# L A M P I R A N

**Lampiran 1.** ***Certificate of Analysis*** **(CoA)**

Lipoid

PHOSPHOLIPID GmbH · Member of the Lipoid Group

**ANALYTICAL DATA**

AN3025519/4

- 1 -

PHOSPHOLIPON 90 G

**Batch** 228154-3200080

**Recommended storage** n.m.t. +8 °C
**Date of production** 07/2020

**Sample for laboratory use only**

| Parameter | Result | Specification min | max | Unit | Method |
|---|---|---|---|---|---|
| Phosphatidylcholine | 96,0 | 94,0 | 102,0 | % (m/m) | 05.P07.857 |
| Identity (TLC) | conform to reference | conform to reference | | | 05.P08.309 |
| Lysophosphatidylcholine | 2,0 | | 4,0 | % (m/m) | 05.P07.857 |
| Nonpolar lipids | 0,7 | | 3,0 | % (m/m) | 05.P03.008 |
| Tocopherol | 0,24 | | 0,30 | % (m/m) | 05.P07.142 |
| Acid value | 0,3 | | 0,5 | | 05.P03.002 |
| Peroxide value | 1,3 | | 5,0 | | 05.P06.120 |
| Water | 0,4 | | 1,5 | % (m/m) | 05.P10.013 |
| Toluene insolubles | 0,02 | | 0,05 | % (m/m) | 05.P06.001 |
| Ethanol | 0,1 | | 0,2 | % (m/m) | 05.P05.049 |
| Appearance | yellowish, waxy | yellowish, waxy | | | 05.P06.155 |

Köln, September 7, 2020

Dr. Stefan Hilken
Deputy Head of Quality Control

PHOSPHOLIPID GmbH · Nattermannallee 1 · D-50829 Köln · Tel. 0221-98746-0 · Fax 0221-98746-216

Lubrizol

LUBRIZOL ADVANCED MATERIALS, INC.
9911 BRECKSVILLE ROAD
BRECKSVILLE, OH 44141
USA

# CERTIFICATE OF ANALYSIS

| Customer PO No | Ship Date | Page |
|---|---|---|
| | OCT 22, 2019 | 1 / 1 |
| **Ship To PO No** | **Delivery No.** | **Sales Order No** |
| | 40061528 | 4300037815 |

**Material:** CARBOPOL® 934 POLYMER, BOX
**Batch:** 0102379223
**Quantity:** 1 CAR
**Country of Origin:** US

RECIPIENT
LUBRIZOL ADVANCED MATERIALS INC
C/O CHEM MARKETING-NEW MILFORD
200 PICKETT DISTRICT ROAD
NEW MILFORD CT 06776-4416
USA

**Trans Equipment ID** N/A

**Comp./Seal No.** N/A

SOLD TO
LUBRIZOL ADVANCED MATERIALS INC
9911 BRECKSVILLE RD
CLEVELAND OH 44141
USA

SHIP TO
LUBRIZOL ADVANCED MATERIALS INC
C/O CHEM MARKETING-NEW MILFORD
200 PICKETT DISTRICT ROAD
NEW MILFORD CT 06776-4416
USA

| Characteristics | Product Specifications | | | | |
|---|---|---|---|---|---|
| | UoM | Minimum | Typical | Maximum | Result |
| BROOKFIELD VIS, 0.2% MUCILAGE @ 25 C | cP | 2050 | | 5450 | 3310 |
| BROOKFIELD VIS, 0.5% MUCILAGE @ 25 C | cP | 30500 | | 39400 | 35350 |
| PPM BENZENE | ppm | | | 999 | 29 |
| LOSS ON DRYING | % | | | 2.00 | 0.34 |
| HM AS (PB,AS,HG,SB) 10 PPM MAX | | | | | Pass |
| MANUFACTURING DATE | | | | | 06/22/2019 |
| RECOMMENDED RETEST DATE | | | | | 06/21/2021 |
| MANUFACTURING LOCATION | | | | | CALVERT CITY, KY, US |

Where actual values for Loss on Drying (Once/10 lots) and Heavy Metals (Once/200 lots) are not given, Lubrizol Advanced Materials, Inc. certifies that each batch/lot meets requirements for the characteristics based on historical process and product data. Because these characteristics are tested on a skip-lot test frequency as indicated on the product specification, results are not reported on the Certificate of Analysis.

We guarantee that the above analytical results are in conformity with the agreed upon specifications.

**Approved by:** Quality Assurance

# PT. SMART-LAB INDONESIA

MANUFACTURER OF ANALYTICAL REAGENTS

## CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| Product Name | : Methanol | Molecular Weight | : 32.04 g/mol |
| Catalog No. | : A-1056 | Batch No. | : 110220001 |
| Grade | : Analytical Reagent | Manufacturing Date | : February 11, 2020 |
| Formula | : $CH_3OH$ | Expire Date | : February, 2023 |
| Cas No | : 67-56-1 | Recommended for a plastic container for 24 month from the date of pouring (Expiry date corresponding to label ) | |

