

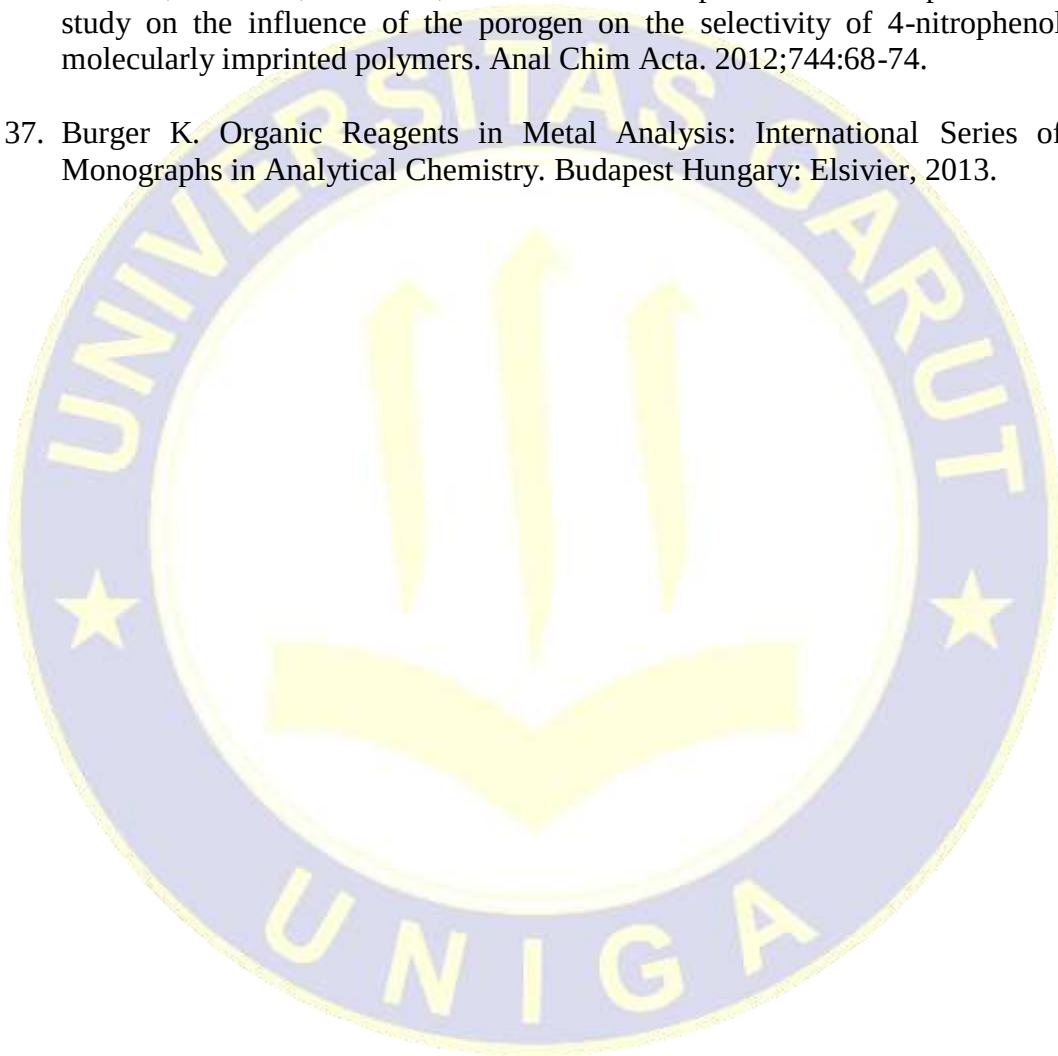
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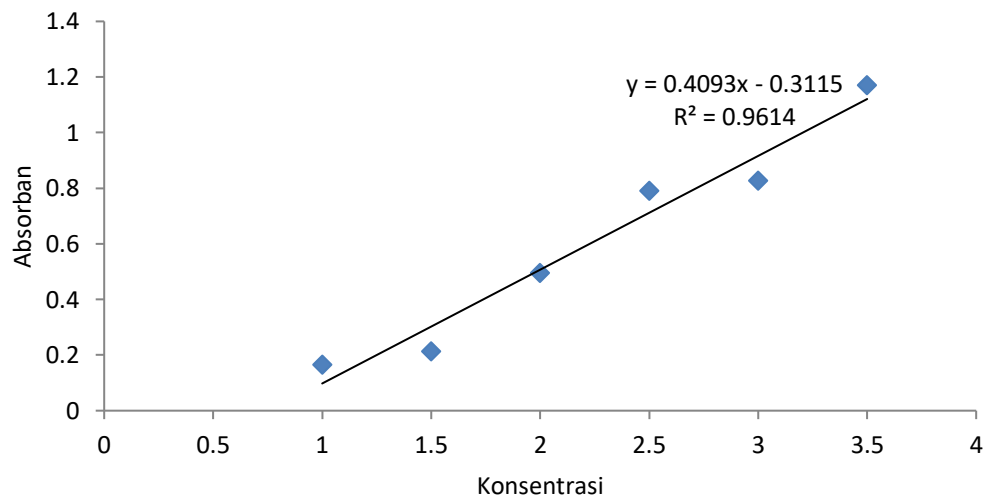
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LAMPIRAN 1

