CERTIFICATE OF ANALYSIS

BASELINE® Ammonia Solution

1	PRODU	JCT NU	MBER:	S02070)1	LOT	IUMBEI	R: 7216	060	AS	SAY (NI	13, w/w): 20 %	0		
2A 4 Be < 0.05	average evaporat Nitric Aci For volati	of three ali ed to dryne d / 2% Hydr ile elements	quots subs ss. The res ogen Perox s (indicated	ampled fron ulting residu ide. Operati by *), the ac	n three same is reconstrons are considered samples	nples repres ituted in a s ducted und are diluted t	sentative of mall volume er Class 100 then directly	the lot. The of SEASTA or better cl injected int	e samples a AR™ BASEL ean-room c o the ICP-M	are slowly INE® 2% conditions.	3A 13 AI	4A	5A	6A	7A	
< 0.5	below 3 ti 3B	mes the sta 4B	indard devia	ation of the b	lank are sho	own with '<',	no blank va 8	ue is subtra	cted. 1B	2B	< 10					
20 Ca < 10	21 Sc < 0.01	22 Ti < 0.5	23 V < 0.5	24 Cr < 0.2				28 Ni < 2	29 Cu < 0.5	30 Z n < 2	31 Ga < 0.01	32 G e < 0.01	33 As < 0.5	34 Se < 1		
38 Sr < 0.05	39 Y < 0.01	40 Zr < 0.01	41 N b < 0.01	42 Mo < 0.05		44 Ru < 0.01	45 Rh < 0.01	46 Pd < 0.1	47 Ag < 0.01	48 Cd < 0.02	49 In < 0.01	50 Sn < 0.1	51 Sb < 0.05	52 Te < 0.05		*
			73 Ta									82 Pb < 0.02				
	4 Be < 0.05 12 Mg < 0.5 20 Ca < 10 38 Sr < 0.05 5 56 Ba	2A Most elegaverage evaporat Nitric Acid For volation below 3 to 3B 20	2A 4 Be average of three ali evaporated to dryne Nitric Acid / 2% Hydr For volatile elements below 3 times the state of t	2A 4 Be	A Be average of three aliquots subsampled from evaporated to dryness. The resulting residu Nitric Acid / 2% Hydrogen Peroxide. Operating For volatile elements (indicated by *), the acid below 3 times the standard deviation of the base of the standard deviation	whost elements are determined by high resolution icPalaverage of three aliquots subsampled from three same evaporated to dryness. The resulting residue is reconst Nitric Acid / 2% Hydrogen Peroxide. Operations are constructed by The acid samples below 3 times the standard deviation of the blank are shown as the standard deviation	Most elements are determined by high resolution ICP-MS using saverage of three aliquots subsampled from three samples represe evaporated to dryness. The resulting residue is reconstituted in a sample of three aliquots subsampled from three samples represe evaporated to dryness. The resulting residue is reconstituted in a sample of three aliquots subsampled from three samples representations are conducted und for volatile elements (indicated by *), the acid samples are diluted to below 3 times the standard deviation of the blank are shown with '<', 3B 4B 5B 6B 7B 420 Ca 21 Sc 22 Ti 23 V 24 Cr 25 Mn 26 Fe 4 O.01 4 O.01 4 O.05 4 O.05 38 Sr 39 Y 40 Zr 41 Nb 42 Mo 44 Ru 4 O.05 4 O.01 4 O.01 4 O.01 4 O.01 4 O.01 4 O.01	Most elements are determined by high resolution ICP-MS using sample pred average of three aliquots subsampled from three samples representative of evaporated to dryness. The resulting residue is reconstituted in a small volume Nitric Acid / 2% Hydrogen Peroxide. Operations are conducted under Class 100 For volatile elements (indicated by *), the acid samples are diluted then directly below 3 times the standard deviation of the blank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank valued as a small volume of the plank are shown with '<', no blank	Most elements are determined by high resolution ICP-MS using sample preconcentration average of three aliquots subsampled from three samples representative of the lot. 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Operations are conducted under Class 100 or better clean-room of the blow 3 times the standard deviation of the blank are shown with '<', no blank value is subtracted. 3B 4B 5B 6B 7B 8 1B 4 20 Ca 21 Sc 22 Ti 23 V 24 Cr 25 Mn 26 Fe 27 Co 28 Ni 29 Cu 38 Sr 39 Y 40 Zr 41 Nb 42 Mo 44 Ru 45 Rh 46 Pd 47 Ag 40.05 4 0.01 4 0.01 4 0.01 4 0.01 4 0.01 4 0.01 4 0.01 4 0.01 4 0.01 5	A Be average of three aliquots subsampled from three samples representative of the lot. The samples are slowly evaporated to dryness. The resulting residue is reconstituted in a small volume of SEASTAR™ BASELINE® 2% Nitric Acid / 2% Hydrogen Peroxide. Operations are conducted under Class 100 or better clean-room conditions. For volatile elements (indicated by *), the acid samples are diluted then directly injected into the ICP-MS. Values below 3 times the standard deviation of the blank are shown with '<', no blank value is subtracted. 3B 4B 5B 6B 7B 8 1B 2B 40 Ca 21 Sc 22 Ti 23 V 24 Cr 25 Mn 26 Fe 27 Co 28 Ni 29 Cu 30 Zn < 10 < 0.01 < 0.5 < 0.5 < 0.5 < 0.02 < 2 < 0.05 < 2 < 0.05 < 2 < 0.05 < 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 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.001 < 0.01 < 0.01 < 0.01 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.001 < 0.	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ALL VALUES ARE REPORTED IN PARTS PER TRILLION (PPT)

	IXL I	. (' /	\neg u
ı	(1) (2)	(2)	Ele
ı	(3)	(3)	Co
ı	(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
90 Th		92 U										
< 0.01		< 0.01										
	1.											



NH₃ (20 - 22%): Properties
Molar Mass: 17.03g/mol
Density: 0.92 g/ml
Molarity: 11 moles/litre
Normality: 11 moles/litre

Greg Henson QA & RA Manager Release Date:

June 30, 2016

Expiry Date: June 30, 2019

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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