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CERTIFICATE OF ANALYSIS

Product Name	Urea Analytical standard		
Synonyms	Carbamide, Carbonyldiamide, Ureophil		
CAS No	57-13-6		
Product code	SYI0041	**Batch No**	LURBF0106
Molecular Formula	CH_4N_2O	**Molecular Weight**	60.06
Mfg. Date	Jan-26	**Expiry Date**	Dec-28
Storage Conditions	Store at room temperature, tightly closed container		

Test	Specification	Results
Description	White powder to crystal	White powder to crystal
Melting Point	132 - 135 °C	135 °C
Solubility	Soluble in Methanol, Ethanol	Complies
Assay	≥99.00%	99.19%
IR Spectrum	Identification by structure	Confirmed
1H NMR Spectra	Identification by structure	Confirmed
Mass Spectra	Identification by molecular weight	Confirmed

Reference to *USP* 30–*NF* 25 General Chapter <11>, "Reference Standards," As a result, noncompendial (secondary) reference standards require characterization data. This product should not use for clinical application.

Approved by
Dr. Gopinath PH. D

SYNTHICURE LABORATORIES LLP

Computer Generated document, Does not require any Signature.

Synthicure Laboratories LLP, 5-5-35/276A/NR, Sakthipuram Industrial Road, Prashanth Nagar, IDA Kukatpally, Hyderabad-500072 Telangana, India.

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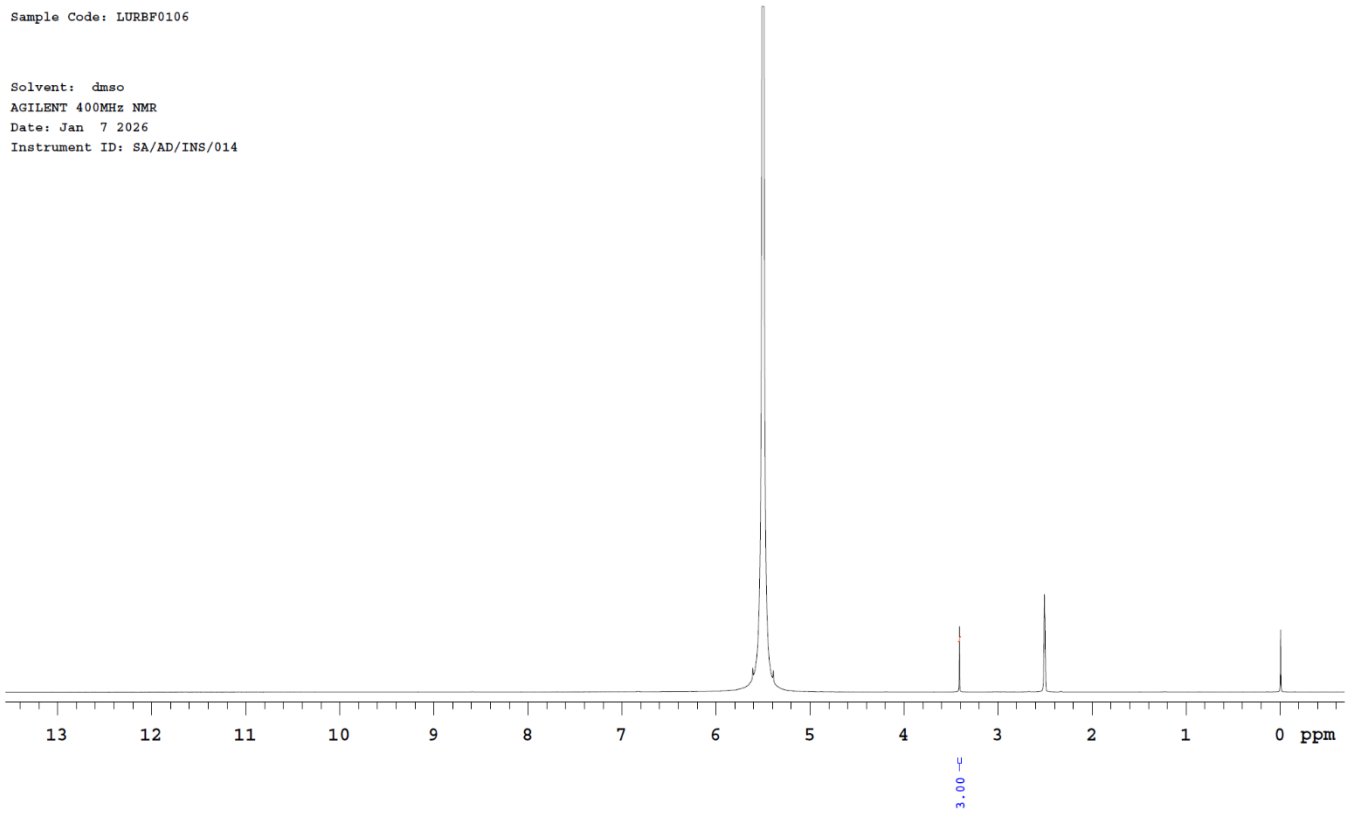
Identification by NMR: H1NMR