UJI LINEARITAS

Linear



Gambar V. 1 Kurva Kalibrasi dan Linearitas Tetrasiklin

Tabel V. 1
Konsentrasi dan absorban tetrasiklin

C	Abs
1	0,165
1,5	0,212
2	0,494
2,5	0,789
3	0,826
3,5	1,17

LAMPIRAN 2

UJI LOD dan LOQ

Tabel V. 2
Nilai LOD dan LOQ

x	Y	Yi	y-yi	(y-yi) ²
1	0,165	0,72	-0,555	0,308
1,5	0,212	0,924	-0,712	0,506
2	0,494	1,129	-0,635	0,403
2,5	0,789	1,333	-0,544	0,295
3	0,826	1,538	-0,712	0,506
3,5	1,17	1,742	-0,572	0,327
Σ				2,345

Perhitungan :

$$SB = \sqrt{\sum \frac{(y - y_i)^2}{n - 2}} = \sqrt{\frac{2,345}{4}} = 0,382$$

$$LOD = \frac{3 \times SB}{b} = \frac{3 \times 0,382}{0,409} = 2,801 \text{ ppm}$$

$$LOQ = \frac{10 \times SB}{b} = \frac{10 \times 0,382}{0,409} = 9,33 \text{ ppm}$$

LAMPIRAN 3

UJI PRESISI

Tabel V. 3
Uji Presisi Tetrasiklin

Konsentrasi (ppm)	Absorban	X	X ²
1	0,47	1,133	1,2836
1	0,471	1,135	1,2888
1	0,472	1,137	1,2927
1	0,49	1,177	1,3853
1	0,491	1,179	1,39
1	0,492	1,181	1,3947
Σ		6,942	8,0351
x		1,157	

Perhitungan :

$$SD = \frac{n \times \sum X^2 - (\sum X)^2}{n(n-1)} = \frac{6 \times 8,0351 - (6,942)^2}{6(6-1)} = \frac{48,2106 - 48,1913}{30} = \frac{0,0193}{30} = 0,0006433$$

$$\%RSD = \frac{SD}{X} \times 100\% = \frac{0,0006433}{1,157} \times 100\% = 0,0556\%$$

$$\% \text{ Ketelitian alat} = 100\% - \frac{sd}{x} = 100\% - 0,0556\% = 99,94444\%$$