| NO. | ITEM TEST | UNITS | SPECIFICATION | RESULT |
|---|---|---|---|---|
| 1. | Appearance | _ | Clear colorless liquid | Clear colorless liquid |
| 2. | Assay (GC) | wt % | min 99.8 | 99.985 |
| 3. | Wt. Per ml at 20 $^0$C | g/cm$^3$ | 0.789 – 0.792 | 0.792 |
| 4. | Colour | Hazen | max 10 | < 10 |
| 5. | Refractive Index | $n^{20}_D$ | 1.327 – 1.330 | 1.328 |
| 6. | Water ($H_2O$) | wt % | max 0.1 | 0.0672 |
| 7. | Non-volatile matter | wt % | max 0.001 | 0.0008 |
| 8. | Acidity (as HCOOH) | wt % | max 0.001 | 0.00080 |
| 9. | Alkalinity ($NH_3$) | wt % | max 0.0002 | 0.00014 |
| 10. | Ethanol (GC) | wt % | max 0.1 | 0.00080 |
| 11. | Acetone (GC) | wt % | max 0.001 | NIL |
| 12. | Acetaldehyde | wt % | max 0.001 | < 0.001 |
| 13. | Formaldehyde | wt % | max 0.001 | < 0.001 |
| 14. | Solubility in water | _ | passes test | Passes test |
| 15. | Substances darkened ( by $H_2SO_4$) | _ | passes test | Passes test |
| 16. | Substances Reducing $KMnO_4$ | _ | passes tes | Passes test |

Result : The above product corresponds to AR Grade

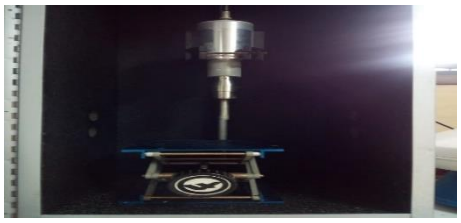
*Reference or standard of product specification to Analar standard and ACS specification*

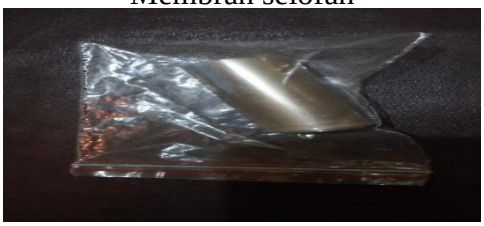
PT. SMART LAB INDONESIA

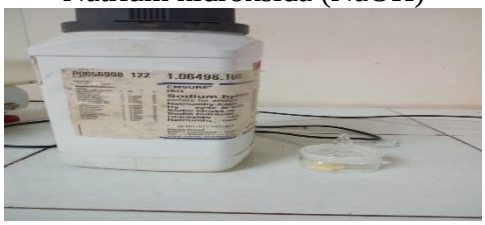
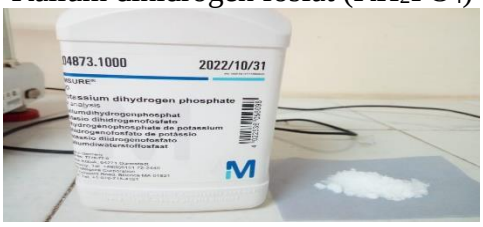
SUDIRO S.Si.
Head QC

Ruko Boulevard Taman Tekno Blok E No.10 -11 BSD Sektor XI Serpong, Tangerang - Indonesia
Telp : (62-21) 7588 0205, Fax : (62-21) 7588 0198 Website: www.smartlab.co.id Email : smart-lab@cbn.net.id

**Lampiran 2. Gambar alat dan bahan penelitian**

<table>
<tr><td colspan="2">Alat</td></tr>
<tr><td>Spektrofotometer UV-Vis<br>  </td><td>Neraca analitik<br>  </td></tr>
<tr><td>Rotary evaporator<br>  </td><td>Sonikator<br>  </td></tr>
<tr><td>Sentrifuge<br>  </td><td>Particle Size Analyzer<br>  </td></tr>
<tr><td>Homogenizer<br>  </td><td>Kaca Arloji<br>  </td></tr>
<tr><td>Alat uji daya sebar<br>  </td><td>Alat uji daya lekat<br>  </td></tr>
<tr><td>pH meter<br>  </td><td>Difusi Franz Horizontal<br>  </td></tr>
</table>

| | |
|---|---|
| Membran selofan | Botol timbang |
|  |  |

| Bahan | |
|---|---|
| Naringenin | Natrium hidroksida (NaOH) |
|  |  |
| Kalium dihidrogen fosfat ($KH_2PO_4$) | Phospholipon 90G |
|  |  |
| Tween 80 | Metanol |
|  |  |
| Kloroform | Karbopol-934 |
|  |  |
| Propilenglikol | Trietanolamin |
|  |  |

