

# Certificate of Analysis

## 2-Butanol

### PurCert Standard for GC

<b>Product Number</b>	PSR28308	<b>CAS No.</b>	78-92-2
<b>Brand</b>	PureSynth	<b>Lot No.</b>	WQE01P
<b>Molecular Formula</b>	C <sub>4</sub> H <sub>10</sub> O	<b>Date of Mfg.</b>	January.2023
<b>Molecular Weight</b>	74.12 g/mol	<b>Date of Exp.</b>	December.2027

Test	Specification	Result
Description	Colorless liquid	Colorless liquid
Clarity	Clear	Clear
APHA	10	< 10
Assay (GC-FID)	≥ 99.5 %	99.98 %
Water (By KF)	NMT 0.2000 %	0.1035 %
Identification by <sup>1</sup> H NMR	Conforms to structure	Conforms
Identification by GC-MS	Conforms to molecular mass	Conforms
Identification by IR	Conforms to structure	Conforms

**\*Traceable to Internal reference standard**

**Storage Condition:** Store at room temperature and keep container tightly closed.

**Remark:** The batch complies with the prescribed quality of the above specification.

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## Assay by GC-FID

### METHOD: G.C- FID conditions:

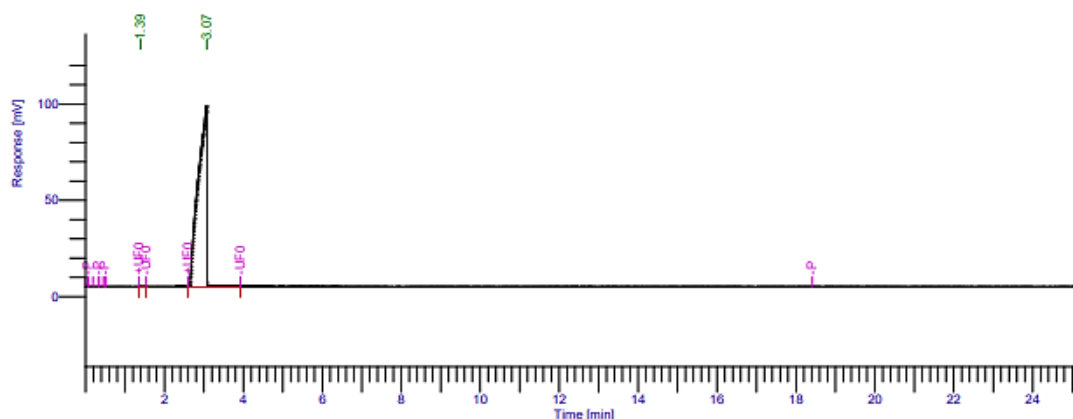
**Column:** Agilent Technologies DB-FFAP 30mx 0.530mm, 1.0micron

**Instrument:** PerkinElmer, GC 2014,

**Detector:** FID, **Carrier gas:** Nitrogen

**Temp programming:** Initial 50°C hold for 1min, 5°C Ramp/ min., 100 °C hold for 1 min., 25°C Ramp up to 250°C hold for 2 min., Run time 20 min.

Software Version	: 6.3.4.0700	Date	: 15/04/2023 4.07.47 PM
Operator	: manager	Sample Name	: AR23000195-2-BUTANOL- WQE01
Sample Number	: 1		
AutoSampler	: BUILT-IN	Study	: GC Purity
Instrument Name	: Clarus 680	Rack/Vial	: 0/38
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 25.27 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000	Area Reject	: 0.000000
Data Acquisition Time	: 15/04/2023 2.12.46 PM	Dilution Factor	: 1.00
		Cycle	: 1



## GC Reports

15/04/2023 4.07.47 PM Result:

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]
1		1.391	226.71	85.97	0.02
2		3.071	1441497.40	94160.70	99.98
			1441724.12	94246.66	100.00

Missing Component Report

Component Expected Retention (Calibration File)

