LAMPIRAN

Lampiran 1. Perhitungan Kadar Air

Table 3.1 Hasil analisa kadar air

Sampel	Bobot Botol timbang (gram)	Pengulangan (gram)			
		W_1	W_2	W_3	W_4
A	53,3534	58,4846	58,4131	58,3306	58,5216
B	45,7648	51,0248	50,7098	50,7087	-
C	57,6887	63,0746	62,9466	62,7693	62,7626
D	56,0667	61,1621	61,1238	60,9461	61,0078
E	51,4884	56,5877	56,5680	56,4199	56,4127
F	116,9671	122,1490	121,9411	121,8921	122,1181
G	116,4352	121,5895	121,3545	121,3541	-
H	114,7894	119,9043	119,7009	119,4217	119,4212
I	32,9374	37,9947	37,9726	37,8135	37,9951
J	31,2724	36,5491	36,0381	36,0378	-

$$\text{kadar air} = \frac{W_1 - W_2}{W_1 - W_0} \times 100\%$$

Keterangan :

W_0 : bobot botol timbang kosong dan tutupnya, dinyatakan dalam gram (g);

W_1 : bobot botol timbang, tutupnya dan contoh sebelum dikeringkan, dinyatakan dalam gram (g);

W_2 : bobot botol timbang, tutupnya dan contoh setelah dikeringkan, dinyatakan dalam gram (g).

- Sampel A

$$\text{kadar air} = \frac{58{,}4846 - 58{,}5216}{58{,}4846 - 53{,}3534} \times 100\%$$

$$\text{kadar air} = \frac{0{,}154}{5{,}1312} \times 100\%$$

$$\text{kadar air} = 3{,}001247\%$$

- Sampel B

$$\text{kadar air} = \frac{51{,}0248 - 50{,}7087}{51{,}0248 - 45{,}7648} \times 100\%$$

$$\text{kadar air} = \frac{0{,}3161}{5{,}26} \times 100\%$$

$$\text{kadar air} = 6{,}009506\%$$

- Sampel C

$$\text{kadar air} = \frac{63{,}0746 - 62{,}7626}{63{,}0746 - 57{,}6887} \times 100\%$$

$$\text{kadar air} = \frac{0{,}312}{5{,}3859} \times 100\%$$

$$\text{kadar air} = 5{,}792904\%$$

- Sampel D

$$\text{kadar air} = \frac{61{,}1621 - 60{,}9461}{61{,}1621 - 56{,}0667} \times 100\%$$

$$\text{kadar air} = \frac{0{,}216}{5{,}0954} \times 100\%$$

$$\text{kadar air} = 4{,}239118\%$$

- Sampel E

$$\text{kadar air} = \frac{56{,}5877 - 56{,}4127}{56{,}5877 - 51{,}4884} \times 100\%$$

$$\text{kadar air} = \frac{0{,}175}{5{,}0993} \times 100\%$$

$$\text{kadar air} = 3{,}431844\%$$

- Sampel F

$$\text{kadar air} = \frac{122{,}149 - 121{,}892}{122{,}149 - 116{,}967} \times 100\%$$

$$\text{kadar air} = \frac{0{,}2569}{5{,}1819} \times 100\%$$

$$\text{kadar air} = 4{,}957641\%$$

- Sampel G

$$\text{kadar air} = \frac{121{,}59 - 121{,}354}{121{,}59 - 116{,}435} \times 100\%$$

$$\text{kadar air} = \frac{0{,}2354}{5{,}1543} \times 100\%$$

$$\text{kadar air} = 4{,}567061\%$$

- Sampel H

$$\text{kadar air} = \frac{119{,}904 - 119{,}421}{119{,}904 - 114{,}789} \times 100\%$$

$$\text{kadar air} = \frac{0{,}4831}{5{,}1149} \times 100\%$$

$$\text{kadar air} = 9{,}444955\%$$

- Sampel I

$$\text{kadar air} = \frac{37{,}9947 - 37{,}8135}{37{,}9947 - 32{,}9374} \times 100\%$$

$$\text{kadar air} = \frac{0{,}1812}{5{,}0573} \times 100\%$$

$$\text{kadar air} = 3{,}58294\%$$

- Sampel J

$$\text{kadar air} = \frac{36{,}5491 - 36{,}0378}{36{,}5491 - 31{,}2724} \times 100\%$$