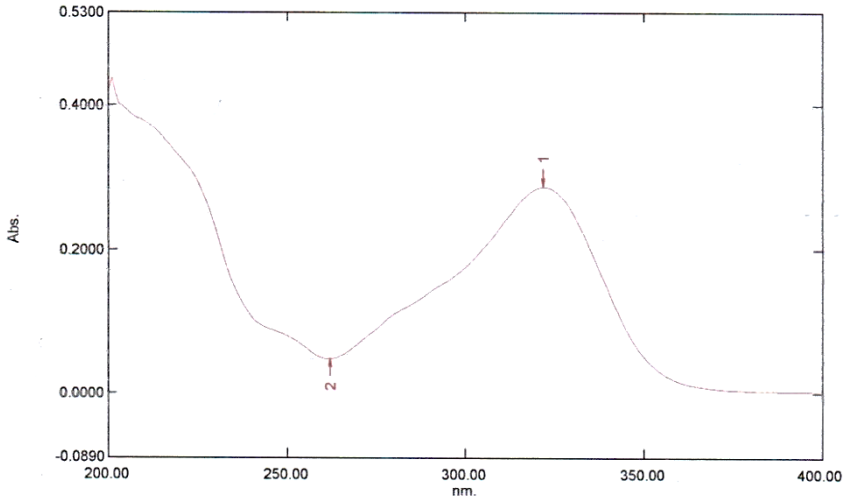
Aquadestillata

**Lampiran 3. *Scanning* panjang gelombang dan *operating time***

## Spectrum Peak Pick Report

01/18/2021 11:17:45 AM

Data Set: naringenin juniar - RawData




| No. | P/V | Wavelength | Abs. | Description |
|---|---|---|---|---|
| 1 | ↑ | 322.00 | 0.2872 | |
| 2 | ↓ | 262.00 | 0.0474 | |

[Measurement Properties]
Wavelength Range (nm.): 200.00 to 400.00
Scan Speed: Fast
Sampling Interval: 1.0
Auto Sampling Interval: Disabled
Scan Mode: Single

[Instrument Properties]
Instrument Type: UV-1800 Series
Measuring Mode: Absorbance
Slit Width: 1.0 nm
Light Source Change Wavelength: 340.0 nm
S/R Exchange: Normal

[Attachment Properties]
Attachment: None

[Operation]
Threshold: 0.0010000
Points: 4
InterPolate: Disabled
Average: Disabled

[Sample Preparation Properties]
Weight:
Volume:
Dilution:
Path Length:
Additional Information:

# Kinetics Data Print Report

02/08/2021 12:00:26 PM

| Time ( Minute ) | RawData ... |
|---|---|
| 0.000 | 0.662 |
| 1.000 | 0.663 |
| 2.000 | 0.661 |
| 3.000 | 0.662 |
| 4.000 | 0.665 |
| 5.000 | 0.666 |
| 6.000 | 0.666 |
| 7.000 | 0.663 |
| 8.000 | 0.663 |
| 9.000 | 0.663 |
| 10.000 | 0.664 |
| 11.000 | 0.663 |
| 12.000 | 0.664 |
| 13.000 | 0.665 |
| 14.000 | 0.667 |
| 15.000 | 0.669 |
| 16.000 | 0.669 |
| 17.000 | 0.670 |
| 18.000 | 0.670 |
| 19.000 | 0.671 |
| 20.000 | 0.671 |
| 21.000 | 0.671 |
| 22.000 | 0.671 |
| 23.000 | 0.672 |
| 24.000 | 0.672 |
| 25.000 | 0.672 |
| 26.000 | 0.672 |
| 27.000 | 0.673 |
| 28.000 | 0.673 |
| 29.000 | 0.674 |
| 30.000 | 0.674 |

**Lampiran 4. Validasi metode analisis**

1. Pembuatan dapar fosfat pH 7,4 (Depkes RI, 1979)
   a. $KH_2PO_4$0,2 M

   $$M = \frac{g}{Mr}\ x \frac{1000}{V}$$

   $$0{,}2 = \frac{g}{136{,}08}\ x \frac{1000}{250}$$

   $$g = \frac{34020\ x\ 0{,}2}{1000}$$

   $$g = 6{,}804\ g$$

   Ditimbang 6,804 g $KH_2PO_4$dan dilarutkan dalam 250 ml aquadestillata
   b. NaOH 0,2 N

   $$N = \frac{g}{BE\ x\ V}$$

   $$0{,}2 = \frac{g}{40\ x\ 0{,}25}$$

   $$g = 2\ g$$

   Ditimbang 2 g NaOH, dilarutkan dalam 250 ml aquadest kemudian diambil 196 ml
2. Penimbangan naringenin

   Kertas + zat = 0,3386 g
   Kertas + sisa = 0,2887 g
   _____ -
   Berat zat = 0,0499 g
3. Perhitungan
   a. Konsentrasi naringenin

   $C = \frac{49{,}9\ mg}{0{,}1\ L}$ = 499 ppm

   b. Pengenceran larutan induk
      1) 100 ppm
         C1.V1 = C2.V2
         499 ppm. V1 = 100 ppm. 100 ml
         V1 = 20,04 ml ~ 20 ml
      2) 10 ppm
         C1.V1 = C2.V2
         100 ppm. V1 = 10 ppm. 100 ml
         V1 = 10 ml

c. Perhitungan untuk kurva baku

1) 12 ppm
   C1.V1 = C2.V2
   100 ppm. V1 = 12 ppm. 25 ml
   V1 = 3 ml
2) 16 ppm
   C1.V1 = C2.V2
   100 ppm. V1 = 16 ppm. 25 ml
   V1 = 4 ml
3) 20 ppm
   C1.V1 = C2.V2
   100 ppm. V1 = 20 ppm. 25 ml
   V1 = 5 ml
4) 24 ppm
   C1.V1 = C2.V2
   100 ppm. V1 = 24 ppm. 25 ml
   V1 = 6 ml
5) 28 ppm
   C1.V1 = C2.V2
   100 ppm. V1 = 28 ppm. 25 ml
   V1 = 7 ml
6) 32 ppm
   C1.V1 = C2.V2
   100 ppm. V1 = 32 ppm. 25 ml
   V1 = 8 ml
7) 36 ppm
   C1.V1 = C2.V2
   100 ppm. V1 = 36 ppm. 25 ml
   V1 = 9 ml

d. Kurva baku

| Konsentrasi (x) | Serapan (y) |
|---|---|
| 12 | 0,24 |
| 16 | 0,329 |
| 20 | 0,419 |
| 24 | 0,518 |
| 28 | 0,606 |
| 32 | 0,675 |
| 36 | 0,762 |

