Analisis Kadar Fe total dalam Lempung Kaolinit Sebelum Perlakuan menggunakan asam klorida dan variasi waktu.

Metodologi penelitian (sub bab 3.4.3 dan 3.4.4) menunjukkan bahwa

v = volume sampel yang dianalisa dengan AAS = 250 ml

a = faktor pengenceran sampel = 60 kali

b = berat sampel = 1 gram (1.000 mg)

c = konsentrasi hasil pengukuran Fe dengan AAS (lampiran 2)

Dengan menggunakan rumus

$$\text{Kadar Fe} = \frac{v \cdot a \cdot c}{b} \times 100\%$$

dapat dihitung kadar (%) Fe total sebagai berikut:

c = konsentrasi terukur (lampiran 2) = 8,41 ppm

$$\begin{aligned} \text{Kadar Fe} &= \frac{60 \text{ ml} \times 250 \times 8,41 \text{ mg}/1000 \text{ ml}}{1000 \text{ mg}} \times 100\% \\ &= 12,615\% \end{aligned}$$

Dengan cara yang sama kadar Fe dalam persen dapat dihitung, dan hasilnya tercantum pada Tabel L.1.

Tabel L.1. Hasil analisis kandungan besi total

No.	Kadar besi terukur (ppm)	% besi total dalam Lempung Kaolinit
1.	8,41	12,615
2.	7,5	11,25
3.	8,26	12,39
	Rata-rata = 8,06	12,09

LAMPIRAN 2

HASIL ANALISIS KANDUNGAN Fe MENGGUNAKAN AAS



METHOD: FLAME
SIGNAL: AA
INTEG. TIME: 6.0sec
CALIBRATION TYPE: Non Linear
EXPANSION: 1.00
PRINT CALIB: Yes
READ DELAY: 03sec
LAMP CURRENT: 30mA
REPLICATES: 03
TECHNIQUE: Flame
ENERGY: 45
Standard1: 5.00
Standard2: 15.00

STANDARD 1:

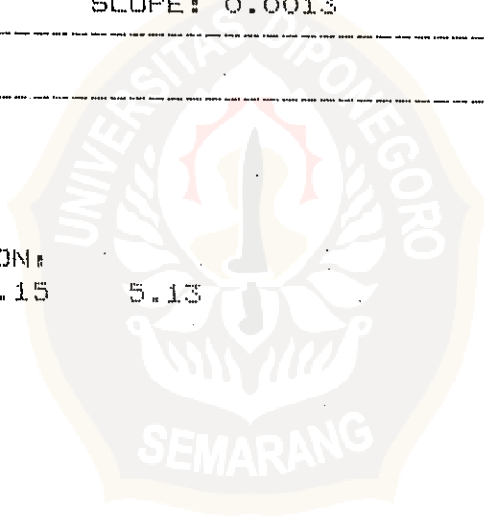
(AA-BG) ABSORBANCE:
0.010 0.009 0.001

CONC. (STD APPLIED):

MEAN: 5.00 SD: 0.0048 RSD(%): 73.39
CORR. COEF.: 1.0000 SLOPE: 0.0013

Standard Re-applied
STANDARD 1:

(AA-BG) CONCENTRATION:
5.22 5.15 5.13



CONC. (STD APPLIED):

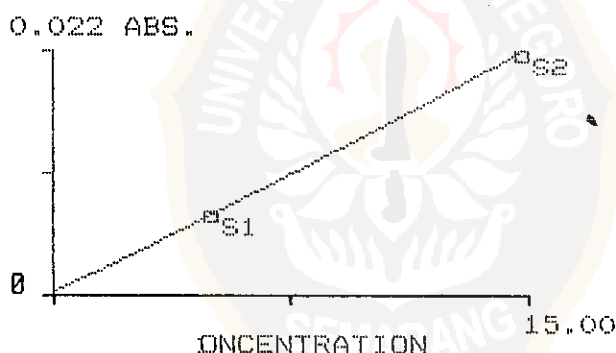
MEAN: 5.00 SD: 0.0498 RSD(%): 0.96
CORR. COEF.: 1.0000 SLOPE: 0.0014