$$\text{kadar air} = \frac{0{,}5113}{5{,}2767} \times 100\%$$

$$\text{kadar air} = 9{,}689768\%$$

Lampiran 2. Standarisasi AgNO3 0,1 N

Table 7.2 Hasil analisa standarisasi

Berat Sampel dalam (mg)	Volume Titran $AgNO_3$ 0,1 N dalam (ml)	Normalitas $AgNO_3$	Rata – Rata (N)
100,5	16,8	0,102259	0,101464
100,8	17,2	0,100179	
100,2	16,8	0,101954	

$$Normalitas\ AgNO_3 = \frac{mg\ NaCl}{Mr\ NaCl \times ml\ AgNO_3}$$

- Replikasi 1

$$Normalitas\ AgNO_3 = \frac{100,5}{58,5 \times 16,8}$$

$$Normalitas\ AgNO_3 = \frac{100,5}{982,8}$$

$$Normalitas\ AgNO_3 = 0,102259\text{N}$$

- Replikasi 2

$$Normalitas\ AgNO_3 = \frac{100,8}{58,5 \times 17,2}$$

$$Normalitas\ AgNO_3 = \frac{100,5}{1006,2}$$

$$Normalitas\ AgNO_3 = 0,100179\text{N}$$

- Replikasi 3

$$Normalitas\ AgNO_3 = \frac{100,2}{58,5 \times 16,8}$$

$$Normalitas\ AgNO_3 = \frac{100,5}{982,8}$$

$$Normalitas\ AgNO_3 = 0,101954\text{N}$$

Lampiran 3. Perhitungan Kadar NaCl

Table 7.3 Hasil analisa kadar NaCl

Sampel	Berat Sampel dalam (mg)	Volume Titran $AgNO_3$ 0,1 N dalam (ml)	% b/b Kadar Sampel	Kadar Rata-Rata Sampel
A.1	104,8	17,6	99,22672	97,28043
A.2	106,6	17,2	95,33415	
B.1	106,7	17	94,1373	96,30615
B.2	100,8	16,8	98,475	
C.1	103,3	16,6	94,94782	95,06694
C.2	101,8	16,4	95,18605	
D.1	102,4	16	92,32031	93,32399
D.2	102,1	16,3	94,32767	
E.1	100,5	16,5	97,00522	96,04227
E.2	104,4	16,8	95,07931	
F.1	103,7	16,5	94,01181	94,49533
F.2	101,4	16,3	94,97885	
G.1	102	16,2	93,84088	94,89793
G.2	101,6	16,5	95,95497	
H.1	105,3	16,2	90,9	90,31784
H.2	109,3	16,6	89,73568	
I.1	104,7	17,2	97,06418	97,28592
I.2	101,8	16,8	97,50766	
J.1	109,3	17,4	94,06029	93,34567
J.2	112,9	17,7	92,63105	

$$kadar\ NaCl = \frac{V \times N \times Mr\ NaCl}{W} \times 100\%$$

Keterangan ;

V : volume $AgNO_3$ yang diperlukan pada penitaran, dinyatkan dalam mililiter (mL);

N : normalitas $AgNO_3$, dinyatakan dalam normalitas (N);

W : bobot contoh uji, dinyatakan dalam miligram (mg).

- Sampel A.1

$$kadar\ NaCl = \frac{17{,}6\text{ml} \times 0.101N \times 58{,}5}{104{,}8\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{103{,}9896}{104{,}8} \times 100\%$$

$$kadar\ NaCl = 99{,}2672\%$$

- Sampel A.2

$$kadar\ NaCl = \frac{17{,}2\text{ml} \times 0.101N \times 58{,}5}{106{,}6\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{101{,}6262}{106{,}6} \times 100\%$$

$$kadar\ NaCl = 95{,}33415\%$$

- Sampel B.1

$$kadar\ NaCl = \frac{17\text{ml} \times 0.101N \times 58{,}5}{106{,}7\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{100{,}4445}{106{,}7} \times 100\%$$

$$kadar\ NaCl = 94{,}1373\%$$

- Sampel B.2

$$kadar\ NaCl = \frac{16{,}8\text{ml} \times 0.101N \times 58{,}5}{100{,}8\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{99{,}2628}{100{,}8} \times 100\%$$

$$kadar\ NaCl = 98{,}475\%$$

- Sampel C.1

$$kadar\ NaCl = \frac{16{,}6\text{ml} \times 0.101N \times 58{,}5}{103{,}3\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{98{,}0811}{103{,}3} \times 100\%$$

$$kadar\ NaCl = 94{,}94782\%$$

- Sampel C.2

$$kadar\ NaCl = \frac{16{,}4\text{ml} \times 0.101N \times 58{,}5}{101{,}8\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{96{,}8994}{101{,}8} \times 100\%$$

