**Lampiran 1.** Sampel Yang Diuji

** **

Sampel A1

** **

Sampel A2

** **

Sampel A3

Sampel A3

 ****

Sampel K1

 ****

Sampel K2

 ****

Sampel K3

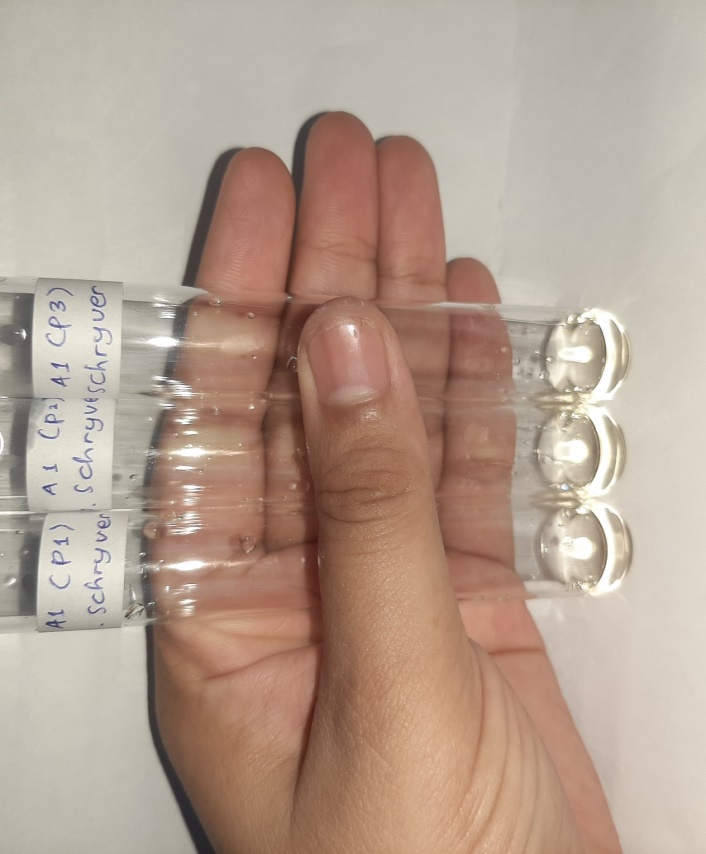
**Lampiran 2.** Destilasi Sampel



Destilat

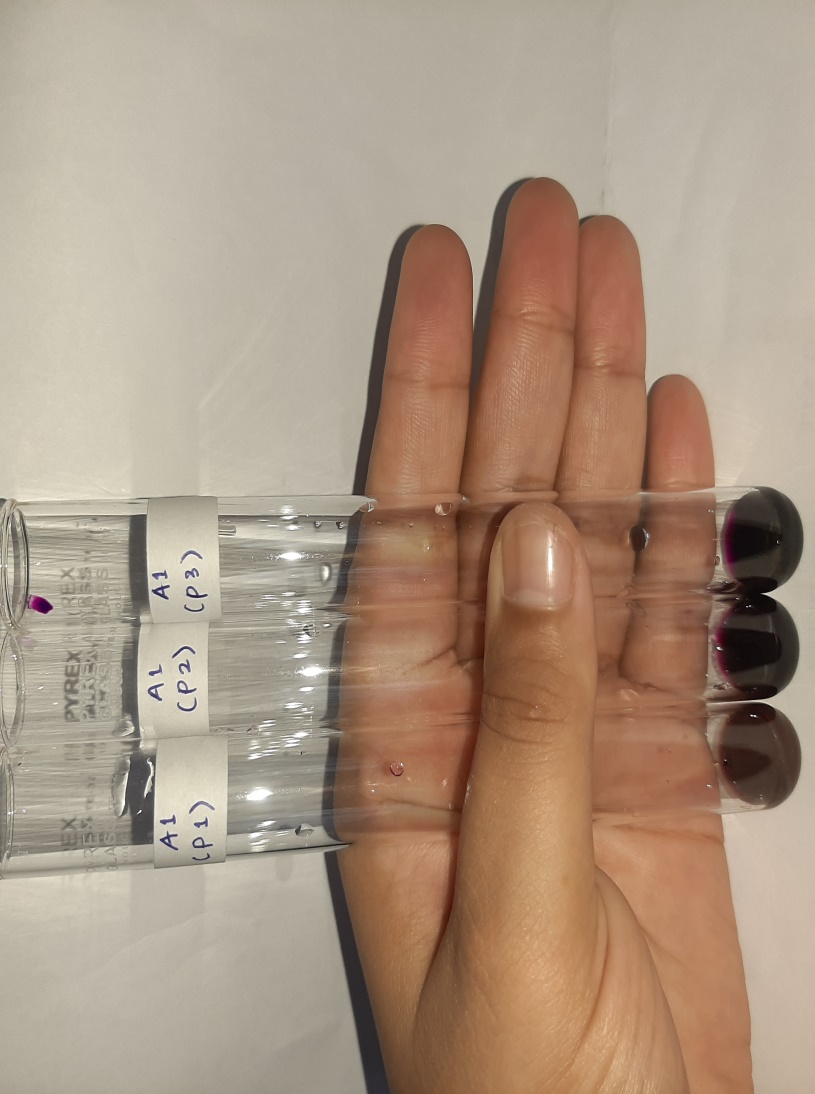
**Lampiran 3.** Hasil Uji Kualitatif Sampel