LAMPIRAN 4

UJI AKURASI

Tabel V. 4
Uji Akurasi Tetrasiklin

C (ppm)	Absorban	C Sebenarnya (ppm)	% Recovery
1,6	0,395	1,72	107,50%
2	0,494	1,96	98%
2,4	0,592	2,2	94%

Perhitungan :

$$y = 0,409x + (-0,311)$$

1,6 ppm

$$C \text{ Sebenarnya} = \frac{0,395 + 0,311}{0,409} = 1,72$$

$$\% \text{Recovery} = \frac{1,72}{1,6} \times 100 \% = 107,5 \%$$

2 ppm

$$C \text{ Sebenarnya} = \frac{0,494 + 0,311}{0,409} = 1,96$$

$$\% \text{Recovery} = \frac{1,96}{2} \times 100 \% = 98 \%$$

2,2 ppm

$$C \text{ Sebenarnya} = \frac{0,592 + 0,311}{0,409} = 2,2$$

$$\% \text{Recovery} = \frac{2,2}{2,4} \times 100\% = 94\%$$

LAMPIRAN 5

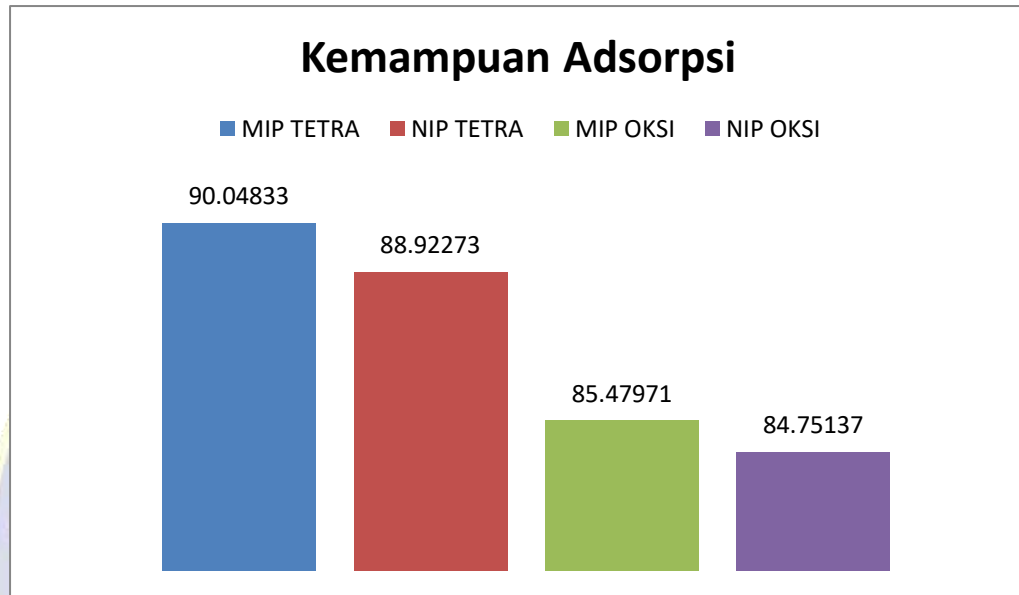
SINTESIS MIP da NIP

Tabel V. 5
Hasil Perhitungan MIP dan NIP

Polimer (<i>template</i> : monomer : <i>cross</i> - <i>linker</i>)	Tetrasiklin (<i>template</i>)	Monomer Asam Metakrilat	EGDMA (<i>cross</i> - <i>linker</i>)
MIP (5:20:100)	2,22 gram	1,7 ml	18,9 ml
NIP (0:20:100)	-	1,7 ml	18,9 ml