$$kadar\ NaCl = 95{,}18605\%$$

- Sampel D.1

$$kadar\ NaCl = \frac{16\text{ml} \times 0.101N \times 58{,}5}{102{,}4\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{94{,}536}{102{,}4} \times 100\%$$

$$kadar\ NaCl = 92{,}32031\%$$

- Sampel D.2

$$kadar\ NaCl = \frac{16{,}3\text{ml} \times 0.101N \times 58{,}5}{102{,}1\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{96{,}30855}{102{,}1} \times 100\%$$

$$kadar\ NaCl = 94{,}32767\%$$

- Sampel E.1

$$kadar\ NaCl = \frac{16{,}5\text{ml} \times 0.101N \times 58{,}5}{100{,}5\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{97{,}49025}{100{,}5} \times 100\%$$

$$kadar\ NaCl = 97{,}00522\%$$

- Sampel E.2

$$kadar\ NaCl = \frac{16{,}8\text{ml} \times 0.101N \times 58{,}5}{104{,}4\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{99{,}2628}{104{,}4} \times 100\%$$

$$kadar\ NaCl = 95{,}07931\%$$

- Sampel F.1

$$kadar\ NaCl = \frac{16{,}5\text{ml} \times 0.101N \times 58{,}5}{103{,}7\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{97{,}49025}{103{,}7} \times 100\%$$

$$kadar\ NaCl = 94{,}01181\%$$

- Sampel F.2

$$kadar\ NaCl = \frac{16{,}3\text{ml} \times 0.101N \times 58{,}5}{101{,}4\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{96{,}30855}{101{,}4} \times 100\%$$

$$kadar\ NaCl = 94{,}97885\%$$

- Sampel G.1

$$kadar\ NaCl = \frac{16{,}2\text{ml} \times 0.101N \times 58{,}5}{102\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{95{,}7177}{102} \times 100\%$$

$$kadar\ NaCl = 93{,}84088\%$$

- Sampel G.2

$$kadar\ NaCl = \frac{16{,}5\text{ml} \times 0.101N \times 58{,}5}{101{,}6\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{97{,}49025}{101{,}6} \times 100\%$$

$$kadar\ NaCl = 95{,}95497\%$$

- Sampel H.1

$$kadar\ NaCl = \frac{16{,}2\text{ml} \times 0.101N \times 58{,}5}{105{,}3\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{95{,}7177}{105{,}3} \times 100\%$$

$$kadar\ NaCl = 90{,}9\%$$

- Sampel H.2

$$kadar\ NaCl = \frac{16{,}6\text{ml} \times 0.101N \times 58{,}5}{109{,}3\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{98{,}0811}{109{,}3} \times 100\%$$

$$kadar\ NaCl = 89{,}73568\%$$

- Sampel I.1

$$kadar\ NaCl = \frac{17{,}2\text{ml} \times 0.101N \times 58{,}5}{104{,}7\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{101{,}6262}{104{,}7} \times 100\%$$

$$kadar\ NaCl = 97{,}06418\%$$

- Sampel I.2

$$kadar\ NaCl = \frac{16{,}8\text{ml} \times 0.101N \times 58{,}5}{101{,}8\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{99{,}2628}{101{,}8} \times 100\%$$

$$kadar\ NaCl = 97{,}50766\%$$

- Sampel J.1

$$kadar\ NaCl = \frac{17{,}4\text{ml} \times 0.101N \times 58{,}5}{109{,}3\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{102{,}8079}{109{,}3} \times 100\%$$

$$kadar\ NaCl = 94{,}06029\%$$

- Sampel J.2

$$kadar\ NaCl = \frac{17{,}7\text{ml} \times 0.101N \times 58{,}5}{112{,}9\text{mg}} \times 100\%$$

$$kadar\ NaCl = \frac{104{,}5805}{112{,}9} \times 100\%$$

$$kadar\ NaCl = 92{,}63105\%$$

Lampiran 4. Pembuatan Larutan Baku Pb 10 mg/L

- Pembuatan larutan baku dilakukan dengan pengenceran dari larutan baku Pb 1000 mg/L

  $M_1 \times V_1 = M_2 \times V_2$

  1000 mg/L × V_1 = 10 mg/L × 250 ml

  V_1 = 2,5 ml

- Maka dibutuhkan 2,5 ml larutan baku Pb 1000 mg/L

Lampiran 5. Pembuatan Larutan Standar Pb

- Pembuatan larutan baku dilakukan dengan pengenceran dari larutan baku Pb 10 mg/L
  - Larutan standar Pb 0,05 mg/L