1. Sampel A1

Sampel A1 + P. Schiff = (-)

Sampel A1 + P. Schryver = (-)



Sampel A1 + KMnO4 = (-)

1. Sampel A2

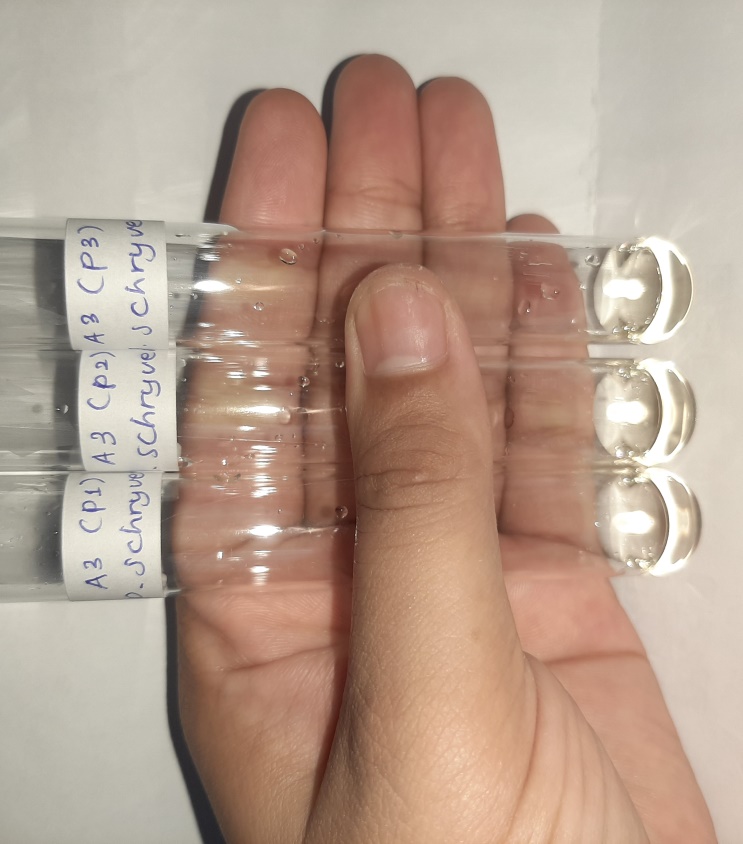
Sampel A2 + P. Schryver = (-)

Sampel A2 + P. Schryver = (-)



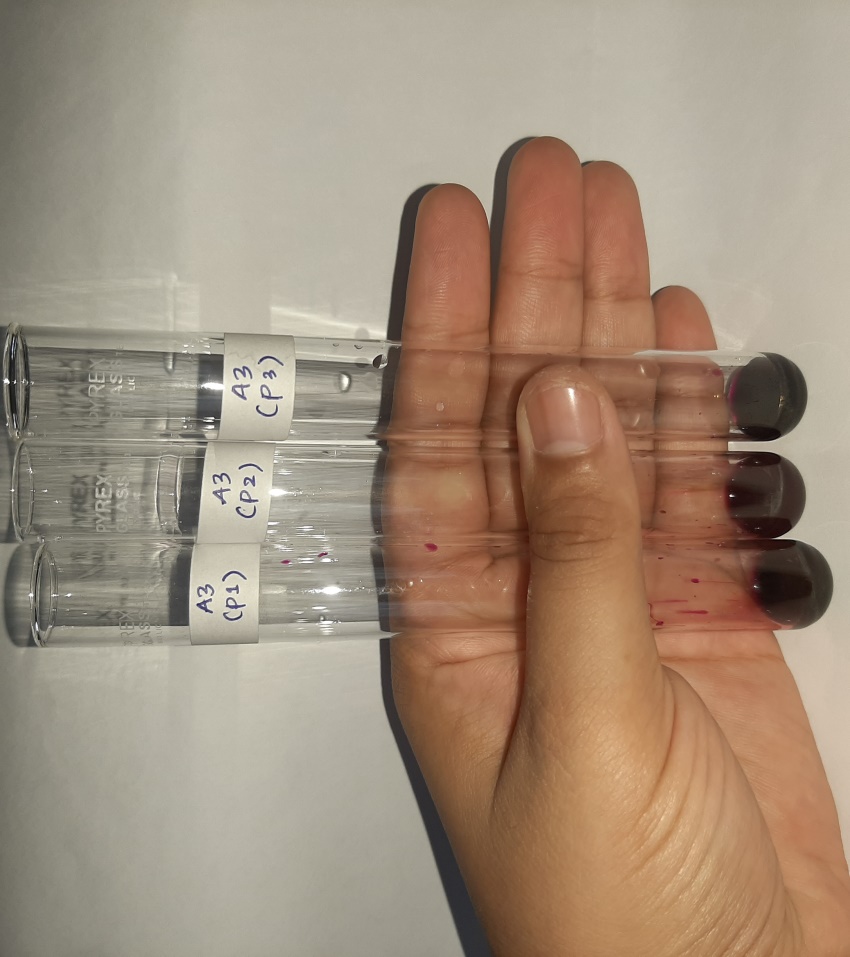
Sampel A2 + KMnO4 = (-)

