



Material Safety Data Sheet

NFPA 	HMIS <table border="1" style="margin: auto;"> <tr><td style="background-color: #00FFFF;">Health Hazard</td><td style="text-align: center;">2</td></tr> <tr><td style="background-color: #FFCCCC;">Fire Hazard</td><td style="text-align: center;">0</td></tr> <tr><td style="background-color: #FFFF00;">Reactivity</td><td style="text-align: center;">0</td></tr> </table>	Health Hazard	2	Fire Hazard	0	Reactivity	0	Personal Protective Equipment
Health Hazard	2							
Fire Hazard	0							
Reactivity	0							
See Section 15.								

Section 1. Chemical Product and Company Identification		Page Number: 1
Common Name/Trade Name	ICP-MS Calibration Std. - Solution II, Alkali, Alkaline, Non-transition Group	Catalog Number(s). PM495
Manufacturer	SPECTRUM CHEMICAL MFG. CORP. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	CAS# Mixture.
Commercial Name(s)	Not available.	RTECS Not applicable.
Synonym	Not available.	TSCA TSCA 8(b) inventory: Aluminum; Arsenic; Barium; Beryllium; Bismuth; Cadmium; Calcium; Cesium; Chromium; Cobalt; Copper; Gallium; Indium; Iron; Lead; Lithium; Magnesium; Manganese; Nickel; Potassium; Rubidium; Selenium; Silver; Sodium; Strontium; Thallium; Uranium; Vanadium; Zinc; Mercury; Nitric acid, 70%; Water
Chemical Name	Not applicable.	CI# Not applicable.
Chemical Family	Metal. (Inert material.)	IN CASE OF EMERGENCY CHEMTREC (24hr) 800-424-9300 CALL (310) 516-8000
Chemical Formula	Not applicable.	
Supplier	SPECTRUM CHEMICAL MFG. CORP. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	

Section 2. Composition and Information on Ingredients					
Name	CAS #	Exposure Limits			% by Weight
		TWA (mg/m ³)	STEL (mg/m ³)	CEIL (mg/m ³)	
1) Aluminum	7429-90-5	10			0.001
2) Arsenic	7440-38-2	0.01			0.001
3) Barium	7440-39-3	0.5			0.001
4) Beryllium	7440-41-7	0.002		0.02	0.001
5) Bismuth	7440-69-9				0.001
6) Cadmium	7440-43-9	0.01			0.001
7) Calcium	7440-70-2				0.001
8) Cesium	7440-46-2				0.001
9) Chromium	7440-47-3	0.5			0.001
10) Cobalt	7440-48-4	0.05			0.001
11) Copper	7440-50-8	1			0.001
12) Gallium	7440-55-3				0.001

Continued on Next Page

14) Iron	7439-89-6				0.001
15) Lead	7439-92-1	0.15		0.45	0.001
16) Lithium	7439-93-2				0.001
17) Magnesium	7439-95-4				0.001
18) Manganese	7439-96-5	1	3		0.001
19) Nickel	7440-02-0	1			0.001
20) Potassium	7440-09-7				0.001
21) Rubidium	7440-17-7				0.001
22) Selenium	7782-49-2	0.2			0.001
23) Silver	7440-22-4	0.01			0.001
24) Sodium	7440-23-5				0.001
25) Strontium	7440-24-6				0.001
26) Thallium	7440-28-0	0.1			0.001
27) Uranium	7440-61-1	0.2	0.6		0.001
28) Vanadium	7440-62-2				0.001
29) Zinc	7440-66-6	10			0.001
30) Mercury	7439-97-6	0.05		0.15	0.001
31) Water	7732-18-5				96.5
32) Nitric acid, fuming	7697-37-2	5		4	3.5

**Toxicological Data
on Ingredients**

**Nitric acid, fuming:
VAPOR (LC50):**

Acute: 67 ppm 4 hour(s) [Rat].

Section 3. Hazards Identification

Potential Acute Health Effects Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant), of ingestion, of inhalation. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant), of ingestion, of inhalation.
CARCINOGENIC EFFECTS: Not available.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.
 The substance is toxic to lungs, mucous membranes.
 Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs. Repeated or prolonged inhalation of vapors may lead to chronic respiratory irritation.

Section 4. First Aid Measures

Eye Contact Check for and remove any contact lenses. Do not use an eye ointment. Seek medical attention.