LAMPIRAN 6

UJI KEMAMPUAN ADSORPSI



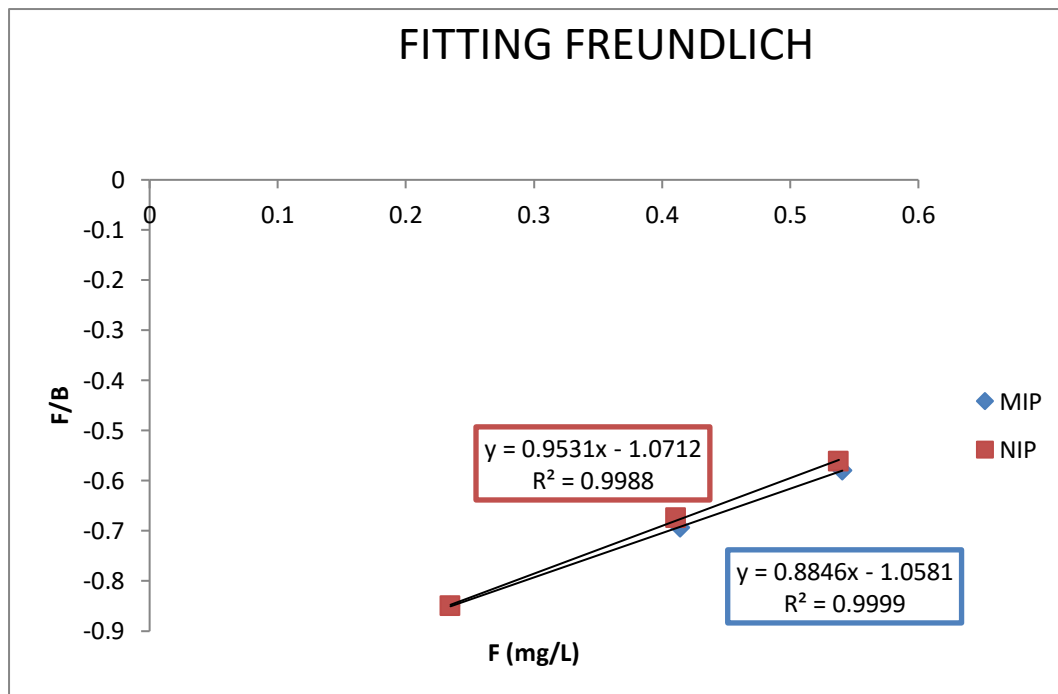
Gambar V. 2 Uji Kemampuan Adsorpsi Tetrasiklin

Tabel V. 6
Uji Kemampuan Adsorpsi Tetrasiklin

No	Polimer	% Adsorpsi
1	MIP TETRA	90,04833
2	NIP TETRA	88,92273
3	MIP OKSI	85,47971
4	NIP OKSI	84,75137

LAMPIRAN 7

UJI KAPASITAS ADSORPSI



Gambar V. 3 Uji Kapasitas Adsorpsi Tetrasiklin

Tabel V. 7
Uji Kapasitas Adsorpsi Tetrasiklin

Polimer	Afinitas(mg/g)	n	R ²
MIP	0,087478	1,130454	0,9999
NIP	0,084879	1,049208	0,9988

LAMPIRAN 8

UJI SELEKTIVITAS

Tabel V. 8
Hasil Perhitungan KD dan Nilai IF

Zat	KD		IF
	MIP	NIP	
Tetrasiklin	4,524285	4,013748	1,127197
Oxytetrasiklin	2,943456	2,778984	1,059184