1. Sampel A3

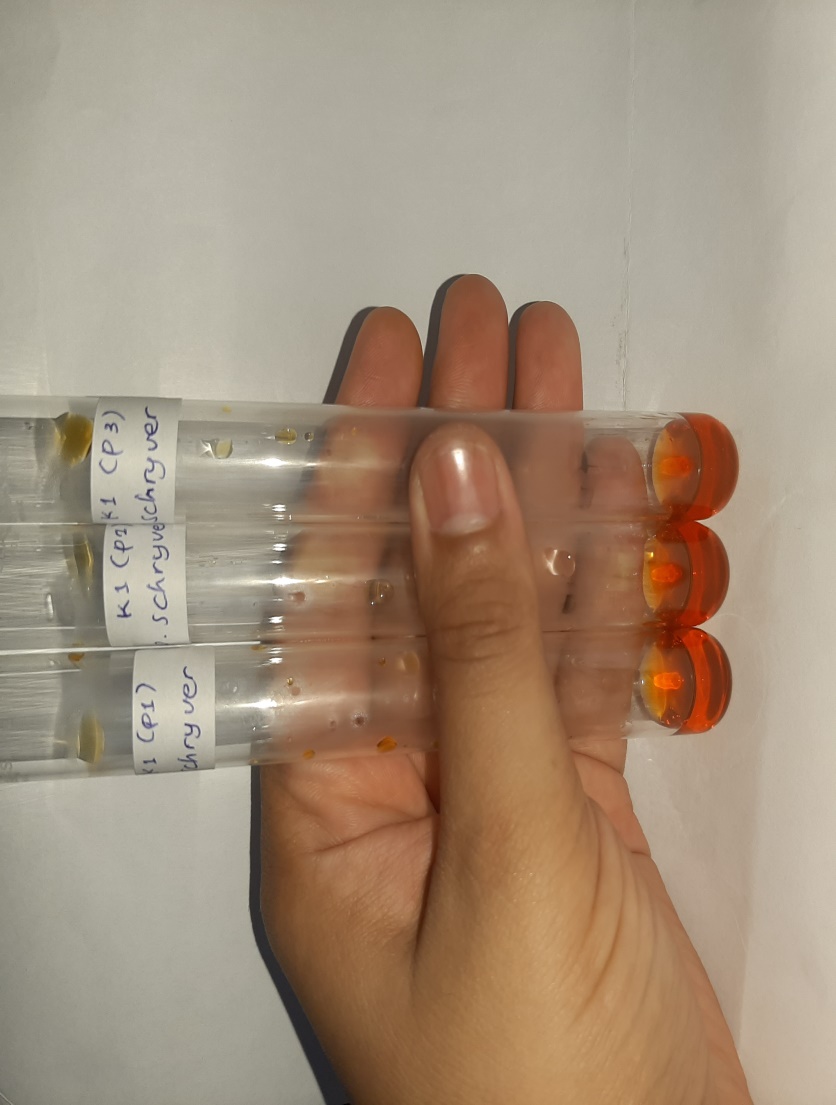
Sampel A3 + P. Schiff = (-)

Sampel A3 + P. Schiff = (-)



Sampel A3 + KMnO4 = (-)