4. Linearitas, LOD, dan LOQ

| Konsentrasi | Absorbansi | y' | y-y' | (y-y')^2 |
|---|---|---|---|---|
| 12 | 0,24 | 0,245035714 | -0,005035714 | 2,5E-05 |
| 16 | 0,329 | 0,332357143 | -0,003357143 | 1,1E-05 |
| 20 | 0,419 | 0,419678571 | -0,000678571 | 4,6E-07 |
| 24 | 0,518 | 0,507 | 0,011 | 0,00012 |
| 28 | 0,606 | 0,594321429 | 0,011678571 | 0,00014 |
| 32 | 0,675 | 0,681642857 | -0,006642857 | 4,4E-05 |
| 36 | 0,762 | 0,768964286 | -0,006964286 | 4,9E-05 |
| a | -0,016928571 | | | 0,00039 |
| b | 0,021830357 | | | 9,7E-05 |
| r | 0,999094661 | | Sy/x | 0,00984 |
| r square | 0,998190141 | | LOD | 1,48709 |
| Xrata-rata | 24 | | LOQ | 4,50635 |
| Vx0 | 1,88% | | | |

5. Akurasi

| AKURASI | | | | | | |
|---|---|---|---|---|---|---|
| LEVEL | Konsentrasi awal | Absorbansi | Konsentrasi sebenarnya | % | Rata-Rata | Rata-Rata |
| 80% | 16 | 0,334 | 16,08 | 100,47% | 100,57% | 99,90% |
| | 16 | 0,332 | 15,98 | 99,90% | | |
| | 16 | 0,337 | 16,21 | 10,33% | | |
| 100% | 20 | 0,413 | 19,69 | 98,47% | 99,00% | |
| | 20 | 0,418 | 19,92 | 99,62% | | |
| | 20 | 0,415 | 19,79 | 98,93% | | |
| 120% | 24 | 0,512 | 24,23 | 100,95% | 100,13% | |
| | 24 | 0,508 | 24,05 | 100,19% | | |
| | 24 | 0,503 | 23,82 | 99,24% | | |

6. Presisi

| PRESISI | | | |
|---|---|---|---|
| Replikasi | Konsentrasi | Serapan | Kadar |
| Replikasi 1 | 20 | 0,414 | 19,7398773 |
| Replikasi 2 | 20 | 0,411 | 19,60245399 |
| Replikasi 3 | 20 | 0,42 | 20,01472393 |
| Replikasi 4 | 20 | 0,418 | 19,92310838 |
| Replikasi 5 | 20 | 0,419 | 19,96891616 |
| Replikasi 6 | 20 | 0,42 | 20,01472393 |
| | | rata-rata | 19,87730061 |
| | | SD | 0,168930712 |
| | | rsd | 0,85% |

**Lampiran 5. Pembuatan naringenin transfersom**

1. Tahap pembuatan naringenin transfersom

| | | | | |
|---|---|---|---|---|
|  |  |  |  |  |
| Melarutkan bahan | Penguapan pelarut organik | Proses hidrasi | Proses sonikasi | Transfersom naringenin |

2. Ukuran dan distribusi ukuran partikel

| FORMULA | F I | F II | F III | F IV |
|---|---|---|---|---|
| UKURAN PARTIKEL ± SD | 306,4 ± 20,48 | 876,6 ± 108,3 | 115,6 ± 3,035 | 384,1 ± 136,7 |
| PdI ± SD | 0,694 ± 0,009 | 0,749 ± 0,066 | 0,274 ± 0,011 | 0,699 ±0,152 |

3. Efisiensi penjerapan

| FORMULA | REP | ABS | KADAR (µg/ml) | TD | %EP | RATA-RATA | SD |
|---|---|---|---|---|---|---|---|
| 1 (97.5 : 2.5) | 1 | 0,692 | 1625,92 | 20000 | 91,87 | 91,19 | 0,59 |
| | 2 | 0,773 | 1811,70 | 20000 | 90,94 | | |
| | 3 | 0,788 | 1846,10 | 20000 | 90,77 | | |
| 2 (90 : 10) | 1 | 0,274 | 1334,40 | 20000 | 93,33 | 92,27 | 1,13 |
| | 2 | 0,314 | 1517,89 | 20000 | 92,41 | | |
| | 3 | 0,372 | 1783,94 | 20000 | 91,08 | | |
| 3 (85 : 15) | 1 | 0,744 | 1745,18 | 20000 | 91,27 | 90,91 | 0,47 |
| | 2 | 0,762 | 1786,47 | 20000 | 91,07 | | |
| | 3 | 0,822 | 1924,08 | 20000 | 90,38 | | |
| 4 (80 : 20) | 1 | 0,451 | 4292,66 | 20000 | 78,54 | 78,31 | 0,48 |
| | 2 | 0,468 | 4448,62 | 20000 | 77,76 | | |
| | 3 | 0,449 | 4274,31 | 20000 | 78,63 | | |

