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CERTIFICATE of ANALYSIS / CONFORMANCE

Product Name: N-Methylpyrrolidone (NMP)
Specification / Requirement: Electronic Grade
Part Number: NMP-EG
Lot Number: --

<u>Analysis</u>	<u>Specification</u>	<u>Result</u>
Assay, %	≥ 99.90	99.95
Water, %	≤ 0.02	0.01
Gamabutyrolactone(GBL) %	≤ 0.05	0.010
Color, APHA	≤ 20	10
Particles ≥ 0.5 um	≤ 30	< 10
Total amines, ppm	≤ 15	< 10
pH (5% in DI)	8.0-9.5	8.5
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Chloride (Cl), ppb	≤ 200	< 100
Nitrate (NO ₃), ppb	≤ 400	< 100
Phosphate (PO ₄), ppb	≤ 250	< 100
Sulfate (SO ₄), ppm	≤ 1.0	< 1.0
Antimony, ppb	≤ 10	< 5
Arsenic, ppm	≤ 10	< 5
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Aluminum, ppb	≤ 100	< 20
Barium, ppb	≤ 500	< 20
Boron, ppb	≤ 100	< 20
Calcium, ppb	≤ 100	< 20
Chromium, ppb	≤ 100	< 20
Copper, ppb	≤ 100	< 20
Gold, ppb	≤ 100	< 20
Iron, ppb	≤ 100	< 20
Lead, ppb	≤ 100	< 20
Lithium, ppb	≤ 500	< 20
Magnesium, ppb	≤ 100	< 20
Manganese, ppb	≤ 100	< 20
Nickel, ppb	≤ 100	< 20
Potassium, ppb	≤ 100	< 20
Sodium, ppb	≤ 100	< 20
Tin, ppb	≤ 100	< 20
Titanium, ppb	≤ 100	< 20
Zinc, ppb	≤ 100	< 20

Quality Control Approval

Date: _____

Officer: _____