1. Sampel K1

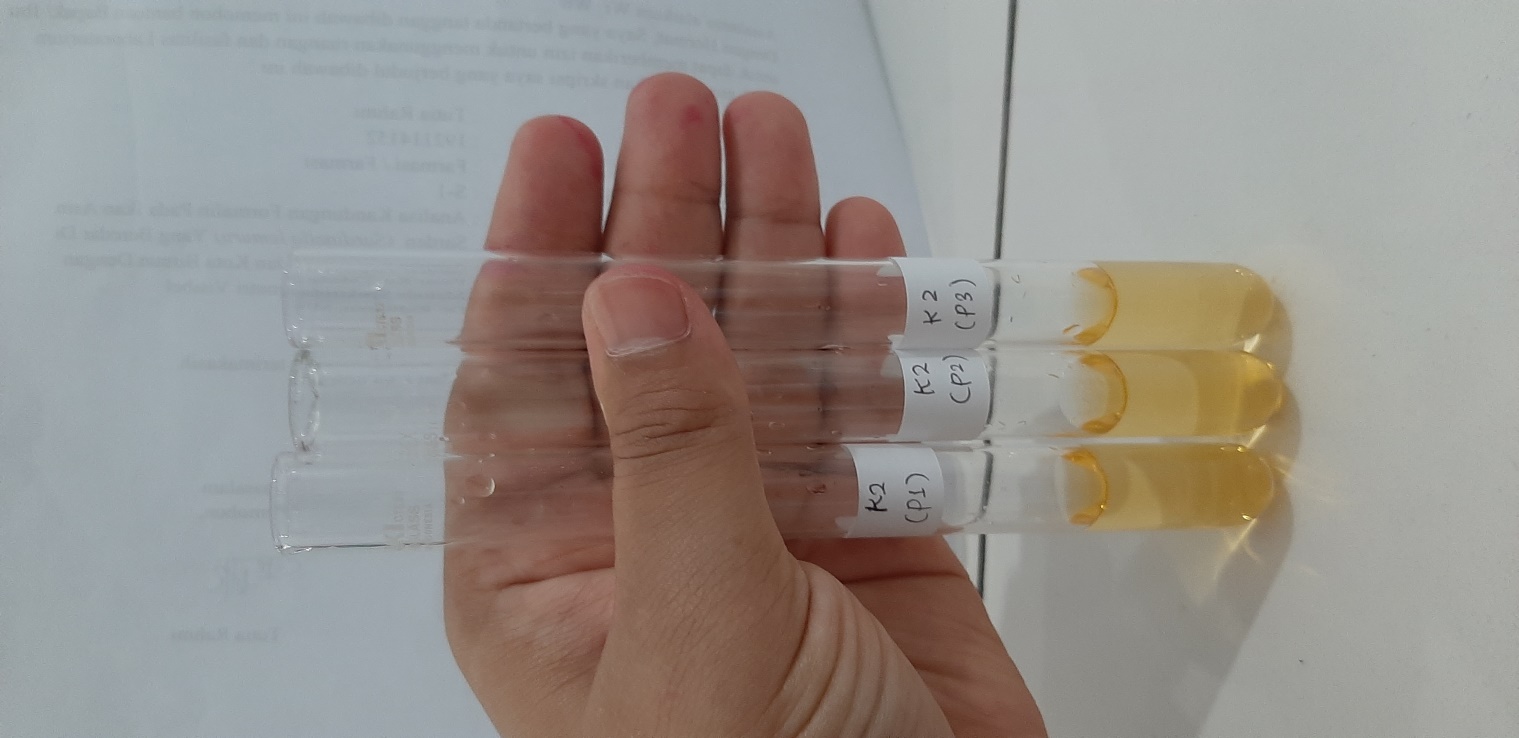
Sampel K1 + P. Schiff = (+)

Sampel K1 + P. Schryver = (+)



Sampel K1 + KMnO4 = (+)

1. Sampel K2

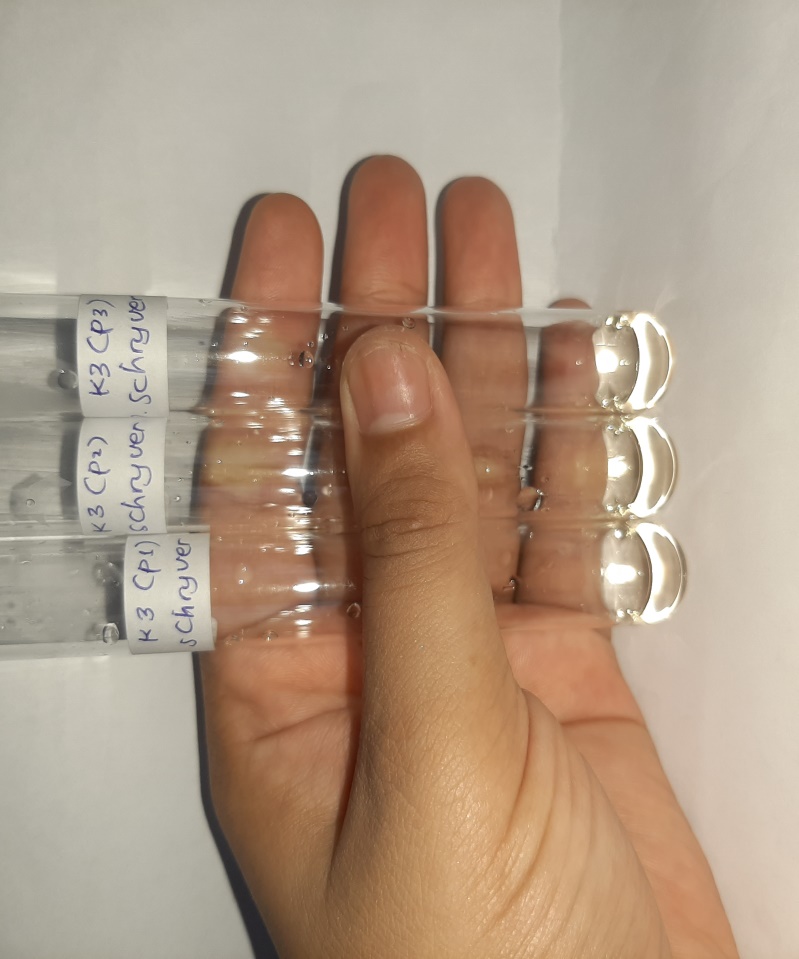
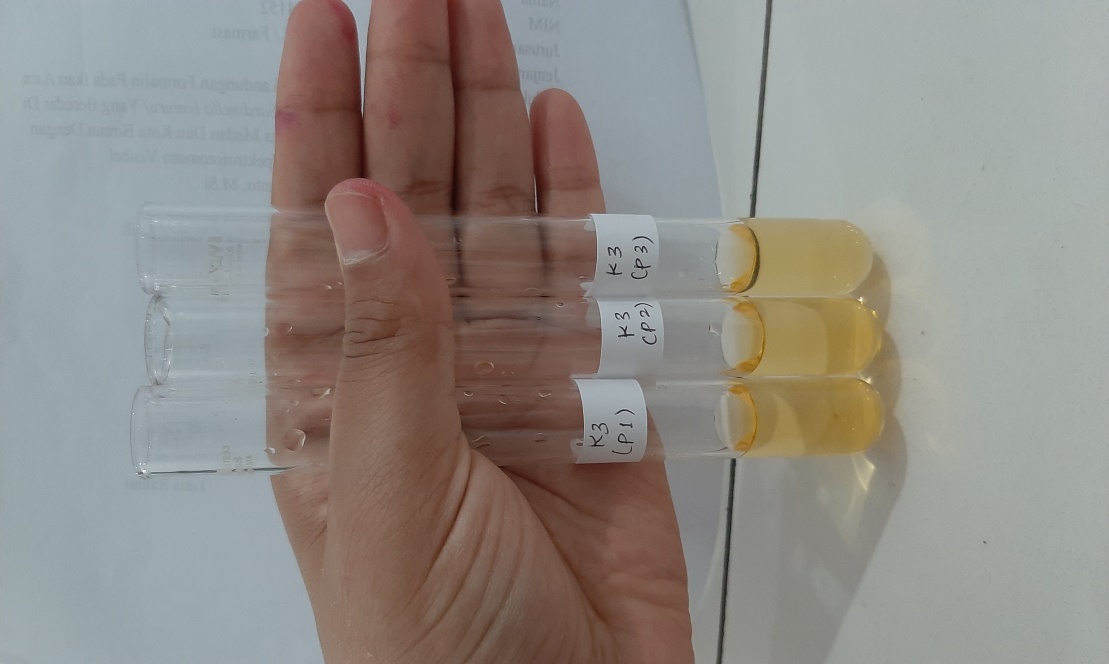
Sampel K2 + P. Schiff = (-)