LAMPIRAN 9

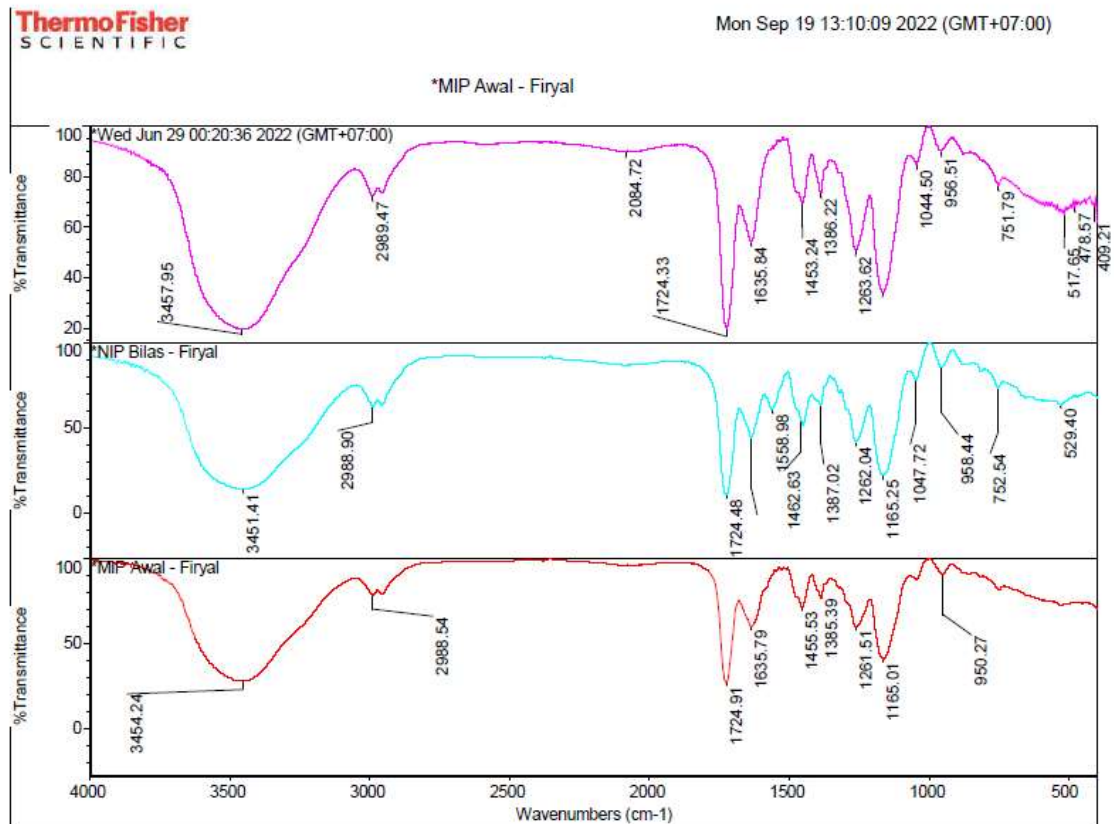
KARAKTERISASI FTIR

Tabel V. 9

Karakteristik FTIR MIP dan NIP Tetrasiklin

Bilangan Gelombang (cm ⁻¹)			Gugus Fungsi
Sorben MIP sebelum ekstraksi	Sorben MIP sesudah ekstraksi	Sorben NIP	
3454,24	3457,95	3451,41	O – H stretching
2988,54	2989,47	2988,90	C – H stretching
1724,91	1724,33	1724,48	C = O stretching
950,27	956,51	958,44	C – O stretching

LAMPIRAN 9 (LANJUTAN)



Gambar V. 4 FTIR MIP dan NIP Tetrasiklin

LAMPIRAN 10

COA EDGMA

SIGMA-ALDRICH® sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103, USA
 Website: www.sigmaaldrich.com
 Email USA: techserv@sigmaaldrich.com
 Outside USA: eurtechserv@sigmaaldrich.com

Certificate of Analysis

Product Name: Ethylene glycol dimethacrylate - 98%, contains 90-110 ppm monomethyl ether hydroquinone as inhibitor

Product Number: 335661
 Batch Number: SHBJ9904
 Brand: ALDRICH
 CAS Number: 97-90-5
 MDL Number: MFCD00008590
 Formula: C10H14O4
 Formula Weight: 198.22 g/mol
 Storage Temperature: Store at 2 - 8 °C
 Quality Release Date: 22 MAR 2018