STANDARD 2:

(AA-BG) CONCENTRATION:
15.96 15.70 15.70

CONC. (STD APPLIED):

MEAN: 15.00 SD: 0.1522 RSD(%): 0.96
CORR. COEF.: 1.0000 SLOPE: 0.0013



(AA-BG) CONCENTRATION:
5.25 5.78 5.61
MEAN: 5.55 SD: 0.2723 RSD(%): 4.91

(AA-BG) CONCENTRATION:
5.55 5.82 6.33
MEAN: 5.90 SD: 0.3972 RSD(%): 6.73

(AA-BG) CONCENTRATION:
7.44 7.30 7.74
MEAN: 7.49 SD: 0.2238 RSD(%): 2.99

(AA-BG) CONCENTRATION:
7.75 7.49 8.15
MEAN: 7.80 SD: 0.3306 RSD(%): 4.24

(AA-BG) CONCENTRATION:
8.92 8.56 8.44
MEAN: 8.64 SD: 0.2496 RSD(%): 2.89

(AA-BG) CONCENTRATION:


	7.82	8.18	8.30		
√ MEAN:	8.10	SD: 0.2524		RSD(%):	3.12
	(AA-BG) CONCENTRATION:				
	8.53	8.37	8.18		
∩ MEAN:	8.36	SD: 0.1789		RSD(%):	2.14
	(AA-BG) CONCENTRATION:				
	7.86	8.53	7.79		
∩ MEAN:	8.06	SD: 0.4108		RSD(%):	5.10
	(AA-BG) CONCENTRATION:				
	8.28	7.80	8.24		
∩ MEAN:	8.11	SD: 0.2671		RSD(%):	3.30
	(AA-BG) CONCENTRATION:				
	8.60	8.08	8.19		
∩ MEAN:	8.29	SD: 0.2750		RSD(%):	3.32

(AA-BG) CONCENTRATION:
 MEAN: 8.55 SD: 0.04948.46 RSD(%): 0.58

(AA-BG) CONCENTRATION:
 MEAN: 7.72 7.79 8.22
 ∩ MEAN: 7.91 SD: 0.2709 RSD(%): 3.43

(AA-BG) CONCENTRATION:
 MEAN: 6.63 7.37 6.89
 ∩ MEAN: 6.96 SD: 0.3773 RSD(%): 5.42

(AA-BG) CONCENTRATION:
 MEAN: 8.41 7.50 8.26
 ∩ MEAN: 8.06 SD: 0.4878 RSD(%): 6.06

(jark) 

LAMPIRAN 3



Lampiran 3. Analisa Pengurangan Kadar Fe dalam Ball Clay (lempung kaolinit)

1. Variabel bebas berupa konsentrasi HCl 1 M sampai 8 M, pada t = 60 menit

Metodologi (sub bab 3.4.5) menunjukkan bahwa

v = volume sampel yang dianalisa dengan AAS = 250 ml

a = faktor pengenceran sampel = 50 kali

b = berat sampel = 1 gram (1.000 mg)

c = konsentrasi hasil pengukuran Fe dengan AAS (lampiran 2)

Dengan menggunakan rumus pada lampiran 1, kadar Fe total (%) yang dibebaskan dapat dihitung sebagai berikut;

pada konsentarsi HCl 1 Molar

c = 5,25 ppm

$$\text{Kadar Fe} = \frac{50 \text{ mL} \times 250 \times 5,25 \text{ mg}/1000\text{mL}}{1.000 \text{ mg}} \times 100\%$$

c = 5,78 ppm

$$\text{Kadar Fe} = \frac{50 \text{ mL} \times 250 \times 5,78 \text{ mg}/1000 \text{ mL}}{1.000 \text{ mg}} \times 100\%$$

c = 5,61 ppm

$$\text{Kadar Fe} = \frac{50 \text{ ml} \times 250 \times 5,61 \text{ mg}/1000 \text{ ml}}{1.000 \text{ mg}} \times 100\%$$

konsentrasi rata-rata c = 5,55 ppm

$$\text{Kadar Fe} = \frac{50 \text{ ml} \times 250 \times 5,55 \text{ mg}/1000\text{ml}}{1000 \text{ mg}} \times 100\%$$

Dengan cara yang sama kadar Fe (%) yang dibebaskan pada setiap konsentrasi HCl dapat dihitung dan hasilnya dapat tercantum pada tabel L.2 .