Sample Code: LURBF0106

Solvent: dmso
AGILENT 400MHz NMR
Date: Jan 7 2026
Instrument ID: SA/AD/INS/014



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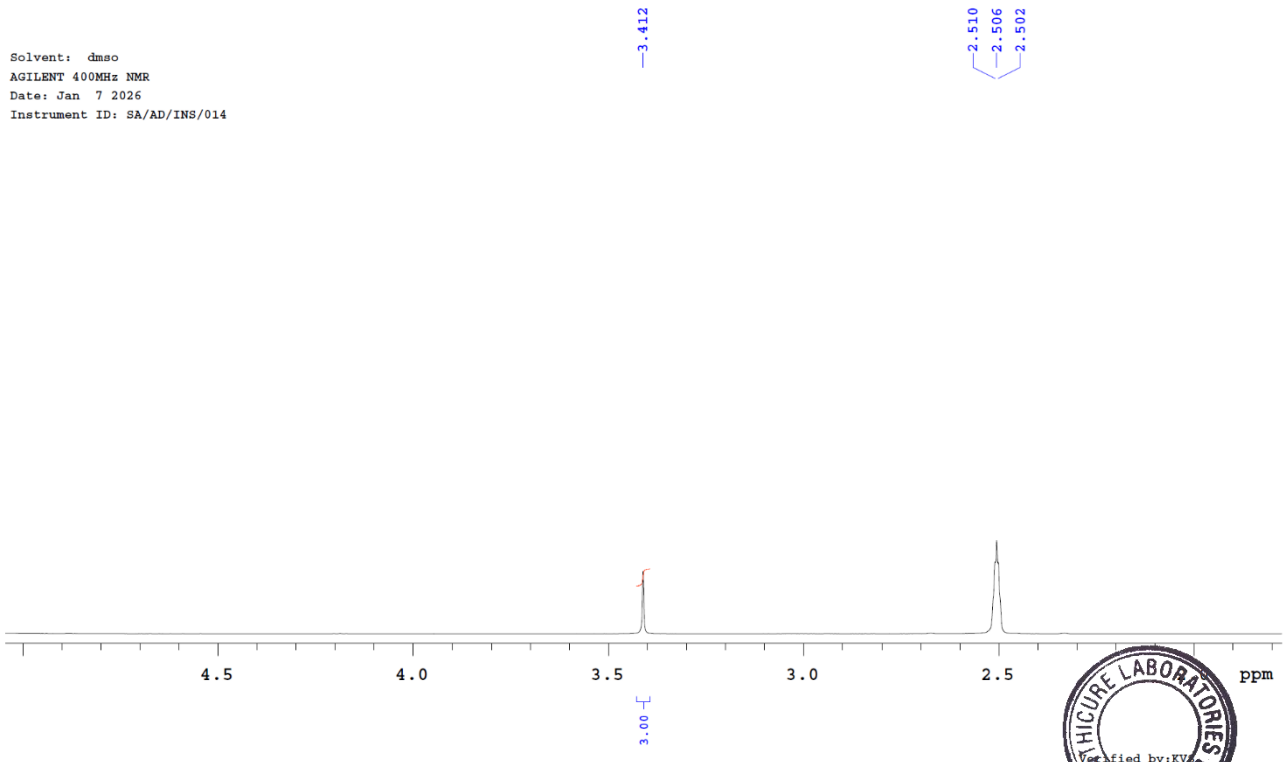