CC(=C)COC(=O)COC(=O)C=C

Test	Specification	Result
Appearance (Color)	Colorless	Colorless
Appearance (Form)	Liquid	Liquid
¹ H NMR Spectrum	Conforms to Structure	Conforms
Purity (GC)	≥ 97.5 %	98.5 %
MEHQ as Inhibitor	90 - 110 ppm	98 ppm

[Signature]
 Michael Grady, Manager
 Quality Control
 Sheboygan Falls, WI US

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Version Number: 1 Page 1 of 1

Gambar V. 5 COA EDGMA

LAMPIRAN 11

COA METANOL



Certificate of Analysis

1.06009.2500 Methanol for analysis EMSURE® ACS,ISO,Reag. Ph Eur
Batch I0997709

	Spec. Values		Batch Values	
Purity (GC)	≥ 99.9	%	99.9	%
Identity (IR)	conforms		conforms	
Appearance	clear		clear	
Color	≤ 10	Hazen	< 5	Hazen
Solubility in water	conforms		conforms	
Acidity	≤ 0.0002	meq/g	0.0001	meq/g
Alkalinity	≤ 0.0002	meq/g	< 0.0002	meq/g
Density (d 20 °C/20 °C)	0.791 - 0.793		0.793	
Boiling point	64 - 65	°C	64	°C
Benzene (impurity A) (GC)	≤ 2	ppm	< 1	ppm
Ethanol (GC)	≤ 0.05	%	< 0.01	%
Acetone	≤ 0.001	%	≤ 0.001	%
Acetaldehyde	≤ 0.001	%	≤ 0.001	%
Formaldehyde	≤ 0.001	%	≤ 0.001	%
Readily carbonizable substances	conforms		conforms	
Carbonyl compounds (as CO)	≤ 0.001	%	≤ 0.001	%
Chloride (Cl)	≤ 0.5	ppm	≤ 0.5	ppm
Sulfate (SO ₄)	≤ 1	ppm	≤ 1	ppm
Substances reducing potassium permanganate (as O)	≤ 0.00025	%	≤ 0.00025	%
Ag (Silver)	≤ 0.000002	%	≤ 0.000002	%
Al (Aluminium)	≤ 0.00005	%	≤ 0.00005	%
As (Arsenic)	≤ 0.000002	%	≤ 0.000002	%
Au (Gold)	≤ 0.000002	%	≤ 0.000002	%
Ba (Barium)	≤ 0.00001	%	≤ 0.00001	%
Be (Beryllium)	≤ 0.000002	%	≤ 0.000002	%
Bi (Bismuth)	≤ 0.000002	%	≤ 0.000002	%
Ca (Calcium)	≤ 0.00005	%	≤ 0.00005	%
Cd (Cadmium)	≤ 0.000005	%	≤ 0.000005	%
Co (Cobalt)	≤ 0.000002	%	≤ 0.000002	%
Cr (Chromium)	≤ 0.000002	%	≤ 0.000002	%
Cu (Copper)	≤ 0.000002	%	≤ 0.000002	%
Fe (Iron)	≤ 0.00001	%	≤ 0.00001	%
Ga (Gallium)	≤ 0.000002	%	≤ 0.000002	%
In (Indium)	≤ 0.000002	%	≤ 0.000002	%
Li (Lithium)	≤ 0.000002	%	≤ 0.000002	%
Mg (Magnesium)	≤ 0.00001	%	≤ 0.00001	%
Mn (Manganese)	≤ 0.000002	%	≤ 0.000002	%
Mo (Molybdenum)	≤ 0.000002	%	≤ 0.000002	%
Ni (Nickel)	≤ 0.000002	%	≤ 0.000002	%
Pb (Lead)	≤ 0.00001	%	≤ 0.00001	%
Pt (Platinum)	≤ 0.000005	%	≤ 0.000005	%

