CERTIFICATE OF ANALYSIS BASELINE[®] Nitric Acid

PRODUCT NUMBER: S020101						LOT NUMBER: 1217042 AS					SAY (HNO 3, w/w): 68%								
2A Most elements are determined by high resolution ICP-MS using sample preconcentration. The results are a verage 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. 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. 3A 4A 5A 6A 7A																			
20 Ca	3B 21 Sc	4B 22 Ti	5B 23 V	6B 24 Cr	7B 25 Mn	26 Fe	8 27 Co	28 Ni	1B 29 Cu	2B 30 Zn	31 Ga	32 Ge	33 As	34 Se					
< 10	< 0.01	< 0.5	< 0.01	< 1	< 0.1	< 5	< 0.1	< 5	< 0. <mark>5</mark>	< 1	< 0.1	< 0.02	< 1	< 10					
38 Sr < 0.05	39 Y < 0.01	40 Zr < 0.05	41 Nb < 0.05	42 Mo < 0.2		44 Ru < 0.05	45 Rh < 0.01	46 Pd < 1	47 Ag < <mark>0.1</mark>	48 Cd < 0.01	49 In < 0.05	50 Sn < 0.2	51 Sb < 0.01	52 Te < 0.02		5			
56 Ba < 0.05	57 La < 0.01	72 Hf < 0.01	73 Ta < 0.01	74 W < 0.05	75 Re < 0.05			78 Pt < 1	79 Au < 1	80 Hg < 20	81 TI < 0.2	82 Pb < 0.05	83 Bi < 0.01						
	2A 4 Be < 0.01 a 12 Mg < 0.5 c 0.5 c 20 Ca < 10 c 38 Sr < 0.05 s 56 Ba	2A Most elerative 4 Be < 0.01	2A Most elements are of average of three alie evaporated to dryne Nitric Acid / 2% Hyd directly injected into blank value is subtrated as the subtr	2AMost elements are determined average of three aliquots subsa- evaporated to dryness. The resu- Nitric Acid / 2% Hydrogen Pero- directly injected into the ICP-MS blank value is subtracted.3B4B5820Ca21Sc3B4B5BColspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2"312Mga 12MgColspan="2">Colspan="2"AB4B58Colspan="2"Colspan="2"ABColspan="2"ABColspan="2"ABColspan="2"ABColspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"ABColspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"MgColspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspa	2AMost elements are determined by high res average of three aliquots subsampled from evaporated to dryness. The resulting residu Nitric Acid / 2% Hydrogen Peroxide. For vi- directly injected into the ICP-MS. Values bell blank value is subtracted.3B4B5B6B < 0.5 $3B$ $4B$ $5B$ $6B$ < 20 Ca 21 Sc 22 Ti 23 V 24 Cr < 10 < 0.01 < 0.5 < 0.01 < 1 < 1 < 38 Sr 39 Y 40 Zr 41 Nb 42 Mc < 0.05 < 0.01 < 0.05 < 0.05 < 0.2 < 0.2 < 0.2 < 56 Ba 57 La 72 Hf 73 Ta 74 W	2AMost elements are determined by high resolution ICP- average of three aliquots subsampled from three same evaporated to dryness. The resulting residue is reconst Nitric Acid / 2% Hydrogen Peroxide. For volatile element directly injected into the ICP-MS. Values below 3 times to blank value is subtracted.a12Mg directly injected into the ICP-MS. Values below 3 times to blank value is subtracted.a12Mg directly injected into the ICP-MS. Values below 3 times to blank value is subtracted.a20Ca21Sc22Ti23V24Cr25Mm410< 0.01	2AMost elements are determined by high resolution ICP-MS using s average of three aliquots subsampled from three samples represe evaporated to dryness. The resulting residue is reconstituted in a s Nitric Acid / 2% Hydrogen Peroxide. For volatile elements (indica directly injected into the ICP-MS. Values below 3 times the standard blank value is subtracted.a12Mg c0.53B4B5B6B7B334B5B6B7B4321Sc22Ti23V24Cr25Mn26Fe538Sr39Y40Zr41Nb42Mo44Ru< 0.05	2AMost 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. For volatile elements (indicated by *), th directly injected into the ICP-MS. Values below 3 times the standard deviation a blank value is subtracted.a12Mg c 0.53B4B5B6B7B840.53B4B5B6B7B8520Ca21Sc22Ti23V24Cr25Mn26Fe27Cc510< 0.01	2AMost elements are determined by high resolution ICP-MS using sample preconcentration average of three aliquots subsampled from three samples representative of the lot. The evaporated to dryness. The resulting residue is reconstituted in a small volume of SEASTA Nitric Acid / 2% Hydrogen Peroxide. For volatile elements (indicated by *), the acid sam directly injected into the ICP-MS. Values below 3 times the standard deviation of the blank a blank value is subtracted.3B4B5B6B7B820Ca21Sc23V24Cr25Min3B4B5B6B7B820Ca21Sc22Ti23V24Cr25Min20Ca21Sc27Co28384B5B6B7B820Ca23V24Cr25Min38Sr39Y44Ru <td colspa<="" td=""><td>2A Most elements are determined by high resolution ICP-MS using sample preconcentration. The result average of three aliquots subsampled from three samples representative of the lot. The samples are evaporated to dryness. The resulting residue is reconstituted in a small volume of SEASTAR[™] BASEL Nitric Acid / 2% Hydrogen Peroxide. For volatile elements (indicated by *), the acid samples are did directly injected into the ICP-MS. Values below 3 times the standard deviation of the blank are shown value is subtracted. 3B 4B 5B 6B 7B 8 1B 3B 4B 5B 6B 7B 8 1B 2 3B 4B 5B 6B 7 Co 28 N <th <="" colspan="2" td=""><td>2AMost elements are determined by high resolution ICP-MS using sample preconcentration. The results are an 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 SEASTARTM BASELINE[®] 2% Nitric Acid / 2% Hydrogen Peroxide. 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.</td></th>a12Mg< 0.5</td>3B4B5B6B7B3B4B5B6B7B810< 0.01</td> < 0.5	<td>2A Most elements are determined by high resolution ICP-MS using sample preconcentration. The result average of three aliquots subsampled from three samples representative of the lot. The samples are evaporated to dryness. The resulting residue is reconstituted in a small volume of SEASTAR[™] BASEL Nitric Acid / 2% Hydrogen Peroxide. For volatile elements (indicated by *), the acid samples are did directly injected into the ICP-MS. Values below 3 times the standard deviation of the blank are shown value is subtracted. 3B 4B 5B 6B 7B 8 1B 3B 4B 5B 6B 7B 8 1B 2 3B 4B 5B 6B 7 Co 28 N <th <="" colspan="2" td=""><td>2AMost elements are determined by high resolution ICP-MS using sample preconcentration. The results are an average of three aliquots subsampled from three samples representative of the lot. 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Values below 3 times the standard deviation of the blank are shown with '<', no blank value is subtracted.3B4B5B6B7B81B2B20Ca21Sc22Ti23V24Cr25Mn26Fe27Co28Ni29Cu30Zn31Ga32Ge33As< 10	A Most elements are determined by high resolution ICP-MS using sample preconcentration. The results are an 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 TM BASELINE [®] 2%, Nitric Acid / 2% Hydrogen Peroxide. 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 directly injected into the ICP-MS. Values below 3 times the standard deviation of the blank are shown with '<', no blank value is subtracted.3A 4A 5A 6A20Ca21Sc22Ti23V24Cr25Mn26Fe27Co28Ni29Cu30Zn31Ga32Ge33As34Se20Ca21Sc22Ti23V24Cr25Mn26Fe27Co28Ni29Cu30Zn31Ga32Ge33As34Se< 10	A Most elements are determined by high resolution ICP-MS using sample preconcentration. The results are an 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 TM BASELINE® 2% Nitric Acid / 2% Hydrogen Peroxide. For volatile elements (indicated by *), the acid samples are slowly directly injected into the ICP-MS. Values below 3 times the standard deviation of the blank are shown with 's', no directly injected into the ICP-MS. Values below 3 times the standard deviation of the blank are shown with 's', no blank value is subtracted.3A 4A 5A 6A 7A12Mg< 0.5