Plotname: LURBF0106_PROTON_20260107_01_plot02

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Verified by:KV

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Identification by NMR: H1NMR

```
exp2  PROTON

      SAMPLE           PRESATURATION
date    Jan  7 2026  satmode          n
solvent       dmso  wet              n
file /home/spark-d~       SPECIAL
d2/data/2026/Jan/L~ temp          25.0
URBF0106_20260107_~ gain            34
01/LURBF0106_PROTO~ spin            20
 N_20260107_01.fid  hst          0.008
   ACQUISITION      pw90        12.600
sw          7183.9  alfa        10.000
at           4.000        FLAGS
np           57472  il               n
fb            4000  in               n
bs               2  dp               y
d1           1.000  hs              nn
nt             128      PROCESSING
ct              16  lb            0.50
   TRANSMITTER      fn        not used
tn              H1       DISPLAY
sfrq       399.829  sp           800.6
tof          799.7  wp           901.3
tpwr            59  rfl          779.4
pw           6.300  rfp              0
    DECOUPLER       rp          -132.1
dn              C13  lp               0
dof               0         PLOT
dm              nnn  wc             268
decwave W40_ATB-78~  sc               0
                 98  vs             147
dpwr             38  th               7
dmf           29412  ai  cdc  ph
```

INDEX	FREQUENCY	PPM	HEIGHT
1	1364.1	3.412	13.1
2	1003.4	2.510	15.1
3	1001.9	2.506	19.6
4	1000.4	2.502	14.9

Plotname: LURBF0106_PROTON_20260107_01_plot03

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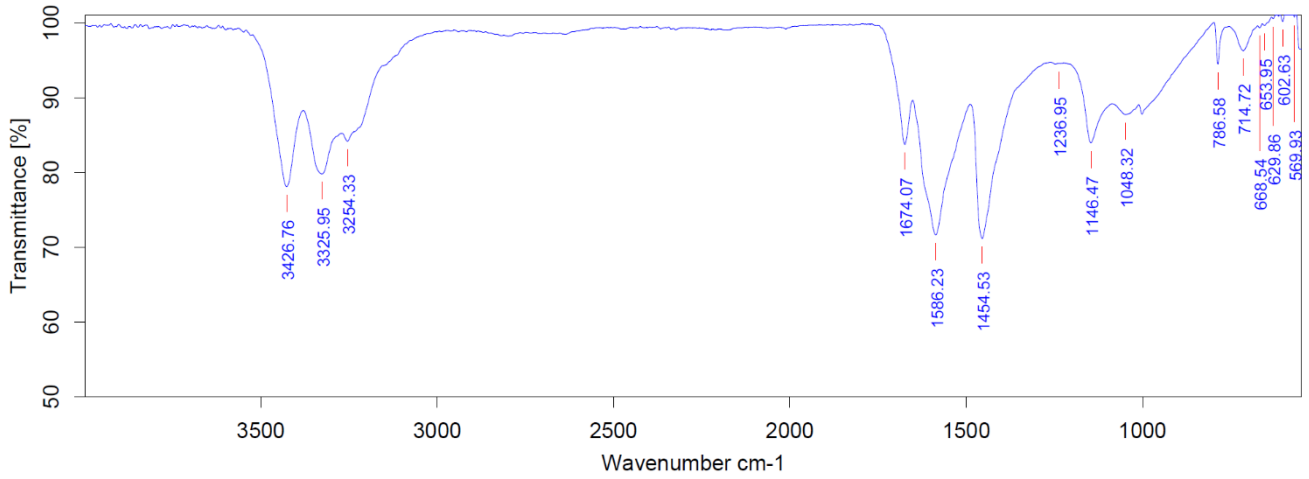
Identification by Infrared Spectroscopy (IR)