Contoh perhitungan:

Kadar obat :

y = 0,0218x – 0,0169

0,744 + 0,0169 = 0,0218 x

X = 34,90 ppm . fp

X = 34,90 . 50

X = 1745,18 ppm

Efisiensi Penjerapan Rep I:

$$\%EP = \frac{TD-FD}{TD} \text{x } 100\%$$

$$\%EP = \frac{20000\ ppm - 1745{,}18\ ppm}{20000\ ppm} x\ 100\% = 91{,}27\%$$

**Lampiran 6. *Scanning* ukuran dan distribusi ukuran partikel**
Formula I

## Size Distribution Report by Intensity

*v2.2*

Malvern

**Sample Details**

**Sample Name:** F I average
**SOP Name:** mansettings.nano
**General Notes:** Average result created from record number(s): 1 2 3

| | | | |
|---|---|---|---|
| **File Name:** | Juniar_050221.dts | **Dispersant Name:** | Water |
| **Record Number:** | 15 | **Dispersant RI:** | 1.330 |
| **Material RI:** | 1.52 | **Viscosity (cP):** | 0.8872 |
| **Material Absorbtion:** | 0.100 | **Measurement Date and Time:** | Tuesday, February 9, 2021 3:... |

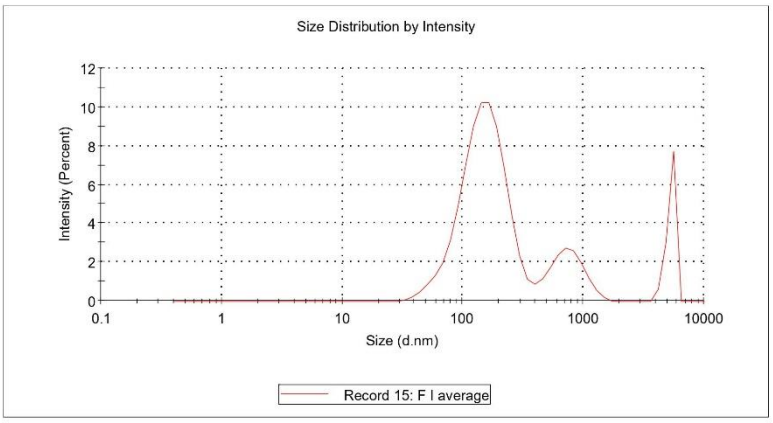
**System**

| | | | |
|---|---|---|---|
| **Temperature (°C):** | 24.9 | **Duration Used (s):** | 70 |
| **Count Rate (kcps):** | 210.6 | **Measurement Position (mm):** | 0.65 |
| **Cell Description:** | Disposable sizing cuvette | **Attenuator:** | 7 |

**Results**

| | | | Size (d.nm): | % Intensity: | St Dev (d.n... |
|---|---|---|---|---|---|
| **Z-Average (d.nm):** | 306.3 | **Peak 1:** | 158.3 | 73.4 | 67.27 |
| **PdI:** | 0.694 | **Peak 2:** | 751.6 | 15.3 | 236.5 |
| **Intercept:** | 0.813 | **Peak 3:** | 5280 | 11.2 | 430.2 |

**Result quality :** Refer to quality report



Formula II

## Size Distribution Report by Intensity

*v2.2*

Malvern

### Sample Details

**Sample Name:** F II average
**SOP Name:** mansettings.nano
**General Notes:** Average result created from record number(s): 4 5 6

| | | | |
|---|---|---|---|
| **File Name:** | Juniar_050221.dts | **Dispersant Name:** | Water |
| **Record Number:** | 16 | **Dispersant RI:** | 1.330 |
| **Material RI:** | 1.52 | **Viscosity (cP):** | 0.8872 |
| **Material Absorbtion:** | 0.100 | **Measurement Date and Time:** | Tuesday, February 9, 2021 3:... |

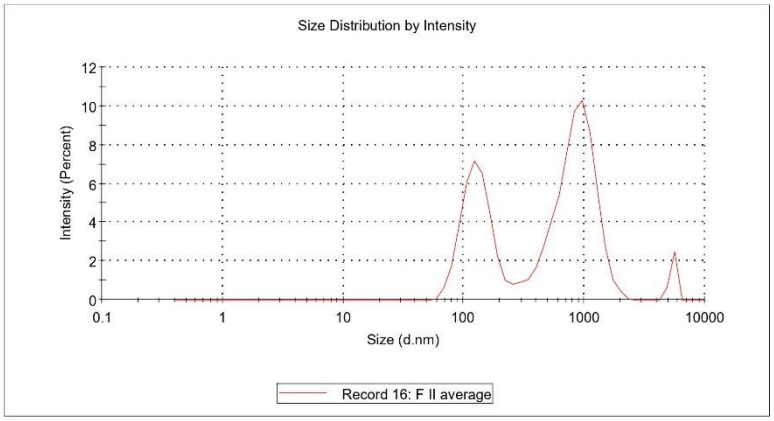
### System

| | | | |
|---|---|---|---|
| **Temperature (°C):** | 25.0 | **Duration Used (s):** | 60 |
| **Count Rate (kcps):** | 358.7 | **Measurement Position (mm):** | 1.05 |
| **Cell Description:** | Disposable sizing cuvette | **Attenuator:** | 7 |