All components were found

**Purity by GC-FID: 99.98 %**

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## IDENTIFICATION TESTS

### GC-MS Spectrum:

#### METHOD: G.C-MS conditions:

**Column:** Agilent Technologies, Elite -5MS, 30 m X 0.25 mm, 1.0micron

**Instrument:** Perkin Elmer, **Carrier gas:** Helium

**Source Temp.:** 230°C, Transfer line: 250°C

**Inlet Temp.:** 180°C, **Diluent:** Methanol

**Source energy:** 70eV

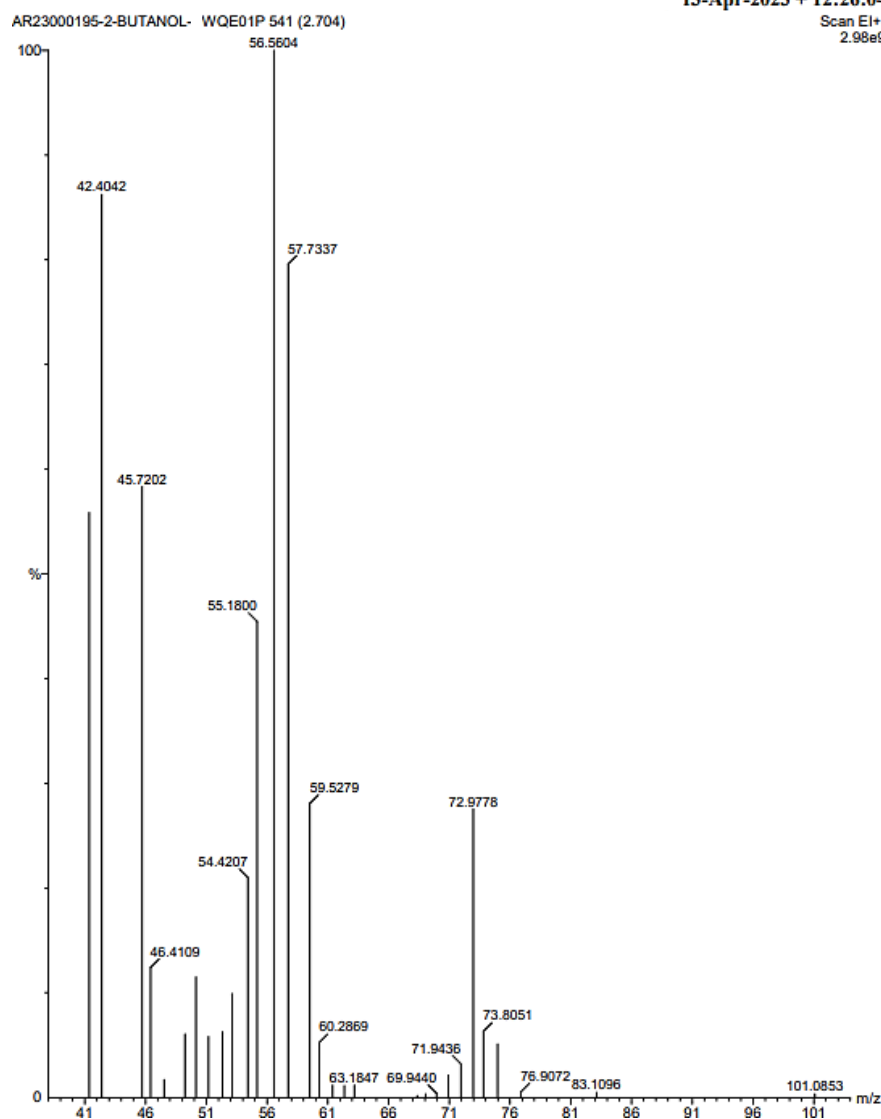
#### Mass by GC-MS:

**Product Name:** 2-Butanol

**Product Code:** PSR28308

13-Apr-2023 + 12:26:04

Scan EI+  
2.98e5



Identification by GC-MS: Conforms to molecular mass

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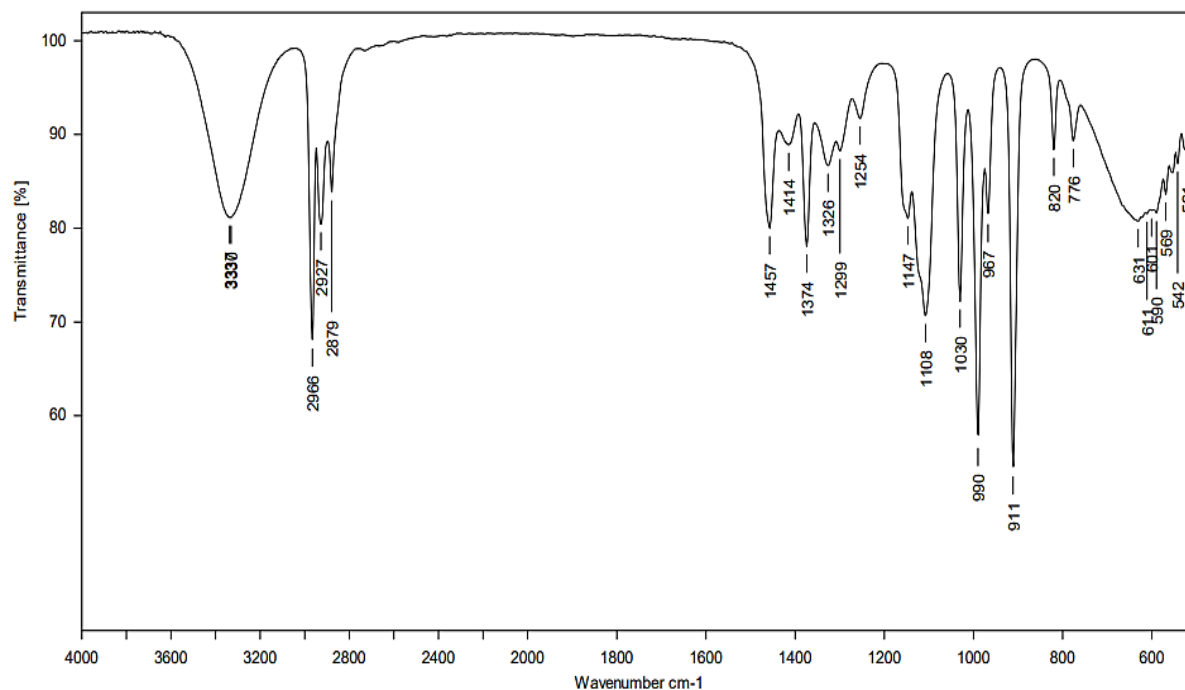
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**Infrared spectrum:**

**Product Name: 2-Butanol**

**Product Code: PSR28308**

2-Butanol: WQE01P



Experiment ATR\_ZnSe1.XPM

Operator Name Admin

Instrument Type Alpha II

Resolution 4

Path of File C:\PRL

Date of Measurement 17-04-2023

Sample Form Liquid

Sample Scans 32

**Identification by IR: Conforms to structure**

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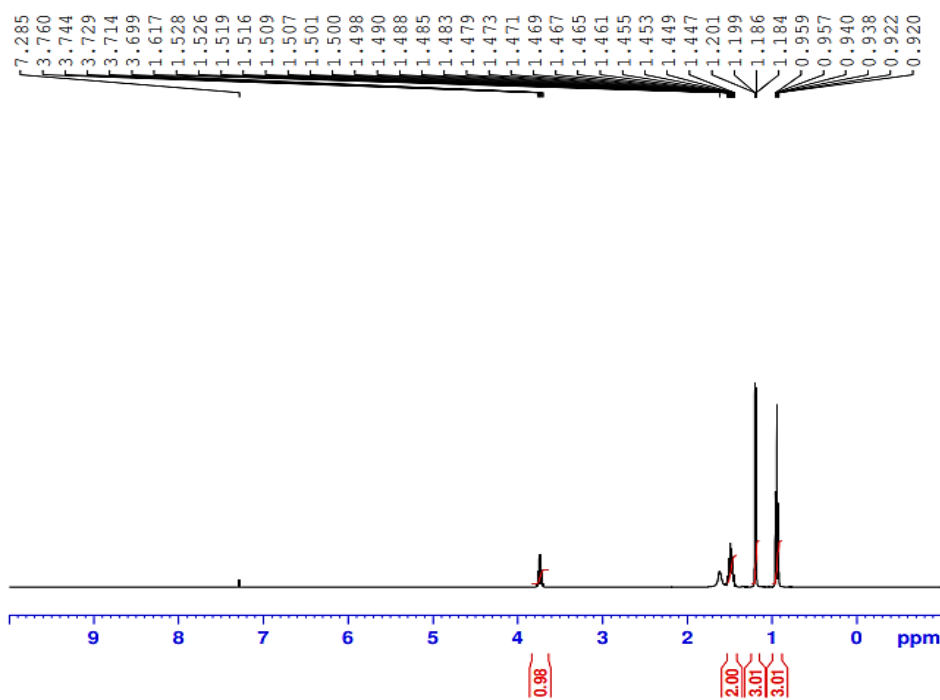
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# <sup>1</sup>H NMR Spectrum:

Product Name: 2-Butanol

Product Code: PSR28308

2-Butanol  
Batch Number: WQE01P  
1H-NMR in CDCl<sub>3</sub>



Identification by <sup>1</sup>H NMR: Conforms to structure

## Maximum limits of impurities

### WATER DETERMINATION

Method: Karl Fisher titration

Water Content (PSR28308) = **0.1035 %**

Approved By  
Head - Technical

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