Path/File Name:D:\2026\JAN-2026/LURBF0106.0

Sample Name:LURBF0106

Lot No./Batch No:LURBF0106

Date & Time:1/7/2026,6:17:08 PM

Operator Name:SPARK

Experiment:JANUARY-2026.XPM

Resolution:2

Sample Scans:32

Frequency Range:4000 to 550

- "D:\2026\JAN-2026\LURBF0106.0" 1
  - Peak Table TR
    - Peak Picking

Peak Picking	Values
Method:	Standard
Searched for minima:	Yes
Number of peaks:	16
Sensitivity > [%]:	10.000000
From:	4000.000000
to:	400.000000
Absolute peak height >	0.000000
Relative peak height < [%]	0.000000
Absolute peak height <	0.000000

Wavenumber	Abs. intensity	Rel. intensity	Width	Found if threshold <	Shoulder
3426.7585	0.781	0.218	268.0223	62.497623	0
3325.9545	0.798	0.089	59.1155	24.299952	0
1674.0666	0.837	0.075	25.4299	17.007418	0
1586.2269	0.716	0.179	79.3546	50.026196	0
1454.5301	0.712	0.333	95.2535	82.374474	0
1146.4687	0.840	0.127	143.5856	30.936426	0
786.5807	0.945	0.059	10.8176	15.918880	0
3254.3293	0.842	0.012	16.4704	11.282663	0
1048.3239	0.877	0.027	166.6406	82.034981	0
1236.9467	0.945	0.000	18.9672	0.417842	0
714.7174	0.963	0.047	44.5553	72.073006	0
668.5437	0.994	0.006	2.7208	3.640999	0
653.9480	0.996	0.008	1.8503	2.489824	0
602.6252	1.002	0.033	14.3675	12.617673	0
569.9288	1.008	0.028	19.6139	16.729086	0
629.8569	1.006	0.004	21.8685	2.306005	0