Merck KGaA, Frankfurter Straße 250, 64293 Darmstadt (Germany): +49 6151 72-0
 EMD Millipore Corporation - a subsidiary of Merck KGaA, Darmstadt, Germany
 400 Summit Drive, Burlington, MA 01803, USA, Phone +1 (781) 533-6000

Page 1 of 2

Gambar V. 6 COA Metanol

LAMPIRAN 11 (LANJUTAN)

Certificate of Analysis

1.06009.2500 **Methanol for analysis EMSURE® ACS,ISO,Reag. Ph Eur**
Batch **10997709**

Sn (Tin)	≤ 0.00001	%	≤ 0.00001	%
Ti (Titanium)	≤ 0.000002	%	≤ 0.000002	%
Tl (Thallium)	≤ 0.000002	%	≤ 0.000002	%
V (Vanadium)	≤ 0.000002	%	≤ 0.000002	%
Zn (Zinc)	≤ 0.00001	%	≤ 0.00001	%
Zr (Zirconium)	≤ 0.000002	%	≤ 0.000002	%
Evaporation residue	≤ 0.0005	%	< 0.0001	%
Water	≤ 0.05	%	0.01	%

ACS, ISO, Reag Ph Eur

Date of release (DD.MM.YYYY) 15.02.2019
 Minimum shelf life (DD.MM.YYYY) 29.02.2024

Jeannette David
 Responsible laboratory manager quality control

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Page 2 of 2

Gambar V. 7 COA Metanol

LAMPIRAN 12

COA AIBN

Sigma-Aldrich

3050 Spruce Street, Saint Louis, MO 63103, USA
 Website: www.sigmaaldrich.com
 Email USA: techserv@sigmaaldrich.com
 Outside USA: support@sigmaaldrich.com

Certificate of Analysis

Product Name: Azobisisobutyronitrile - 12 wt. % in acetone

Product Number: 788378
 Batch Number: MKC06303
 Brand: ALDRICH
 Formula: C₈H₁₂N₄
 Formula Weight: 164.21 g/mol
 Storage Temperature: Store at 2 - 8 °C
 Quality Release Date: 16 AUG 2021

CC(C)(C#N)N(C(C)(C)C#N)C(C)(C)C#N

Test	Specification	Result
Appearance (Color)	Colorless to Faint Yellow	Colorless
Appearance (Form)	Liquid	Liquid
Proton NMR Spectrum	Conforms to Structure	Conforms
Azobisisobutyronitrile	11 - 14 % wt	12 % wt
¹³ C NMR Spectrum	Conforms to Structure	Conforms
GCMS	Conforms to Structure	Conforms


 Larry Coers, Director
 Quality Control
 Milwaukee, WI US

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Version Number: 1 Page 1 of 1

Gambar V. 8 COA AIBN

LAMPIRAN 13
COA ASAM ASETAT

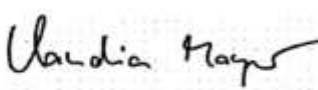
SIGMA-ALDRICH

3050 Spruce Street, Saint Louis, MO 63103 USA
Email USA: techserv@sigma.com Outside USA: eurtechserv@sigma.com

Certificate of Analysis

Product Name:	METHACRYLIC ACID Yes MEHQ 250ppm inhibitor, 99 %
Product Number:	155721
Batch Number:	STBH9948
Brand:	Aldrich
CAS Number:	79-41-4
Formula:	$H_2C=C(CH_3)COOH$
Formula Weight:	86.09
Quality Release Date:	12 APR 2019

TEST	SPECIFICATION	RESULT
STABILIZER	200 - 300 PPM MEHQ	260 PPM
APPEARANCE (COLOR)	COLORLESS	COLORLESS
APPEARANCE (FORM)	LIQUID	LIQUID
TITRATION (T) NaOH 0.1M	99.5 - 101.5 %	99.8 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS
PROTON NMR SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS



Claudia Mayer
Manager Quality Control
Steinheim, Germany

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Gambar V. 9 COA Asam Asetat