# CERTIFICATE OF ANALYSIS

# **BASELINE®** Hydrofluoric Acid

	PRODU	CT NUN	MBER: \$	S020502	2 L	OT NU	MBER:	521502	:0		ASSAY	(HF, w/\	w): 49%	6		
2A 4 Be < 0.01	average evaporate Nitric Acid	of three alided to drynes d / 2% Hydro	quots subs ss. The resu ogen Perox	ampled fror ulting residu ide. Operati	n three sam le is reconst ions are con	nples repres ituted in a s ducted und	sentative of mall volume er Class 10	the lot. The of SEASTA or better cl	e samples a AR™ BASEL ean-room c	are slowly INE® 2% conditions.	3A 5 B < 10	4A	5A	6A	7A	
12 Mg   < 1										IS. Values 2B	13 AI < 5					
<b>20</b> Ca < 10	<b>21</b> Sc < 0.01	<b>22</b> Ti < 5	<b>23 V</b> < 0.01				27 Co < 0.1	28 Ni < 1	29 Cu < 1	30 Zn < 1	<b>31 Ga</b> < 0.01	<b>32 Ge</b> < 0.01	<b>33 As</b> <sup>3</sup> < 20	* <b>34 Se</b> < 5		
38 Sr < 0.05	<b>39</b> Y < 0.01	<b>40 Z</b> r < 0.5	<b>41 Nb</b> < 0.05	<b>42</b> Mo < 0.5		<b>44 Ru</b> < 0.01	45 Rh < 0.01	<b>46</b> Pd < 0.1	47 Ag < 0.5	<b>48 Cd</b> < 0.01	<b>49</b> In < 0.01	<b>50</b> Sn < 0.1	<b>51 Sb</b> < 0.02	<b>52 Te</b> < 0.02		-
<b>56 Ba</b> < 0.05	<b>57</b> La < 0.01	<b>72 Hf</b> < 0.01	<b>73 Ta</b> < 0.01	<b>74 W</b> < 20	<b>75</b> Re < 0.01			<b>78</b> Pt < 0.1	79 Au < 1	<b>80 Hg</b> *	81 TI < 0.01	<b>82 Pb</b> < 0.05	83 Bi < 0.02			
1	2A  4 Be < 0.01  12 Mg < 1  20 Ca < 10  38 Sr < 0.05  5 56 Ba	2A Most eler average evaporat Nitric Acid For volation below 3 to 3B St	2A  4 Be average of three ali evaporated to dryne Nitric Acid / 2% Hydr For volatile elements below 3 times the state of t	A Be average of three aliquots subsequaporated to dryness. The resultiric Acid / 2% Hydrogen Perox For volatile elements (indicated below 3 times the standard deviation 3B AB 5B	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	A Be average of three aliquots subsampled from three same evaporated to dryness. The resulting residue is reconst Nitric Acid / 2% Hydrogen Peroxide. Operations are const Nitric Acid / 2% Hydrogen Peroxide. Operations are	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 sometime of the provided in t	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 at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank valued at the standard deviation of the blank are shown with '<', no blank value	Most elements are determined by high resolution ICP-MS using sample preconcentratio average of three aliquots subsampled from three samples representative of the lot. 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#### ALL VALUES ARE REPORTED IN PARTS PER TRILLION (PPT)

(1) (2) (3) (4) (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										
	•											



HF (47 - 51%): Properties

Molar Mass: 20.01g/mol
Density: 1.18 g/ml
Molarity: 29 moles/litre
Normality: 29 moles/litre

Analyte Maximum Actual
Specification Value (in ppb)
Total Sulphur (S) 100 ppb < 50

Release Date: March 24, 2015 Expiry Date: March 24, 2018

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Dr. B. McKelvey QA/QC 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.

Dr. B. McKelvey QA/QC Manager

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