Tabel L.2. Perhitungan kadar Fe yang dibebaskan pada setiap konsesentrasi HCl

Konsentrasi HCl	Kadar Fe Terukur (ppm)	Rata-rata (ppm)	% Fe (%)	Rata-rata (%)
1 M	5,25	5,55	6,563	6,938
	5,78		7,225	
	5,61		7,013	
2 M	5,90	5,9	7,375	7,375
	5,82		7,275	
	6,30		7,875	
3 M	7,44	7,49	9,30	9,363
	7,30		9,125	
	7,74		9,675	
4 M	7,75	7,80	9,687	9,750
	7,49		9,362	
	8,15		10,187	
5 M	8,92	8,64	11,150	10,800
	8,56		10,700	
	8,44		10,550	
6 M	7,82	8,1	9,775	10,125
	8,18		11,000	
	8,30		10,375	
7 M	8,53	8,36	10,662	10,450
	8,37		10,462	
	8,18		10,225	
8 M	7,86	8,06	9,825	10,08
	8,53		10,662	
	7,79		9,737	

2. Variabel bebas berupa waktu reaksi 30 menit, 60 menit, 90 menit, dan 120 menit pada konsentrasi HCl 5M

Dari metodolgi penelitian diketahui,

v = volume sampel yang dianalisa dengan AAS = 250 ml

a = faktor pengenceran sampel = 50 kali

b = berat sampel = 1 gram (1.000 mg)

c = konsentrasi hasil pengukuran Fe dengan AAS (lampiran 2)

Analogi pada lampiran 1 dan lampiran 3 bagian 1, kadar Fe yang dibebaskan dalam lempung kaolinit pada variasi waktu dan dan konsentrasi HCl 5 M, dapat dihitung.

Hasil perhitungan tersebut dapat tercantum pada tabel L.3.

Tabel L.3. Hasil analisa penurunan kadar Fe dalam lempung kaolinit menggunakan HCl 5 M pada variasi waktu

Waktu Kontak (menit)	Konsentrasi Fe (ppm)	Rata-rata (ppm)	Kadar Fe (%) yang dibebaskan	Rata-rata (% Fe)
30	8,28	8,11	10,3500	10,1375
	7,80		9,7500	
	8,24		10,3000	
60	8,60	8,29	10,7500	10,3625
	8,08		10,1000	
	8,19		10,2375	
90	7,72	7,91	9,6500	9,8875
	7,79		9,7375	
	8,22		10,25	
120	6,63	6,96	8,2875	8,7000
	7,37		9,2125	
	6,89		8,6125	

LAMPIRAN 4

Hasil Penelitian Pendahuluan: Analisis Pengurangan Kadar Fe
Dengan AAS



METHOD: FLAME
SIGNAL: AA-BG
INTEG. TIME: 6.0sec
CALIBRATION TYPE: Non Linear
EXPANSION: 1.00
PRINT CALIB: Yes
READ DELAY: 03sec

LAMP CURRENT: 30mA
REPLICATES: 03
TECHNIQUE: Flame
ENERGY: 45

Standard1: 5.00

Standard2: 15.00

(AA-BG) ABSORBANCE:

0.061 0.062 0.062
MEAN: 0.062 SD: 0.0005 RSD(%): 0.80

AUTOZERO APPLIED

MEAN: 0.000 SD: 0.0005 RSD(%): 0.80

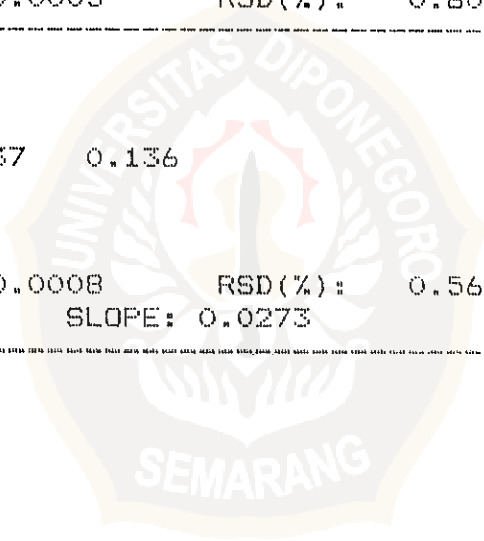
STANDARD 1:

(AA-BG) ABSORBANCE:

0.137 0.137 0.136

CONC. (STD APPLIED):

MEAN: 5.00 SD: 0.0008 RSD(%): 0.56
CORR. COEF.: 1.0000 SLOPE: 0.0273



(AA-BG) CONCENTRATION:

2.04 2.02 2.04
MEAN: 2.03 SD: 0.0097 RSD(%): 0.48

(AA-BG) CONCENTRATION:

ERR 8: Sample conc. > than highest standard.
5.57

ERR 8: Sample conc. > than highest standard.
5.58

ERR 8: Sample conc. > than highest standard.
5.60

ERR 8: Sample conc. > than highest standard.

MEAN: 5.58 SD: 0.0145 RSD(%): 0.26

STANDARD 1:

(AA-BG) ABSORBANCE:

0.055 0.056 0.056

CONC. (STD APPLIED):

MEAN: 5.00 SD: 0.0003 RSD(%): 0.46
CORR. COEF.: 1.0000 SLOPE: 0.0111

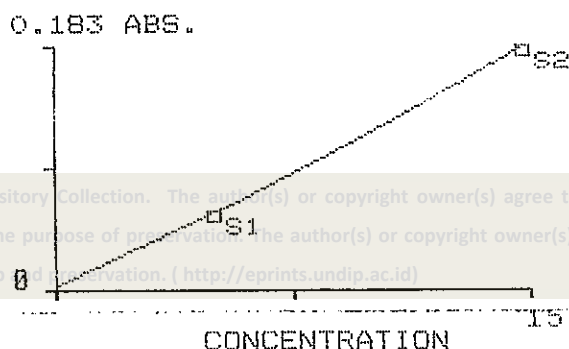
STANDARD 2:

(AA-BG) CONCENTRATION:

16.37 16.44 16.59

CONC. (STD APPLIED):

MEAN: 15.00 SD: 0.1157 RSD(%): 0.70
CORR. COEF.: 1.0000 SLOPE: 0.0106



CONCENTRATION 15.00

(AA-BG) CONCENTRATION:

9.38 9.46 9.46
1 MEAN: 9.44 SD: 0.0451 RSD(%): 0.48

(AA-BG) CONCENTRATION:

16.12 16.22 16.16
2 MEAN: 16.16 SD: 0.0526 RSD(%): 0.33

(AA-BG) CONCENTRATION:

ERR 8: Sample conc. > than highest standard.
18.56

ERR 8: Sample conc. > than highest standard.
18.46

ERR 8: Sample conc. > than highest standard.
18.30

ERR 8: Sample conc. > than highest standard.

MEAN: 18.44 SD: 0.1356 RSD(%): 0.74

(AA-BG) CONCENTRATION:

5.18 5.19 5.30
3 MEAN: 5.22 SD: 0.0672 RSD(%): 1.29

(AA-BG) CONCENTRATION:

8.53 8.49 8.48
5 MEAN: 8.50 SD: 0.0262 RSD(%): 0.31

(AA-BG) CONCENTRATION:

8.24 8.25 8.38
4 MEAN: 8.29 SD: 0.0811 RSD(%): 0.98

(AA-BG) CONCENTRATION:

6.28 6.27 6.13
6 MEAN: 6.23 SD: 0.0816 RSD(%): 1.31

(AA-BG) CONCENTRATION:

6.60 6.58 6.39
7 MEAN: 6.52 SD: 0.1180 RSD(%): 1.81

(AA-BG) CONCENTRATION:

6.35 6.38 6.38
8 MEAN: 6.37 SD: 0.0150 RSD(%): 0.24