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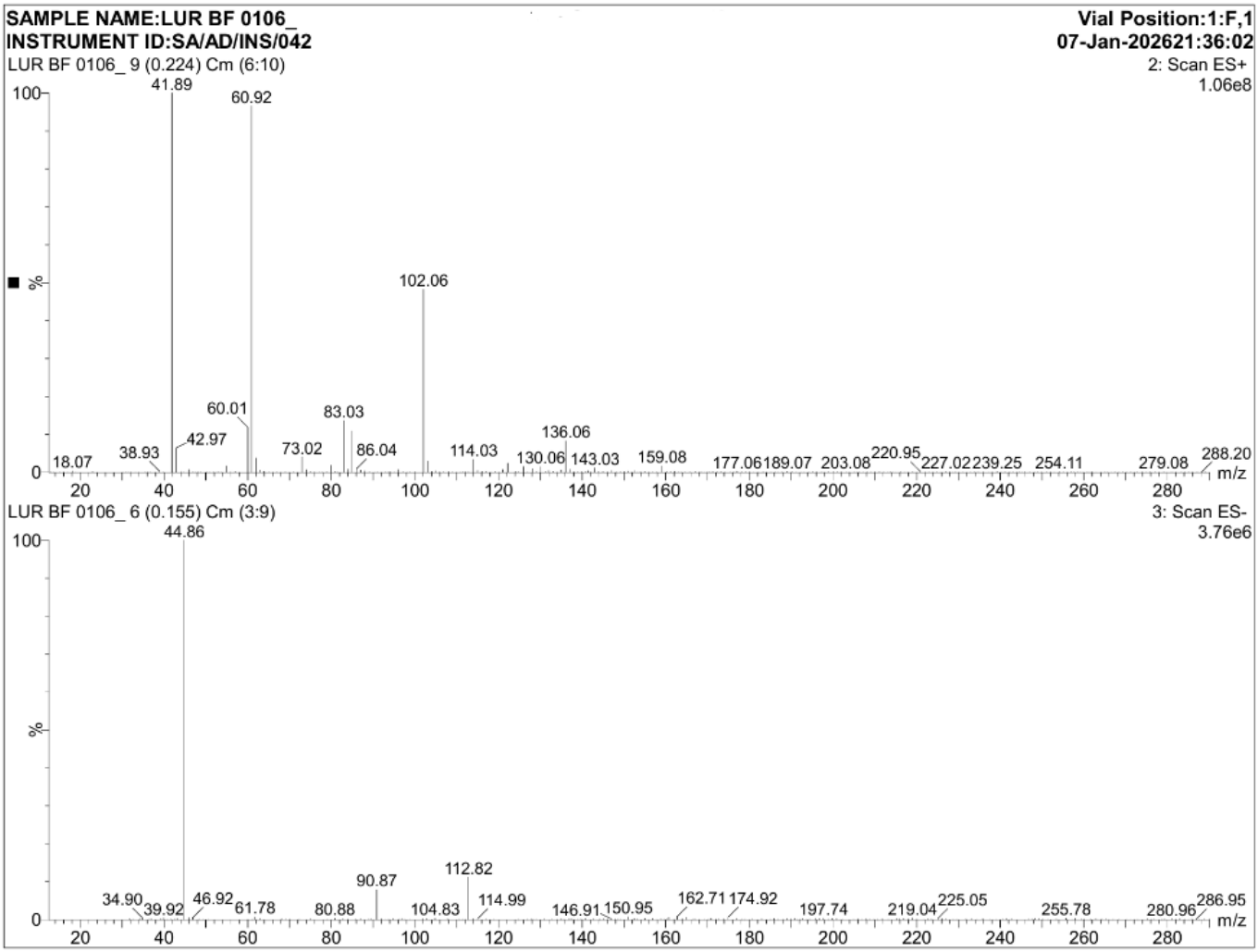
Identification by Mass spectrometry (MS)



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Urea purity analysis by Assay Method

Principle: Urea is dissolved in a non-aqueous solvent glacial acetic acid and titrated with a strong acid with perchloric acid.

Reagents:

- 0.1N Perchloric Acid in glacial acetic acid (standardized titrant).
- Glacial Acetic Acid (solvent).
- Crystal Violet (indicator).

Experimental Values:

Sample Weight: 150 mg

Actual Normality of $HClO_4 (N_{act})$: 0.1005 N

Standard Equivalence Factor (e): 1mL of $0.1N HClO_4 \equiv 6.006$mg of Urea

Titration and Endpoint Detection:

Dissolve the 150 mg sample in 40 ml of glacial acetic acid. Add 2 drops of Crystal Violet indicator. Titrate with the perchloric acid until the color changes from violet to blue-green. Perform a blank titration using only the solvent to account for impurities.

Titration Readings:

Sample Titrate Volume (V_s): 24.75mL (3 times Avg)

Blank Titrate Volume (V_b): 0.10mL (3 times Avg)

Net Volume $(V_{net} = V_s - V_b)$: 24.56 mL

The purity is calculated using the ratio of the actual normality to the theoretical normality (0.1N)

$$\text{Purity \%} = \frac{(V_s - V_b) \times \text{Equivalence Factor} \times \frac{N_{act}}{0.1} \times 100}{W}$$

$$\text{Purity \%} = \frac{24.65 \times 6.006 \times \frac{0.1005}{0.1} \times 100}{150.0}$$

$$\text{Purity \%} = \frac{24.65 \times 6.006 \times 1.005 \times 100}{150.0}$$

$$\text{Purity \%} = \frac{148.788}{150.0} \times 100 = \mathbf{99.192\%}$$