Sampel K2 + P. Schryver = (-)



Sampel K2 + KMnO4 = (-)

1. Sampel K3

Sampel K3 + P. Schiff = (-)

Sampel K3 + P. Schryver = (-)

Sampel K3 + KMnO4 = (-)



**Lampiran 4**. Pembakuan Baku Pembanding



Pembakuan formalin

**Lampiran 5.** Penetapan Kadar Formalin Dengan Menggunakan

Spektrofotometri Visibel



Larutan induk baku I (LIB I), larutan induk baku II (LIB II), panjang gelombang maksimum (λ) dan blanko



Penentuan linearitas kurva kalibrasi



Penetapan kadar pada sampel K1

**Lampiran 6**. Bagan Alir Penelitian

Hasil

Diukur serapan pada panjang gelombang maksimum 554 nm

Dicukupkan dengan aquadest hingga garis tanda

Ditambahkan 5 ml peraksi Schiff

Dimasukkan kedalam labu tentukur 25 ml

Dipipet 5 ml destilat

Uji Kuantitatif

Pereaksi KMnO4

Pereaksi Schiff

Pereaksi Schryver

Uji Kualitatif

Destilat

Dikocok, dan didestilasi selama 30 menit

Ditambahkan 100 ml aquadest dan 1 ml asam fosfat 85%

Dimasukkan kedalam labu destilasi

Ditimbang 100 gram

Dihaluskan

Sampel Cumi Asin

**Lampiran 7.** Perhitungan Pembakuan NaOH 0,1 N

|  |  |  |
| --- | --- | --- |
| No | Berat K-Bifthalat (mg) | Volume NaOH (ml) |
| 1 | 300 | 1,6 |
| 2 | 300 | 1,5 |
| 3 | 300 | 1,5 |

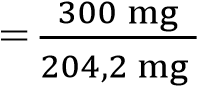
Normalitas larutan NaOH yang diperoleh dari rata – rata ketiga pembakuan adalah sebesar 0,959 N

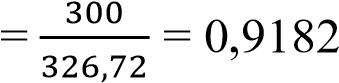
Normalitas NaOH =

Perhitungan :

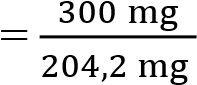
1. Mek NaOH = MeK Kalium Biftalat

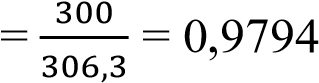
V x N 

1,6 x N 

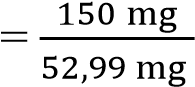
N 

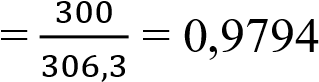
1. V x N 

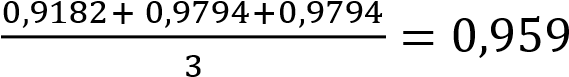
1,5 x N 

N 

1. V x N 

2,8 x N 

N 

N rata – rata = N

**Lampiran 8.** Perhitungan Pembakuan Asam Klorida 1 N

|  |  |  |
| --- | --- | --- |
| No | Berat Na2CO3 anhidrat (mg) | Volume HCl |
| 1 | 150 | 3,1 |
| 2 | 150 | 2,9 |
| 3 | 150 | 2,8 |