Skin Contact If the chemical got onto the clothed portion of the body, remove the contaminated clothes as quickly as possible, protecting your own hands and body. Place the victim under a deluge shower. If the chemical got on the victim's exposed skin, such as the hands : Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion	Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.
Serious Ingestion	Not available.

Section 5. Fire and Explosion Data

Flammability of the Product	Non-flammable.
Auto-Ignition Temperature	Not applicable.
Flash Points	Not applicable.
Flammable Limits	Not applicable.
Products of Combustion	Not available.
Fire Hazards in Presence of Various Substances	Not applicable.
Explosion Hazards in Presence of Various Substances	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive to explosive in presence of reducing materials, of combustible materials, of organic materials.
Fire Fighting Media and Instructions	Not applicable.
Special Remarks on Fire Hazards	Not available.
Special Remarks on Explosion Hazards	Not available.

Section 6. Accidental Release Measures

Small Spill	Absorb with an inert material and put the spilled material in an appropriate waste disposal. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.
Large Spill	Corrosive liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7. Handling and Storage

Precautions	Keep locked up Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapour/spray. Never add water to this product In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes Keep away from incompatibles such as alkalis.
Storage	Corrosive materials should be stored in a separate safety storage cabinet or room.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.
Personal Protection	Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.
Personal Protection in Case of a Large Spill	Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Exposure Limits	<p>Nitric acid, fuming TWA: 2 CEIL: 4 (ppm) TWA: 5 CEIL: 10 (mg/m³)</p> <p>Consult local authorities for acceptable exposure limits.</p>

Section 9. Physical and Chemical Properties

Physical state and appearance	Liquid.	Odor	Not available.
Molecular Weight	Not applicable.	Taste	Not available.
pH (1% soln/water)	Acidic.	Color	Not available.
Boiling Point	The lowest known value is 82.6°C (180.7°F) (Nitric acid, fuming). Weighted average: 99.39°C (210.9°F)		
Melting Point	May start to solidify at -41.6°C (-42.9°F) based on data for: Nitric acid, fuming.		
Critical Temperature	Not available.		
Specific Gravity	Weighted average: 1.01 (Water = 1)		
Vapor Pressure	The highest known value is 45 mm of Hg (@ 20°C) (Nitric acid, fuming). Weighted average: 18.5 mm of Hg (@ 20°C)		
Vapor Density	The highest known value is 0.62 (Air = 1) (Water).		
Volatility	Not available.		
Odor Threshold	The highest known value is 0.29 ppm (Nitric acid, fuming)		
Water/Oil Dist. Coeff.	The product is insoluble in water and oil.		
Ionicity (in Water)	Not available.		
Dispersion Properties	Very slightly dispersed in n-octanol. Is not dispersed in cold water, hot water, methanol, diethyl ether, acetone.		
Solubility	Insoluble in cold water, hot water, methanol, diethyl ether, n-octanol, acetone.		

Section 10. Stability and Reactivity Data

Stability	The product is stable.
Instability Temperature	Not available.
Conditions of Instability	Not available.
Incompatibility with various substances	Reactive with alkalis. Slightly reactive to reactive with reducing agents, combustible materials, organic materials, metals, acids.
Corrosivity	Not considered to be corrosive for metals and glass.
Special Remarks on Reactivity	Air sensitive. (Aluminum)

Continued on Next Page

Special Remarks on Corrosivity Not available.
Polymerization No.

Section 11. Toxicological Information

Routes of Entry Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals **WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE.**
Acute toxicity of the vapor (LC50): 1914 ppm 4 hour(s) (Rat) (Calculated value for the mixture).

Chronic Effects on Humans The substance is toxic to lungs, mucous membranes.

Other Toxic Effects on Humans Very hazardous in case of skin contact (corrosive, irritant, permeator), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals Not available.

Special Remarks on Chronic Effects on Humans Due to the presence of dark line on gums, chronic bismuth toxicity may complicate diagnosis of chronic lead toxicity. (Bismuth)

Special Remarks on other Toxic Effects on Humans Material is irritating to mucous membranes and upper respiratory tract. (Aluminum)

Section 12. Ecological Information

Ecotoxicity Not available.

BOD5 and COD Not available.

Products of Biodegradation Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation Not available.