    $M_1 \times V_1 = M_2 \times V_2$

    10 mg/L × V_1 = 0,05 mg/L × 100 ml

    V_1 = 0,5 ml
  - Larutan standar Pb 0,1 mg/L

    $M_1 \times V_1 = M_2 \times V_2$

    10 mg/L × V_1 = 0,1 mg/L × 100 ml

    V_1 = 1 ml
  - Larutan standar Pb 0,2 mg/L

    $M_1 \times V_1 = M_2 \times V_2$

    10 mg/L × V_1 = 0,2 mg/L × 100 ml

    V_1 = 2 ml
  - Larutan stnadar Pb 0,5 mg/L

    $M_1 \times V_1 = M_2 \times V_2$

    10 mg/L × V_1 = 0,5 mg/L × 100 ml

    V_1 = 5 ml
  - Larutan standar Pb 1 mg/L

    $M_1 \times V_1 = M_2 \times V_2$

    10 mg/L × V_1 = 1 mg/L × 100 ml

    V_1 = 10 ml

Lampiran 6. Penetapan Kadar Pb

Table 7.4 Hasil analisa kadar Pb

Sampel	Bobot Contoh (Kg)	Vol. Contoh (L)	fp	Hasil AAS (mg/L)	Kadar Pb (mg/Kg)
A	0,0100067	0,5	1	0,0225	1,1242
B	0,0100173	0,5	1	0,0550	2,7453
C	0,0100116	0,5	1	0,0550	2,7468
D	0,0100014	0,5	1	0,0550	2,7496
E	0,0100345	0,5	1	0,0766	3,8168
F	0,0100103	0,5	1	0,0712	3,5563
G	0,0102189	0,5	1	0,0874	4,2764
H	0,0100079	0,5	1	0,0516	2,5780
I	0,0100082	0,5	1	0,0516	2,5779
J	0,0100006	0,5	1	0,0325	1,6249

$$\text{Penetapan Pb} = \frac{C}{W} \times V$$

Keterangan:

C : konsentrasi logam dari kurva kalibrasi, dinyatakan dalam (µg/mL);

V : volume larutan akhir, dinyatakan dalam mililiter (mL);

W : bobot contoh, dinyatakan dalam gram (g).

- Sampel A

$$\text{kadar Pb} = \frac{0{,}0225}{0{,}0100067} \times 0{,}5$$

$$\text{kadar Pb} = 1{,}1242\ \text{mg/kg}$$

- Sampel B

$$\text{kadar Pb} = \frac{0{,}0550}{0{,}0100173} \times 0{,}5$$

$$\text{kadar Pb} = 2{,}7453\ \text{mg/kg}$$

- Sampel C

$$\text{kadar Pb} = \frac{0{,}0550}{0{,}0100116} \times 0{,}5$$

$$\text{kadar Pb} = 2{,}7468\ \text{mg/kg}$$

- Sampel D

$$\text{kadar Pb} = \frac{0{,}0550}{0{,}0100014} \times 0{,}5$$

$$\text{kadar Pb} = 2{,}7496\ \text{mg/kg}$$

- Sampel E

$$\text{kadar Pb} = \frac{0{,}0766}{0{,}0100345} \times 0{,}5$$

$$\text{kadar Pb} = 3{,}8168\ \text{mg/kg}$$

- Sampel F

$$\text{kadar Pb} = \frac{0{,}0712}{0{,}0100103} \times 0{,}5$$

$$\text{kadar Pb} = 3{,}5563\ \text{mg/kg}$$

- Sampel G

$$\text{kadar Pb} = \frac{0{,}0874}{0{,}0102189} \times 0{,}5$$

$$\text{kadar Pb} = 4{,}2764\ \text{mg/kg}$$

- Sampel H

$$\text{kadar Pb} = \frac{0{,}0516}{0{,}0100079} \times 0{,}5$$

$$\text{kadar Pb} = 2{,}5780\ \text{mg/kg}$$

- Sampel I

$$\text{kadar Pb} = \frac{0{,}0516}{0{,}0100082} \times 0{,}5$$

$$\text{kadar Pb} = 2{,}5779\ \text{mg/kg}$$

- Sampel J

$$\text{kadar Pb} = \frac{0{,}0325}{0{,}0100006} \times 0{,}5$$

$$\text{kadar Pb} = 1{,}6249\ \text{mg/kg}$$

Lampiran 7. Pembuatan Larutan Baku Cd 10 mg/L

- Pembuatan larutan baku dilakukan dengan pengenceran dari larutan baku Cd 1000 mg/L