### Results

| | | | Size (d.nm): | % Intensity: | St Dev (d.n... |
|---|---|---|---|---|---|
| **Z-Average (d.nm):** | 876.6 | **Peak 1:** | 877.1 | 62.4 | 329.7 |
| **PdI:** | 0.749 | **Peak 2:** | 132.2 | 34.5 | 38.99 |
| **Intercept:** | 0.838 | **Peak 3:** | 5400 | 3.1 | 309.0 |

**Result quality :** Refer to quality report



Formula III

## Size Distribution Report by Intensity

*v2.2*

Malvern

### Sample Details

**Sample Name:** F III average
**SOP Name:** mansettings.nano
**General Notes:** Average result created from record number(s): 7 8 9

| | | | |
|---|---|---|---|
| **File Name:** | Juniar_050221.dts | **Dispersant Name:** | Water |
| **Record Number:** | 13 | **Dispersant RI:** | 1.330 |
| **Material RI:** | 1.52 | **Viscosity (cP):** | 0.8872 |
| **Material Absorbtion:** | 0.100 | **Measurement Date and Time:** | Monday, February 8, 2021 9:... |

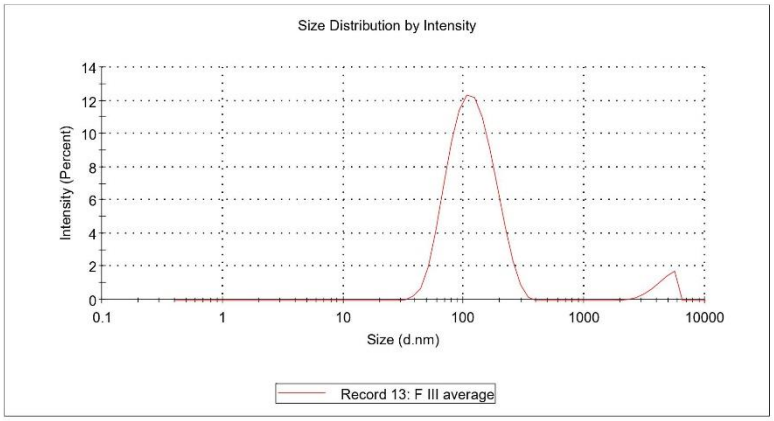
### System

| | | | |
|---|---|---|---|
| **Temperature (°C):** | 25.0 | **Duration Used (s):** | 60 |
| **Count Rate (kcps):** | 271.8 | **Measurement Position (mm):** | 1.05 |
| **Cell Description:** | Disposable sizing cuvette | **Attenuator:** | 7 |

### Results

| | | | Size (d.nm): | % Intensity: | St Dev (d.n... |
|---|---|---|---|---|---|
| **Z-Average (d.nm):** | 115.6 | **Peak 1:** | 123.9 | 94.4 | 52.32 |
| **PdI:** | 0.274 | **Peak 2:** | 4545 | 5.6 | 896.8 |
| **Intercept:** | 0.928 | **Peak 3:** | 0.000 | 0.0 | 0.000 |

**Result quality :** Good



Formula IV

## Size Distribution Report by Intensity

*v2.2*

Malvern

### Sample Details

**Sample Name:** F IV average
**SOP Name:** mansettings.nano
**General Notes:** Average result created from record number(s): 10 11 12

| | | | |
|---|---|---|---|
| **File Name:** | Juniar_050221.dts | **Dispersant Name:** | Water |
| **Record Number:** | 17 | **Dispersant RI:** | 1.330 |
| **Material RI:** | 1.52 | **Viscosity (cP):** | 0.8872 |
| **Material Absorbtion:** | 0.100 | **Measurement Date and Time:** | Tuesday, February 9, 2021 3:... |

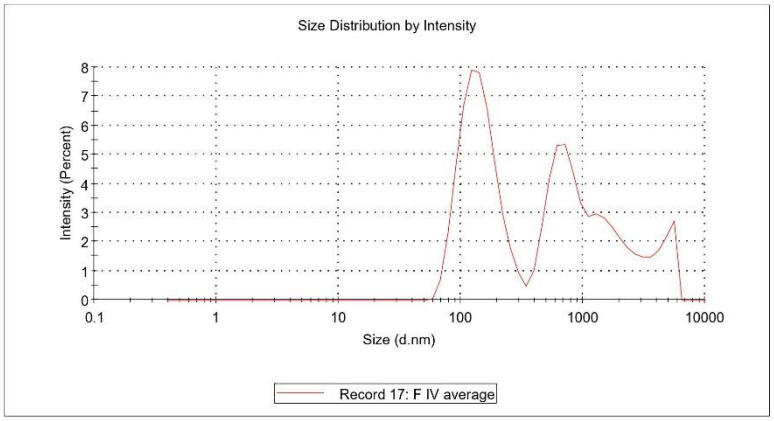
### System

| | | | |
|---|---|---|---|
| **Temperature (°C):** | 24.9 | **Duration Used (s):** | 60 |
| **Count Rate (kcps):** | 383.6 | **Measurement Position (mm):** | 1.05 |
| **Cell Description:** | Disposable sizing cuvette | **Attenuator:** | 7 |