Normalitas larutan HCl yang diperoleh dari rata – rata ketiga pembakuan adalah sebesar 0,9667 N

Normalitas HCl =

Berat

natrium

karbonat

anhidrat

BE

natrium

karbonat

anhidrat

X

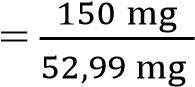
Volume

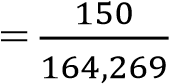
HCl

Perhitungan:

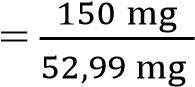
1. Mek HCl = MeK Natrium karbonat anhidrat

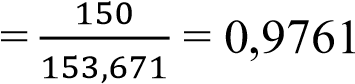
V x N 

3,1 x N 

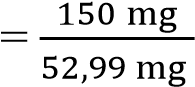
N = 0,9131

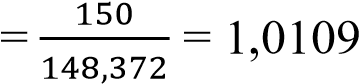
1. V x N 

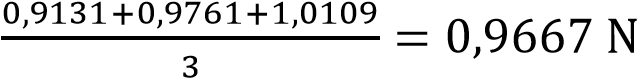
2,9 x N 

N 

1. V x N 

2,8 x N 

N 

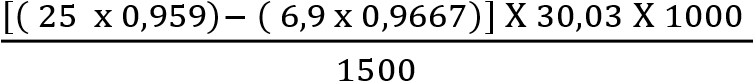
N rata – rata =

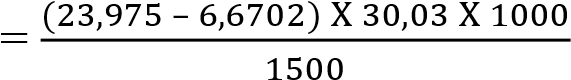
**Lampiran 9.** Perhitungan Pembakuan Larutan Formalin

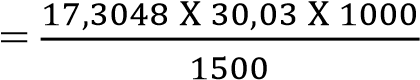
|  |  |  |  |
| --- | --- | --- | --- |
| Berat Formalin | Volume NaOH 0,959 N | Volume HCl  0,9667 N | Kadar  Formaldehid (%) |
| 1500 mg | 25 ml | 6,9 ml | 34,64% |
| 1500 mg | 25 ml | 6,7 ml | 35,03% |
| 1500 mg | 25 ml | 6,5 ml | 35,41% |

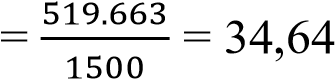
Kadar formalin yang diperoleh dari rata – rata ketiga kadar adalah sebesar ± 35,03%

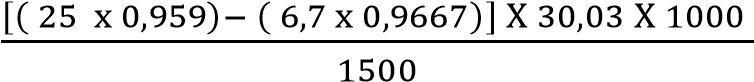
% Formaldehid =

1. % formaldehid = 

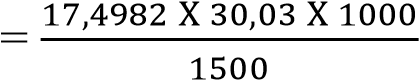


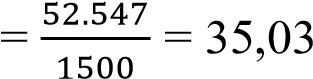


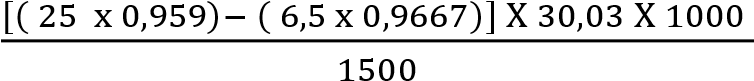


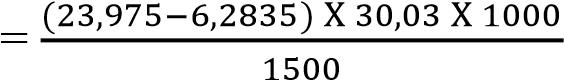
1. % formaldehid = 

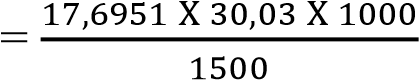


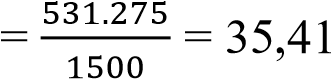




1. % formaldehid = 







**Lampiran 10.** Perhitungan Pembuatan Larutan Induk Formalin 1000 µg/ml

Kadar larutan formalin yang diperoleh yaitu 35,03 %

Formalin 35,03% = x 1000000 µg = 350.300 µg/ml

Untuk pembuatan formalin 1000 µg/ml :

