

LAMPIRAN

Lampiran 1. Perhitungan

Pembuatan larutan kerja

- Pembuatan larutan natrium hidroksida (NaOH) 1 N

Larutkan 10 g NaOH ke dalam 250 ml air bebas mineral dalam gelas piala. Simpan dalam botol plastik.

$$\begin{aligned}M &= \frac{Massa}{Mr} \times \frac{1000}{V} \\ &= \frac{10}{40} \times \frac{1000}{250} \\ &= 1 \text{ N}\end{aligned}$$

- Pembuatan larutan asam sulfat (H₂SO₄) 0,2 N.

Larutkan 1,38 ml H₂SO₄ pekat p.a (36 N) ke dalam 250 ml air bebas mineral dalam gelas piala.

$$N_1 \times V_1 = N_2 \times V_2$$

$$36 \times V_1 = 0,2 \times 250$$

$$= 1,38 \text{ ml}$$

- Dilarutkan ± 141,4 mg K₂Cr₂O₇ kering oven dengan air bebas mineral dalam labu ukur 100,0 mL

$$Mr \text{ K}_2\text{Cr}_2\text{O}_7 = 294,184 \text{ g/mol}$$

$$Mr \text{ Cr} = 51,996 \text{ g/mol}$$

$$500 \text{ ppm} = \frac{500 \text{ mg}}{1000 \text{ ml}} = 0,5$$

$$\text{Massa K}_2\text{Cr}_2\text{O}_7 = \frac{294,184 \text{ g/mol}}{51,996 \text{ g/mol} \times 2} \times 0,5 = 1,414 \text{ gram} = 141,4 \text{ mg}$$

- Memipet 10,0 mL larutan induk krom heksavalen 500 mg (Cr-VI)/L, masukkan ke dalam labu ukur 100,0 mL

$$V_1 \times C_1 = V_2 \times C_2$$

$$V_1 \times 500 = 100 \times 10$$

$$V_1 = 50 \text{ mg(Cr-VI)/L}$$

- Memipet 10,0 ml larutan induk krom heksavalen 50 mg (Cr-VI)/L, masukkan ke dalam labu ukur 100,0 ml

$$V_1 \times C_1 = V_2 \times C_2$$

$$V_1 \times 50 = 100 \times 10$$

$$V_1 = 5 \text{ mg(Cr-VI)/L}$$

Pembuatan larutan standar

- 0,2 ppm
 $V_1 \times C_1 = V_2 \times C_2$
 $V_1 \times 5 = 0,2 \times 100$
 $V_1 = 4 \text{ ml}$
- 0,4 ppm
 $V_1 \times C_1 = V_2 \times C_2$
 $V_1 \times 5 = 0,4 \times 100$
 $V_1 = 8 \text{ ml}$
- 0,6 ppm
 $V_1 \times C_1 = V_2 \times C_2$
 $V_1 \times 5 = 0,6 \times 100$
 $V_1 = 12 \text{ ml}$
- 0,8 ppm
 $V_1 \times C_1 = V_2 \times C_2$
 $V_1 \times 5 = 0,8 \times 100$
 $V_1 = 16 \text{ ml}$
- 1 ppm
 $V_1 \times C_1 = V_2 \times C_2$
 $V_1 \times 5 = 1 \times 100$
 $V_1 = 20 \text{ ml}$

Absorbansi larutan standar

| Konsentrasi | absorbansi |
|-------------|------------|
| 0.2 | 0.084 |
| 0.4 | 0.167 |
| 0.6 | 0.255 |
| 0.8 | 0.337 |
| 1 | 0.423 |

Kadar krom Heksavalen

- ❖ Sampel 1 Simplo

$$\begin{aligned}\text{Cr-VI(mg/L)} &= C \times \frac{102}{V} \text{ fp} \\ &= 0,016 \times \frac{102}{102} \cdot 1 \\ &= 0,016 \text{ mg/L}\end{aligned}$$

❖ Sampel 1 Duplo

$$\begin{aligned}\text{Cr-VI(mg/L)} &= C \times \frac{102}{V} \text{ fp} \\ &= 0,016 \times \frac{102}{102} \cdot 1 \\ &= 0,016 \text{ mg/L}\end{aligned}$$

Jadi rata-rata dari sampel 1 sebesar 0,016 mg/L

❖ Sampel 2 Simplo

$$\begin{aligned}\text{Cr-VI(mg/L)} &= C \times \frac{102}{V} \text{ fp} \\ &= 0,011 \times \frac{102}{102} \cdot 1 \\ &= 0,011 \text{ mg/L}\end{aligned}$$

❖ Sampel 2 Duplo

$$\begin{aligned}\text{Cr-VI(mg/L)} &= C \times \frac{102}{V} \text{ fp} \\ &= 0,045 \times \frac{102}{102} \cdot 1 \\ &= 0,045 \text{ mg/L}\end{aligned}$$

Jadi rata-rata dari sampel 2 sebesar 0,045 mg/L

❖ Sampel 3 Simplo

$$\begin{aligned}\text{Cr-VI(mg/L)} &= C \times \frac{102}{V} \text{ fp} \\ &= 0,031 \times \frac{102}{102} \cdot 1 \\ &= 0,031 \text{ mg/L}\end{aligned}$$