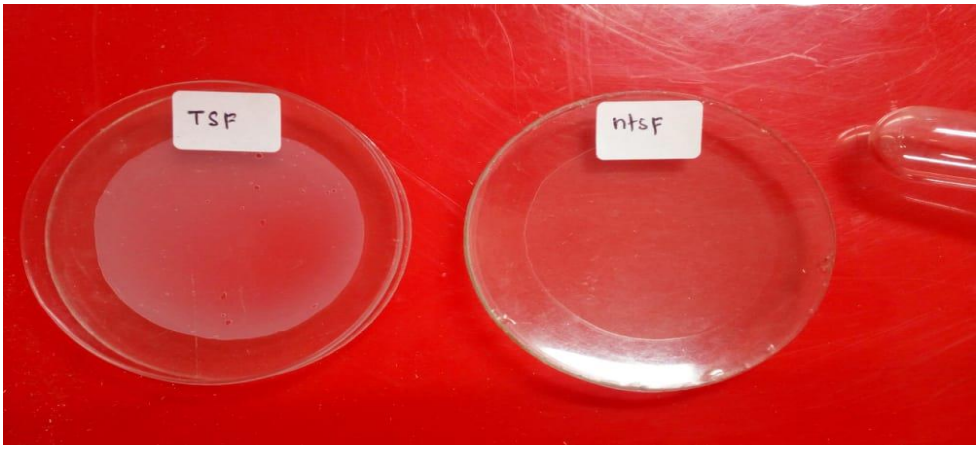
### Results

| | | | Size (d.nm): | % Intensity: | St Dev (d.n... |
|---|---|---|---|---|---|
| **Z-Average (d.nm):** | 384.1 | **Peak 1:** | 146.5 | 45.3 | 52.96 |
| **PdI:** | 0.699 | **Peak 2:** | 712.9 | 28.2 | 203.2 |
| **Intercept:** | 0.829 | **Peak 3:** | 1933 | 18.8 | 748.6 |

**Result quality :** Refer to quality report



**Lampiran 7. Karakterisasi sediaan gel**

<table>
<tr><td colspan="2">Organoleptik</td></tr>
<tr><td colspan="2"> 
</td></tr>
<tr><td colspan="2">Homogenitas</td></tr>
<tr><td colspan="2"> 
</td></tr>
<tr><td>Daya sebar</td><td>Daya lekat</td></tr>
<tr><td>  </td><td>  </td></tr>
</table>

| pH | Viskositas |
| --- | --- |
|  |  |

**Lampiran 8. Data evaluasi gel**

1. Viskositas

| VISKOSITAS | FI | FII |
|---|---|---|
| Sebelum cycling | 260 ± 10 | 203,33 ± 5,77 |
| Sesudah cycling | 263,33 ± 5,77 | 210 ± 10 |

2. Daya lekat

| DAYA LEKAT | FI | FII |
|---|---|---|
| Sebelum cycling | 42,67 ± 2,52 | 28 ± 1 |
| Sesudah cycling | 46,67 ± 11,06 | 31,33 ±2,89 |

3. Daya sebar

| DAYA SEBAR | FI | FII |
|---|---|---|
| Sebelum cycling | 3,6±0,5 | 4,45±0,69 |
| Sesudah cycling | 3,57±0,55 | 4,4±0,69 |

4. pH

| pH | FI | FII |
|---|---|---|
| Sebelum cycling | 5,25±0,06 | 4,77±0,02 |
| Sesudah cycling | 5,11±0,15 | 4,74±0,01 |

**Lampiran 9. Data statistik**

Efisiensi penjerapan

1. Uji Homogenitas

**Test of Homogeneity of Variances**

Efisiensi Penjerapan

| Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|
| 1.187 | 3 | 8 | .374 |

2. One-way ANOVA

**ANOVA**

Efisiensi Penjerapan

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 392.060 | 3 | 130.687 | 251.660 | .000 |
| Within Groups | 4.154 | 8 | .519 | | |
| Total | 396.215 | 11 | | | |

3. Post Hoc

**Multiple Comparisons**

Dependent Variable: Efisiensi Penjerapan
Tukey HSD

| (I) Formula | (J) Formula | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| FI | FII | -1.08000 | .58839 | .325 | -2.9642 | .8042 |
| | FIII | .28667 | .58839 | .960 | -1.5976 | 2.1709 |
| | FIV | 12.88333* | .58839 | .000 | 10.9991 | 14.7676 |
| FII | FI | 1.08000 | .58839 | .325 | -.8042 | 2.9642 |
| | FIII | 1.36667 | .58839 | .172 | -.5176 | 3.2509 |
| | FIV | 13.96333* | .58839 | .000 | 12.0791 | 15.8476 |
| FIII | FI | -.28667 | .58839 | .960 | -2.1709 | 1.5976 |
| | FII | -1.36667 | .58839 | .172 | -3.2509 | .5176 |
| | FIV | 12.59667* | .58839 | .000 | 10.7124 | 14.4809 |
| FIV | FI | -12.88333* | .58839 | .000 | -14.7676 | -10.9991 |
| | FII | -13.96333* | .58839 | .000 | -15.8476 | -12.0791 |
| | FIII | -12.59667* | .58839 | .000 | -14.4809 | -10.7124 |

*. The mean difference is significant at the 0.05 level.