*V1C1 = V2C2*

V1 x 350.300 µg/ml = 1000 ml x 1000 µg/ml

V1 =

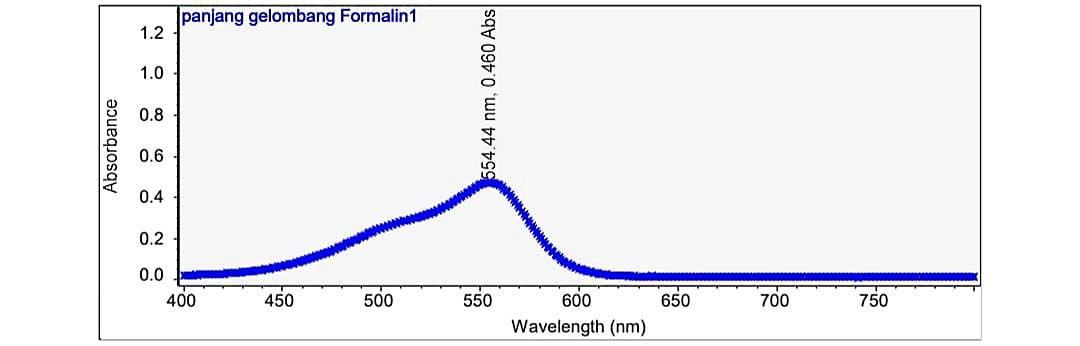
V1 = 2,85 ml

Berat formalin yang ditimbang = V1 x berat jenis formalin

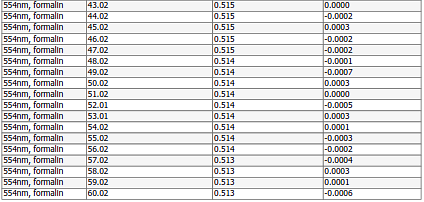
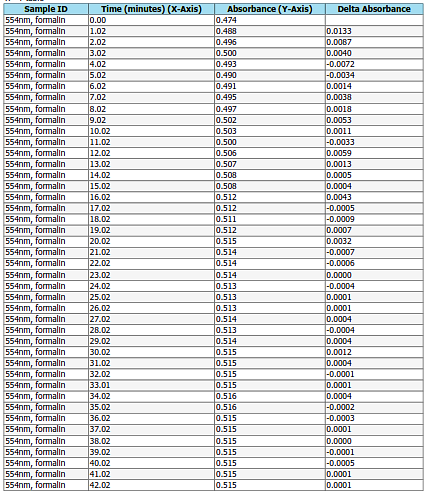
= 2,85 ml x 1,08 g/ml

= 3,078 g

**Lampiran 11.** Panjang Gelombang Maksimum Larutan Formalin Dengan Pereaksi Schiff

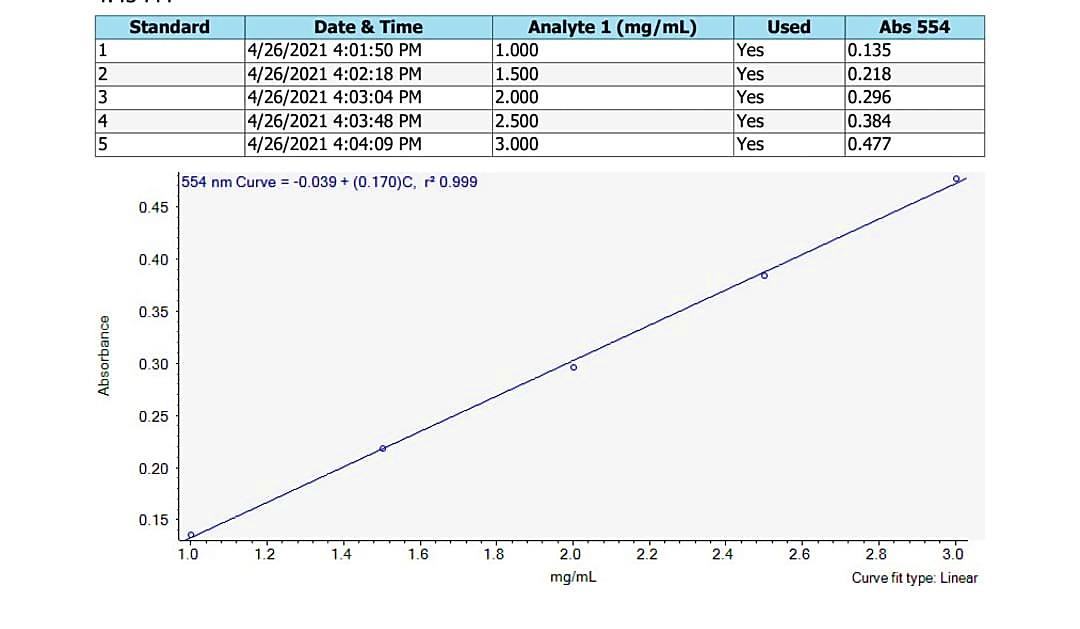


**Lampiran 12.** Data Pengukuran Waktu Kerja Reaksi Larutan Formalin Dengan Schiff

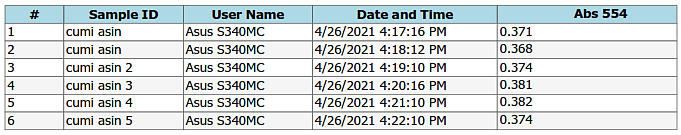
Keterangan:

*Operating time* larutan formalin dengan peraksi schiff diperoleh pada menit ke- 36 dan ke-47

**Lampiran 13.** Data Kurva Kalibrasi Reaksi Larutan Formalin Dengan Pereaksi Schiff

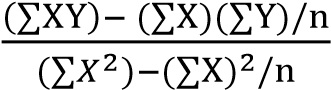


**Lampiran 14.** Data Hasil Penentuan Kadar Formalin Dalam Sampel



**Lampiran 15.** Perhitungan Persamaan Regresi

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | X | Y | XY | X2 | Y2 |
| 1 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 |
| 2 | 1,00 | 0,135 | 0,135 | 1 | 0,018225 |
| 3 | 1,50 | 0,218 | 0,327 | 2,25 | 0,047524 |
| 4 | 2,00 | 0,296 | 0,592 | 4 | 0,087616 |
| 5 | 2,50 | 0,384 | 0,96 | 6,25 | 0,147456 |
| 6 | 3,00 | 0,477 | 1,431 | 9 | 0,227529 |
| **n=6** | **∑X = 10**  **X rata-rata = 1,6667** | **∑Y = 1,51**  **Y rata-rata = 0,25166** | **∑XY=**  **3,445** | **∑X2= 22,5** | **∑Y2= 0,52835** |

