

## Certificate of Analysis

Date of Testing: 2022-11-07 13:52:50

Date of Next Testing: 2023-11-07 13:52:50

Product Name: **Ammonia solution**

CAS Number: 1336-21-6

Specifications & Purity: ≥28% NH3 in H2O, Electronic grade

Lot #: K2204211

SKU #: **A112083**

**Analysis:** **147541**

Storage Temperature: Store at 2-8°C, Protected from light

Parameter	Limit Values	Result
Cadmium(Cd)	0-50 (ppb)	0.01 ppb
Calcium(Ca)	0-0.5 (ppm)	0.00 ppm
Assay(as NH3)	28-30 (%)	28.81 %
Germanium (Ge)	0-50 (ppb)	0.00 ppb
Magnesium(Mg)	0-50 (ppb)	0.04 ppb
Beryllium(Be)	0-50 (ppb)	0.01 ppb
Barium(Ba)	0-50 (ppb)	0.01 ppb
Stannum(Sn)	0-50 (ppb)	0.08 ppb
Gallium(Ga)	0-50 (ppb)	0.01 ppb
Sb	0-50 (ppb)	0.00 ppb
Aluminum(Al)	0-50 (ppb)	0.06 ppb
Copper(Cu)	0-40 (ppb)	0.01 ppb
Cobalt(Co)	0-50 (ppb)	0.01 ppb
Chromium(Cr)	0-50 (ppb)	0.01 ppb
Lithium(Li)	0-50 (ppb)	0.00 ppb
Titanium(Ti)	0-50 (ppb)	0.17 ppb
Ta	0-50 (ppb)	0.01 ppb
Zirconium(Zr)	0-50 (ppb)	0.01 ppb
Chloride (Cl-)	0-0.3 (ppm)	0.10 ppm
Strontium(Sr)	0-50 (ppb)	0.00 ppb
Silver (Ag)	0-20 (ppb)	0.02 ppb
Niobium(Nb)	0-50 (ppb)	0.01 ppb
Sodium(Na)	0-50 (ppb)	0.53 ppb
Sulfate(SO42-)	0-0.8 (ppm)	0.10 ppm
(Pb)Lead	0-25 (ppb)	0.00 ppb
Potassium(K)	0-50 (ppb)	0.37 ppb

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Parameter	Limit Values	Result
Manganese(Mn)	0-50 (ppb)	0.00 ppb
Bismuth(Bi)	0-50 (ppb)	0.00 ppb
(As)Arsenic	0-50 (ppb)	0.00 ppb
Molybdenum(Mo)	0-50 (ppb)	0.01 ppb
Zinc(Zn)	0-30 (ppb)	0.15 ppb
Phosphate(PO4)	0-0.4 (ppm)	0.30 ppm
Boron(B)	0-50 (ppb)	0.57 ppb
Vanadium(V)	0-50 (ppb)	0.02 ppb
Nickel(Ni)	0-20 (ppb)	0.00 ppb
Iron(Fe)	0-50 (ppb)	0.04 ppb
Aurum(Au)	0-50 (ppb)	0.02 ppb

A handwritten signature in black ink that reads "John Su".

John Su  
QA & QC Manager