4. Tukey

**Efisiensi Penjerapan**

Tukey HSD[a]

| Formula | N | Subset for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| FIV | 3 | 78.3100 | |
| FIII | 3 | | 90.9067 |
| FI | 3 | | 91.1933 |
| FII | 3 | | 92.2733 |
| Sig. | | 1.000 | .172 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.

Paired t test viskositas

**Paired Samples Test**

| | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference Lower | Upper | | | |
| Pair 1 | FI SBLM CYCLING - FI SSDH CYCLING | -3.33333 | 15.27525 | 8.81917 | -41.27916 | 34.61250 | -.378 | 2 | .742 |
| Pair 2 | FII SBLM CYCLING - FII SSDH CYCLING | -6.66667 | 5.77350 | 3.33333 | -21.00884 | 7.67551 | -2.000 | 2 | .184 |

Paired t test daya lekat

**Paired Samples Test**

| | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference Lower | Upper | | | |
| Pair 1 | FI SBLM CYCLING - FI SSDH CYCLING | -4.00000 | 13.52775 | 7.81025 | -37.60479 | 29.60479 | -.512 | 2 | .659 |
| Pair 2 | FII SBLM CYCLING - FII SSDH CYCLING | -3.33333 | 3.05505 | 1.76383 | -10.92250 | 4.25583 | -1.890 | 2 | .199 |

Paired t test daya sebar

**Paired Samples Test**

| | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference Lower | Upper | | | |
| Pair 1 | FI SBLM CYCLING - FI SSDH CYCLING | .04000 | .12806 | .06403 | -.16378 | .24378 | .625 | 3 | .576 |
| Pair 2 | FII SBLM CYCLING - FII SSDH CYCLING | .05750 | .04573 | .02287 | -.01527 | .13027 | 2.514 | 3 | .087 |

Paired t test pH

**Paired Samples Test**

| | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference Lower | Upper | | | |
| Pair 1 | FI_SBLM_CYCLING - FI_SSDH_CYCLING | .14333 | .09292 | .05364 | -.08748 | .37415 | 2.672 | 2 | .116 |
| Pair 2 | FII_SBLM_CYCLING - FII_SSDH_CYCLING | .03333 | .01528 | .00882 | -.00461 | .07128 | 3.780 | 2 | .063 |

**Lampiran 10. Data uji Difusi Franz**

Jumlah kumulatif pelepasan

| WAKTU (MENIT) | FI | FII |
|---|---|---|
| 5 | 98,56 ± 1,05 | 19,43 ± 2,21 |
| 10 | 119,89 ± 3,70 | 21,25 ± 1,86 |
| 15 | 131,82 ± 1,23 | 19,76 ± 0,23 |
| 30 | 148,64 ± 1,50 | 43,60 ± 1,32 |
| 45 | 234,84 ± 1,05 | 59,18 ± 2,00 |
| 60 | 322,64 ± 4,25 | 82,88 ± 1,42 |
| 90 | 605,44 ± 3,47 | 89,66 ± 3,17 |

Contoh perhitungan:

Rep I

y = 0,0218x – 0,0169

0,284 = 0,0218x – 0,0169

x = 13,80 µg/ml

konsentrasi terpenetrasi = x. fp

= 13,80 µg/ml . 1

= 13,80 µg/ml

$Q = \frac{((Cn \,.V)+(\sum_{i=1}^{n-1} C.S))}{A}$

$Q = \frac{((13{,}80 \,.15)+(5(6{,}5+7{,}42+7{,}79+8{,}57))}{5{,}72265}$

Q = 233,68 µg/cm$^2$

Rep II: 235,09µg/cm$^2$

Rep III: 235,73µg/cm$^2$

$Rata - Rata = \frac{233{,}68+235{,}09+\ 235{,}74}{3} = 234{,}84$ µg/cm$^2$

Fluks naringenin

| WAKTU (JAM) | FI | FII |
|---|---|---|
| 0,08 | 1182,66 ± 12,61 | 233,12 ± 26,54 |
| 0,17 | 719,35 ± 22,21 | 127,48 ± 11,14 |
| 0,25 | 527,27 ± 4,93 | 79,04 ± 0,93 |
| 0,50 | 297,27 ± 3,01 | 87,2 ± 2,65 |
| 0,75 | 313,11 ± 1,4 | 78,91 ± 2,67 |
| 1,00 | 322,64 ± 4,25 | 82,88 ± 1,42 |
| 1,50 | 403,63 ± 2,31 | 59,78 ± 2,12 |

Contoh perhitungan

Rep I

$$J = \frac{M}{(S\ x\ t)}$$

$$J = \frac{233{,}68}{(0{,}75)}$$

$J$ = 311,57 µg.cm$^{-2}$.jam$^{-1}$

Rep II: 313,46 µg.cm$^{-2}$.jam$^{-1}$

Rep III: 314,31 µg.cm$^{-2}$.jam$^{-1}$

$$Rata - rata = \frac{311{,}57+313{,}46+314{,}31}{3} = 313{,}11 \text{ µg.cm}^{-2}\text{.jam}^{-1}$$