Special Remarks on the Products of Biodegradation Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. (Zinc)

Section 13. Disposal Considerations

Waste Disposal

Section 14. Transport Information

DOT Classification CLASS 8: Corrosive liquid.
CLASS 6.1: Poisonous material.

Identification : Corrosive toxic liquids n.o.s. (Nitric acid, fuming) : UN2922 PG: I

Special Provisions for Transport Marine Pollutant (Cadmium)

DOT (Pictograms)



Section 15. Other Regulatory Information and Pictograms

Federal and State Regulations

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Arsenic; Beryllium; Cadmium; Cobalt; Lead; Nickel; Mercury

California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (female) which would require a warning under the statute: Lead

California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (male) which would require a warning under the statute: Lead

California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Lead; Mercury

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Arsenic; Beryllium; Cadmium; Cobalt; Lead; Nickel

Pennsylvania RTK: Aluminum; Arsenic; Beryllium; Cadmium; Calcium; Chromium; Cobalt; Copper; Lead; Lithium; Magnesium; Manganese; Nickel; Potassium; Selenium; Silver; Sodium; Thallium; Zinc; Mercury; Nitric acid, 70%

Massachusetts RTK: Aluminum; Arsenic; Beryllium; Cadmium; Calcium; Chromium; Cobalt; Copper; Lead; Lithium; Magnesium; Manganese; Nickel; Potassium; Selenium; Silver; Sodium; Thallium; Zinc; Mercury; Nitric acid, 70%

TSCA 8(b) inventory: Aluminum; Arsenic; Barium; Beryllium; Bismuth; Cadmium; Calcium; Cesium; Chromium; Cobalt; Copper; Gallium; Indium; Iron; Lead; Lithium; Magnesium; Manganese; Nickel; Potassium; Rubidium; Selenium; Silver; Sodium; Strontium; Thallium; Uranium; Vanadium; Zinc; Mercury; Nitric acid, 70%; Water

SARA 302/304/311/312 extremely hazardous substances: Nitric acid, 70%

SARA 313 toxic chemical notification and release reporting: Beryllium; Cadmium; Chromium; Lead; Manganese; Nickel; Selenium; Silver; Thallium; Zinc; Mercury; Nitric acid, 70%

CERCLA: Hazardous substances.: Beryllium; Cadmium; Chromium; Copper; Lead; Nickel; Selenium; Silver; Sodium; Thallium; Zinc; Mercury; Nitric acid, 70%;

California Proposition 65 Warnings

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Arsenic; Beryllium; Cadmium; Cobalt; Lead; Nickel

California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Lead; Mercury

Other Regulations

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications

WHMIS (Canada) CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC).
CLASS D-2A: Material causing other toxic effects (VERY TOXIC).
CLASS E: Corrosive liquid.

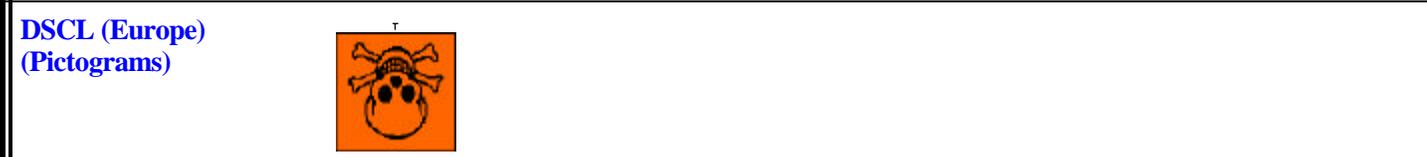
DSCL (EEC) R23- Toxic by inhalation.
R38- Irritating to skin.
R41- Risk of serious damage to eyes.

HMIS (U.S.A.)

Health Hazard	2
Fire Hazard	0
Reactivity	0
Personal Protection	0

National Fire Protection Association (U.S.A.)

Health: 2, Flammability: 0, Reactivity: 0, Specific hazard: COR

**TDG (Canada)
(Pictograms)**



**ADR (Europe)
(Pictograms)**



Protective Equipment



Gloves.



Full suit.



Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.



Face shield.

Section 16. Other Information

MSDS Code PM495

References Not available.

Other Special Considerations Not available.

Validated by Sonia Owen on 8/11/2006.

Verified by Sonia Owen.

Printed 9/12/2006.

CALL (310) 516-8000

Notice to Reader

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.