=

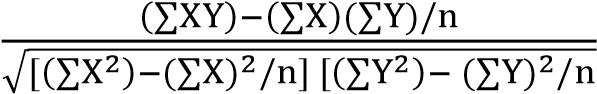
= 0,1591

= Y rata-rata– a Xrata-rata

= 0,25166 – (0,1591) (1,6667)

= 0,01344

Maka persamaan regresinya adalah ; =

= 

=

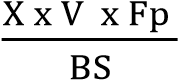
**Lampiran 16.** Contoh Perhitungan Kadar Formalin Dalam Sampel Cumi Asin K1

Berat sampel yang ditimbang = 100 gram

Serapan (y) = 0,371

Persamaan regresi : =

Konsentrasi (x): 0,371 =

Rumus Perhitungan Konsentrasi : = 

Keterangan:

K = Kadar formalin dalam sampel (µg/g)

X = Konsentrasi formalin

V = Volume sampel (ml)

Fp = Faktor Pengenceran

BS = Berat sampel

Kadar Formalin =

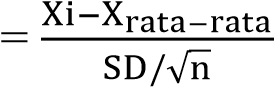
= 5,6182 µg/g

**Lampiran 17.** Analisa Data Statistik Untuk Menghitung Kadar Formalin Dalam Cumi Asin K1 Yang Diambil Dari Salah Satu Pasar di Kota Medan

|  |  |  |  |
| --- | --- | --- | --- |
| No | Xi | (Xi – X rata-rata) | (Xi – X rata-rata)2 |
| 1 | 5, 6182 | -0,0629 | 0,0039 |
| 2 | 5, 5712 | -0,1099 | 0,0120 |
| 3 | 5, 6655 | -0,0156 | 0,0002 |
| 4 | 5, 7755 | 0,0944 | 0,0089 |
| 5 | 5, 7912 | 0,1101 | 0,0121 |
| 6 | 5, 6655 | -0,0156 | 0,0002 |
| **n = 6** | **X rata-rata =**  **5,6811** |  | **∑ (Xi−X rata-rata)2=**  **0,0373** |

= 0,0863

Pada interval kepercayaan 99% dengan nilai α = 0,01, dk = 5, maka diperoleh nilai t tabel α/2 = 0,005, dk= 5 adalah 4,0321. Data diterima jika thitung< ttabel.

thitung 

thitung data 1 = 1,7869

thitung data 2 = 3,1221

thitung data 3 = 0,4431

thitung data 4 = 2,6818

thitung data 5 = 3,1278

thitung data 6 = 0,4431 (semua data diterima)

Kadar formalin = Xrata-rata ± (t α/2,dk X SD/ )

= 5,6811 ± (4,0321 × 0,0352)

= (5,6811 ± 0,1419 ) µg/g

Kadar formalin dalam ikan asin cumi-cumi sebenarnya terletak antara :

(5,5392 – 5,823) µg/g

**Lampiran 18.** Hasil Analisa Kadar Formalin Dalam Sampel Cumi Asin K1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Berat (gram) | FP | Absorbansi | Konsentrasi (µg/ml) | Kadar (µg/g) |
| 1 | 100 | 25/5 | 0,371 | 2,2473 | 5,6182 |
| 2 | 100 | 0,368 | 2,2285 | 5,5712 |
| 3 | 100 | 0,374 | 2,2662 | 5,6655 |
| 4 | 100 | 0,381 | 2,3102 | 5,7755 |
| 5 | 100 | 0,382 | 2,3165 | 5,7912 |
| 6 | 100 |  | 0,374 | 2,2662 | 5,6655 |

Kadar sebenarnya = (5,5392 – 5,823) µg/g

**Lampiran 19.** Perhitungan Batas Deteksi (LOD) dan Batas Quantitasi (LOQ)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Konsentrasi (X) | Absorbansi (Y) | Yi | Y-Yi | (Y-Yi)2 |
| 1 | 0,00 | 0,000 | 0,134 | -0,0134 | 0,0001 |
| 2 | 1,00 | 0,135 | 0,1725 | -0,0375 | 0,0014 |
| 3 | 1,50 | 0,218 | 0,2520 | -0,034 | 0,0011 |
| 4 | 2,00 | 0,296 | 0,3316 | -0,0356 | 0,0012 |
| 5 | 2,50 | 0,384 | 0,4111 | -0,0271 | 0,0007 |
| 6 | 3,00 | 0,477 | 0,4907 | -0,0137 | 0,0001 |
| **n=6** |  |  |  |  | **∑=0,0046** |

SD =

=

= 0,0303

Batas Deteksi =

=

= 0,5713 µg/ml

Batas Kuantitas =

=

= 1,9044 µg/ml

**Lampiran 20.** Tabel Distribusi t