❖ Sampel 3 Duplo

$$\begin{aligned}
 \text{Cr-VI(mg/L)} &= C \times \frac{102}{V} \text{ fp} \\
 &= 0,031 \times \frac{102}{102} \text{ 1} \\
 &= 0,031 \text{ mg/L}
 \end{aligned}$$

Jadi rata-rata dari sampel 3 sebesar 0,031 mg/L

❖ Sampel 4 Simplo

$$\begin{aligned}
 \text{Cr-VI(mg/L)} &= C \times \frac{102}{V} \text{ fp} \\
 &= 0,046 \times \frac{102}{102} \text{ 1} \\
 &= 0,046 \text{ mg/L}
 \end{aligned}$$

❖ Sampel 4 Duplo

$$\begin{aligned}
 \text{Cr-VI(mg/L)} &= C \times \frac{102}{V} \text{ fp} \\
 &= 0,046 \times \frac{102}{102} \text{ 1} \\
 &= 0,046 \text{ mg/L}
 \end{aligned}$$

Jadi rata-rata dari sampel 4 sebesar 0,046 mg/L

%RPD

❖ Sampel 1

$$\begin{aligned}
 \text{RPD} &= \frac{\text{hasil pengukuran} - \text{duplikat pengukuran}}{(\text{hasil pengukuran} + \text{duplikat pengukuran})/2} \times 100\% \\
 \text{RPD} &= \frac{0,016 - 0,016}{(0,016 + 0,016)/2} \times 100\% \\
 &= 0\%
 \end{aligned}$$

❖ Sampel 2

$$\begin{aligned}
 \text{RPD} &= \frac{\text{hasil pengukuran} - \text{duplikat pengukuran}}{(\text{hasil pengukuran} + \text{duplikat pengukuran})/2} \times 100\% \\
 \text{RPD} &= \frac{0,045 - 0,045}{(0,045 + 0,045)/2} \times 100\% \\
 &= 0\%
 \end{aligned}$$

❖ Sampel 3

$$\text{RPD} = \frac{\text{hasil pengukuran} - \text{duplikat pengukuran}}{(\text{hasil pengukuran} + \text{duplikat pengukuran})/2} \times 100\%$$

$$RPD = \frac{0,031-0,031}{(0,031+0,031)/2} \times 100\%$$

$$= 0\%$$

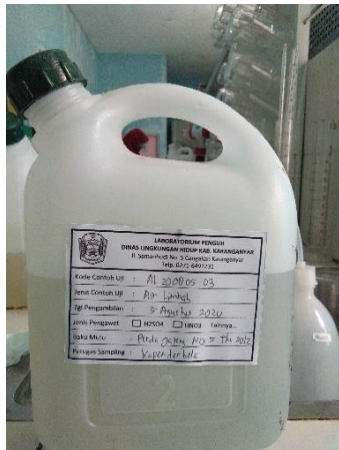
❖ Sampel 4

$$RPD = \frac{\text{hasil pengukuran}-\text{duplikat pengukuran}}{(\text{hasil pengukuran}+\text{duplikat pengukuran})/2} \times 100\%$$

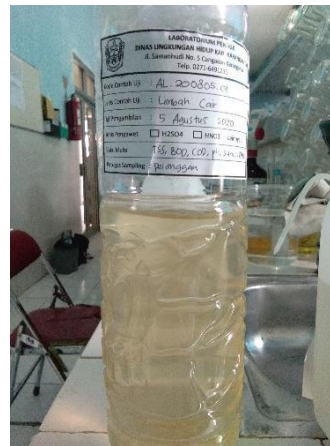
$$RPD = \frac{0,046-0,046}{(0,046+0,046)/2} \times 100\%$$

$$= 0\%$$

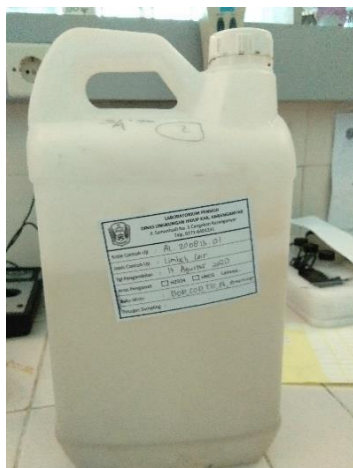
Lampiran 2. Dokumentasi



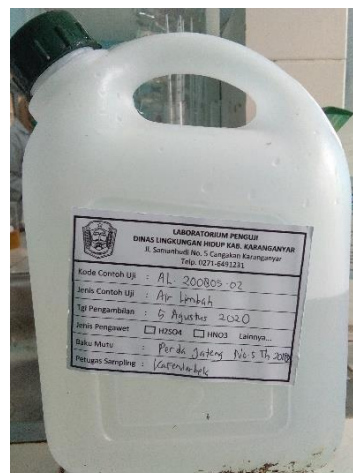
Sampel air limbah 1



Sampel air limbah 2



Sampel air limbah 3



Sampel air limbah 4



pembuatan larutan standar dan sampel.



Spektrofotometer UV-Vis (Shimadzu 2600)



Penentuan koefisien korelasi regresi linier dan kadar krom heksavalen dengan spektrofotometri Uv-Vis.



Perhitungan kadar krom heksavalen dan %RPD