CERTIFICATE OF ANALYSIS

BASELINE® Ammonia Solution

| PR | ODUC | CT NU | MBER: | S02070 |)1 | LOT N | IUMBEI | R: 7216 | 100 | AS | SAY (NI | 13, w/w |): 21% | , D | | |
|----------------------|--|--------------------|---|--|---|---|---|--|--|---|---|---|--|--|---|---|
| Be av 0.05 ev | erage of aporated | three alid | quots subsass. The resu | ampled fron ulting residu | n three sam e is reconst | ples represituted in a s | sentative of mall volume | the lot. The of SEASTA | e samples a AR™ BASEL | are slowly .INE® 2% | 3A | 4A | 5A | 6A | 7A | |
| < 2 be | ow 3 time | es the sta | ndard devia | ation of the b | lank are sho | | no blank va | | cted. | | 13 AI < 10 | | | | | |
| Ca 21 | Sc 2 | | | | | 26 Fe < 0.5 | | 28 Ni < 5 | | | 31 Ga < 0.01 | 32 Ge < 1 | 33 As < 0.5 | 34 Se < 5 | | |
| Sr 39 0.05 < | | | 41 Nb < 0.01 | 42 Mo < 0.05 | | 44 Ru < 0.01 | 45 Rh < 0.01 | 46 Pd < 0.1 | 47 Ag < 0.5 | 48 Cd < 0.02 | 49 In < 0.01 | 50 S n < 0.1 | 51 Sb < 0.05 | 52 Te < 0.05 | | 4 |
| Ba 57 | | 72 Hf < 0.1 | 73 Ta | 74 W < 1 | 75 Re < 0.01 | | | 78 Pt < 0.1 | 79 Au < 0.5 | 80 Hg < 200 | 81 TI < 0.01 | 82 Pb < 0.1 | 83 B i < 0.1 | | | |
| | 2A Mo ave 0.05 Poil 6 P | 2A | Most elements are converged of three alice evaporated to drynes Nitric Acid / 2% Hydro For volatile elements below 3 times the standard Section 10 Section | Most elements are determined average of three aliquots subsequence of three aliquots | Most elements are determined by high res average of three aliquots subsampled from evaporated to dryness. The resulting residu Nitric Acid / 2% Hydrogen Peroxide. Operati For volatile elements (indicated by *), the acid below 3 times the standard deviation of the below 3 times the standard deviation of the below 1 to 2 to 2 to 2 to 2 to 2 to 2 to 3 to 2 to 3 to 3 | Be average of three aliquots subsampled from three same vaporated to dryness. The resulting residue is reconst Nitric Acid / 2% Hydrogen Peroxide. 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ALL VALUES ARE REPORTED IN PARTS PER TRILLION (PPT)

| NE I | .(1) | Αı |
|---------|------|----|
| (1) (2) | (2) | El |
| (3) | (3) | C |
| (4) | | |

KEY (1) Atomic Number

(2) Elemental Symbol(3) Concentration (mean in ppt)

(4) 1 Standard Deviation (N=3)

| 58 Ce | 59 Pr | 60 Nd | 62 Sm | 63 Eu | 64 Gd | 65 Tb | 66 Dy | 67 Ho | 68 Er | 69 Tm | 70 Yb | 71 Lu |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 18 | | | | | | | | | | | | |
| 90 Th | | 92 U | | | | | | | | | | |
| < 0.01 | | < 0.01 | | | | | | | | | | |
| 4 | 1 | | | | | | | | | | | |



NH₃ (20 - 22%): Properties

Molar Mass: 17.03g/mol

Density: 0.92 g/ml

Molarity: 11 moles/litre

Normality: 11 moles/litre

Release Date: November 04, 2016 Expiry Date: November 04, 2019

Greg Henson QA & RA Manager



Product Integrity:

Based on extensive testing results, SEASTAR CHEMICALS INC have found our products, unopened and sealed, maintain the certified integrity, or product quality, for a minimum of three years under the following conditions:

- Stored at room temperature, maximum range 15°C (59°F) to 25°C (77°F).
- Minimum exposure to light.
- For limited time, storage/transport temperature range 5°C (41°F) to 35°C (95°F)

Upon opening the product, the product's integrity will depend on proper handling and exposure to contaminants. The product has been bottled under CLASS 100 clean room conditions, to maintain the certified quality it should be used under these conditions. Furthermore to reduce trace metal contamination, the inner pack of plastic bags and bottle should be opened under CLASS 100 particle conditions to maintain the integrity of the product. The use of plastic gloves, hair net and a clean room suit is also advised.

Safety:

PRIOR to opening or storing this product be sure to consult the Material Safety Data Sheet (MSDS) Section 7 Handling and Storage to ensure safe storage and handling with regards to this hazardous material. This information must be understood prior to its use or storage.

SAFETY HANDLING NOTES: Consult your MSDS, PRIOR to handling these materials. Use proper safety apparel according to the recommendations of the MSDS. Exposure controls and personal protection should include: a properly functioning fume hood, protection for eyes (safety glasses), hands (chemically compatible gloves), feet (chemically compatible boots) and exposed skin (splash protection and a chemically compatible apron). All of these items must conform to local/regional/national regulatory requirements.

Greg Henson

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QA & RA Manager

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