ALL VALUES ARE REPORTED IN PARTS PER TRILLION (PPT)

KEY	(1) Atomic Number	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
	(2) Elemental Symbol	< 0.01	< 0.01	< 0.01	1.00	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	(3) Concentration (mean				1. State 1.										
	in ppt) (4) 1 Standard Deviation	90 Th		92 U											
	(N=3)	< 0.01		< 0.01		_	100		- C						
	(1.0						

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QA & RA Manager

Greg Henson

HNO₃ (67 - 70%): Properties Molar Mass: 63.01g/mol Density: 1.41 g/ml Molarity: 16 moles/litre Normality: 16 moles/litre

BASELINE

n s/litre s/litre ReleaseDate:AExpiry Date:A

April 25, 2017 April 25, 2020

IN SEASTAR CHEMICALS INC



SEASTAR[™]'s Product Integrity Guidelines:

We have found our products, unopened and sealed, maintain the certified integrity, or product quality, for their stated certification period under the following conditions:

- Store at room temperature, maximum range 15°C (59°F) to 25°C (77°F).
- Avoid exposure to sunlight or ultraviolet light sources.
- Open in a 'particle free' environment. SEASTAR recommends a HEPA or ULPA particle filtered trace metal clean room. Open product should be handled under Class 100 or ISO 5 clean room or better conditions.

Once opened, product integrity will depend on proper handling and exposure to contaminants. To reduce trace metal contamination, the inner pack of plastic bags and bottle should be opened under Class 100 or ISO 5 clean room or better conditions to maintain the integrity of the product. The use of plastic gloves, hair net and a clean room suit is also advised.

Safety Guidelines:

PRIOR to opening or storing this product be sure to consult the Safety Data Sheet (SDS) to ensure safe storage and handling with regards to this hazardous material. This information must be read and understood prior to use or storage.

SAFETY HANDLING NOTES: Consult the SDS PRIOR to handling this product. Use proper safety apparel according to the recommendations of the SDS. 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.

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Greg Henson QA & RA Manager

10005 McDonald Park Road, Sidney, BC, Canada V8L5Y2 Phone: 1 (250) 655-5880 Fax: 1 (250) 655-5888 Toll free: 1 (800) 663-2330 (within Canada & U.S. only) Email: <u>seastar.technicalsupport@seastarchemicals.com</u> Web: www.seastarchemicals.com