  $M_1 \times V_1 = M_2 \times V_2$

$1000\ mg/L \times V_1 = 10\ mg/L \times 250\ ml$

$V_1 = 2{,}5\ ml$

- Maka dibutuhkan 2,5 ml larutan baku Cd 1000 mg/L

Lampiran 8. Pembuatan Larutan Standar Cd

- Pembuatan larutan baku dilakukan dengan pengenceran dari larutan baku Cd 10 mg/L
    - Larutan standar Cd 0,01 mg/L

$M_1 \times V_1 = M_2 \times V_2$

$10\ mg/L \times V_1 = 0{,}01\ mg/L \times 100\ ml$

$V_1 = 0{,}1\ ml$

- Larutan standar Pb 0,02 mg/L

$M_1 \times V_1 = M_2 \times V_2$

$10\ mg/L \times V_1 = 0{,}02\ mg/L \times 100\ ml$

$V_1 = 0{,}2\ ml$

- Larutan standar Pb 0,05 mg/L

$M_1 \times V_1 = M_2 \times V_2$

$10\ mg/L \times V_1 = 0{,}05\ mg/L \times 100\ ml$

$V_1 = 0{,}5\ ml$

- Larutan stnadar Pb 0,1 mg/L

$M_1 \times V_1 = M_2 \times V_2$

$10\ mg/L \times V_1 = 0{,}1\ mg/L \times 100\ ml$

$V_1 = 1\ ml$

Lampiran 9. Penetapan Kadar Cd

Table 7.5 Hasil analisa kadar Cd

Sampel	Bobot Contoh (Kg)	Vol. Contoh (L)	Fp	Hasil AAS (mg/L)	Kadar Cd (mg/Kg)
A	0,0100067	0,5	1	0,0012	0,0599
B	0,0100173	0,5	1	0,0026	0,1297
C	0,0100116	0,5	1	0,0017	0,0849
D	0,0100014	0,5	1	0,0014	0,0699
E	0,0100345	0,5	1	0,0005	0,0249
F	0,0100103	0,5	1	0,0013	0,0649
G	0,0102189	0,5	1	0,0054	0,2642
H	0,0100079	0,5	1	0,0051	0,2547
I	0,0100082	0,5	1	0,0092	0,4596
J	0,0100006	0,5	1	0,0142	0,7099

$$\text{Penetapan Cd} = \frac{C}{W} \times V$$

Keterangan:

C : konsentrasi logam dari kurva kalibrasi, dinyatakan dalam (µg/mL);

V : volume larutan akhir, dinyatakan dalam mililiter (mL);

W : bobot contoh, dinyatakan dalam gram (g).

- Sampel A

$$\text{kadar Cd} = \frac{0{,}0012}{0{,}0100067} \times 0{,}5$$

$$\text{kadar Cd} = 0{,}0599 \text{ mg/kg}$$

- Sampel B

$$\text{kadar Cd} = \frac{0{,}0026}{0{,}0100173} \times 0{,}5$$

$$\text{kadar Cd} = 0{,}1297 \text{ mg/kg}$$

- Sampel C

$$\text{kadar Cd} = \frac{0{,}0017}{0{,}0100116} \times 0{,}5$$

$$\text{kadar Cd} = 0{,}0849 \text{ mg/kg}$$

- Sampel D

$$\text{kadar Cd} = \frac{0{,}0014}{0{,}0100014} \times 0{,}5$$

$$\text{kadar Cd} = 0{,}0699 \text{ mg/kg}$$

- Sampel E

$$\text{kadar Cd} = \frac{0{,}0005}{0{,}0100345} \times 0{,}5$$

$$\text{kadar Cd} = 0{,}0249 \text{ mg/kg}$$

- Sampel F

$$\text{kadar Cd} = \frac{0{,}0013}{0{,}0100103} \times 0{,}5$$

$$\text{kadar Cd} = 0{,}0649 \text{ mg/kg}$$

- Sampel G

$$\text{kadar Cd} = \frac{0{,}0054}{0{,}0102189} \times 0{,}5$$

$$\text{kadar Cd} = 0{,}2642 \text{ mg/kg}$$

- Sampel H

$$\text{kadar Cd} = \frac{0{,}0051}{0{,}0100079} \times 0{,}5$$

$$\text{kadar Cd} = 0{,}2547 \text{ mg/kg}$$

- Sampel I

$$\text{kadar Cd} = \frac{0{,}0092}{0{,}0100082} \times 0{,}5$$

$$\text{kadar Cd} = 0{,}4596 \text{ mg/kg}$$

- Sampel J

$$\text{kadar Cd} = \frac{0{,}0142}{0{,}0100006} \times 0{,}5$$

$$\text{kadar Cd} = 0{,}7099 \text{ mg/kg}$$