

Issuing Date 25-Nov-2015

Revision Date 25-Nov-2015

Revision Number 1

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

**Product identifier**

**Product Number** 856  
**Product Name** Vanadium  
**Synonyms** None

**Recommended use of the chemical and restrictions on use**

**Recommended Use** Laboratory use only  
**Uses advised against** No information available

**Details of the supplier of the safety data sheet**

**Supplier** ERA a Waters Company  
**Supplier Address** 16341 Table Mountain Parkway, Golden, CO 80403 USA  
**Non-Emergency Telephone Number** +1-303-431-8454  
**Supplier Email** sdsinfo@waters.com  
**Emergency telephone number**  
**Company Emergency Phone Number** In case of EMERGENCY call CHEMTREC Day or Night  
 Within USA and Canada: 800-424-9300  
 International Call Collect: +1-703-527-3887

## 2. HAZARDS IDENTIFICATION


**Classification**

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1

**GHS Label elements, including precautionary statements**

### Emergency Overview

<b>Signal word</b>	Danger	
<b>Hazard Statements</b>	Causes severe skin burns and eye damage	
		
<b>Appearance</b>	Clear, colorless	<b>Physical state</b> Liquid
		<b>Odor</b> Odorless

**Precautionary Statements - Prevention**

Do not breathe dust/fume/gas/mist/vapors/spray  
 Wash face, hands and any exposed skin thoroughly after handling  
 Wear protective gloves/protective clothing/eye protection/face protection

**Precautionary Statements - Response**

Immediately call a POISON CENTER or doctor/physician  
 Specific treatment (see supplemental first aid instructions on this label)

**Eyes**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
Immediately call a POISON CENTER or doctor/physician

**Skin**

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower  
Wash contaminated clothing before reuse

**Inhalation**

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
Immediately call a POISON CENTER or doctor/physician

**Ingestion**

IF SWALLOWED: Rinse mouth. DO NOT induce vomiting

**Precautionary Statements - Storage**

Store locked up

**Precautionary Statements - Disposal**

Dispose of contents/container to an approved waste disposal plant

**Hazards not otherwise classified (HNOC)**

Not applicable

**Unknown Toxicity**

0 % of the mixture consists of ingredient(s) of unknown toxicity

**Other information**

No information available

**Interactions with Other Chemicals**

No information available.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Note: only the components contributing to the product's GHS hazard classification are listed in this section.

Chemical name	CAS No	Weight-%
Nitric Acid	7697-37-2	1

### 4. FIRST AID MEASURES

**First aid measures****General Advice**

Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

**Eye contact**

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Seek immediate medical attention/advice.

**Skin contact**

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Seek immediate medical attention/advice.

**Inhalation**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, (trained personnel should) give oxygen. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

**Ingestion**

Do NOT induce vomiting. Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

**Self-protection of the first aider**

Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

**Most important symptoms and effects, both acute and delayed****Most Important Symptoms and Effects**

Burning sensation.

**Indication of any immediate medical attention and special treatment needed**

**Notes to Physician**

Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure.

## 5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media**

CO2 (except for Cyanides), dry chemical, dry sand, alcohol-resistant foam. Water spray, fog or alcohol-resistant foam. Move containers from fire area if you can do it without risk. Use water spray or fog; do not use straight streams. Dike fire control water for later disposal; do not scatter the material.

**Unsuitable Extinguishing Media**

Note: Most foams will react with the material and release corrosive/toxic gases.

**Specific hazards arising from the chemical**

Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.). Substance will react with water (some violently), releasing corrosive and/or toxic gases. Reaction with water may generate much heat which will increase the concentration of fumes in the air. Containers may explode when heated or if contaminated with water.

**Uniform Fire Code**

Corrosive: Other--Liquid

**Hazardous Combustion Products**

Carbon oxides.

**Explosion Data**

**Sensitivity to Mechanical Impact** No.

**Sensitivity to Static Discharge** No.

**Protective equipment and precautions for firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures****Personal precautions**

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if you can do it without risk.

**Other Information**

Do not get water inside containers.

**Environmental precautions****Environmental precautions**

Prevent entry into waterways, sewers, basements or confined areas. Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.

**Methods and material for containment and cleaning up****Methods for containment**

A vapor suppressing foam may be used to reduce vapors. Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.

**Methods for cleaning up**

Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

**7. HANDLING AND STORAGE**

**Precautions for safe handling**

**Handling** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Use only with adequate ventilation and in closed systems. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.

**Conditions for safe storage, including any incompatibilities**

**Storage** Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Store locked up. Keep out of the reach of children. Store away from other materials.

**Incompatible Products** Acids. Bases. Oxidizing agent.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Control parameters**

**Exposure Guidelines**

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Nitric Acid 7697-37-2	STEL: 4 ppm TWA: 2 ppm	TWA: 2 ppm TWA: 5 mg/m <sup>3</sup> (vacated) TWA: 2 ppm (vacated) TWA: 5 mg/m <sup>3</sup> (vacated) STEL: 4 ppm (vacated) STEL: 10 mg/m <sup>3</sup>	IDLH: 25 ppm TWA: 2 ppm TWA: 5 mg/m <sup>3</sup> STEL: 4 ppm STEL: 10 mg/m <sup>3</sup>

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits Immediately Dangerous to Life or Health

**Other Exposure Guidelines** Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992) See section 15 for national exposure control parameters

**Appropriate engineering controls**

**Engineering Measures** Showers  
Eyewash stations  
Ventilation systems

**Individual protection measures, such as personal protective equipment**

**Eye/face protection** Face protection shield.  
**Skin and body protection** Wear protective gloves and protective clothing. Long sleeved clothing. Chemical resistant apron. Impervious gloves.  
**Respiratory protection** No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.  
**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. For environmental protection, remove and wash all contaminated protective equipment before re-use.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Physical and Chemical Properties**

<b>Physical state</b>	Liquid	<b>Odor</b>	Odorless
<b>Appearance</b>	Clear, colorless	<b>Odor Threshold</b>	No information available
<b>Color</b>	No information available		
<b>Property</b>	<b>Values</b>	<b>Remarks</b>	<b>Method</b>
<b>pH</b>	2	None known	
<b>Melting / freezing point</b>	no data available	None known	

Boiling point / boiling range	no data available	None known
Flash Point	no data available	None known
Evaporation Rate	no data available	None known
Flammability (solid, gas)	no data available	None known
Flammability Limit in Air		None known
Upper flammability limit	no data available	
Lower flammability limit	no data available	
Vapor pressure	no data available	None known
Vapor density	no data available	None known
Specific Gravity	1	None known
Water Solubility	Soluble in water	None known
Solubility in other solvents	no data available	None known
Partition coefficient: n-octanol/water	no data available	None known
Autoignition temperature	no data available	None known
Decomposition temperature	no data available	None known
Kinematic viscosity	no data available	None known
Dynamic viscosity	no data available	None known
Explosive properties	no data available	
Oxidizing properties	no data available	

**Other Information**

Softening Point	no data available
VOC Content (%)	no data available
Particle Size	no data available
Particle Size Distribution	

**10. STABILITY AND REACTIVITY****Reactivity**

no data available.

**Chemical stability**

Stable under recommended storage conditions.

**Possibility of Hazardous Reactions**

None under normal processing.

**Hazardous Polymerization**

Hazardous polymerization does not occur.

**Conditions to avoid**

Exposure to air or moisture over prolonged periods.

**Incompatible materials**

Acids. Bases. Oxidizing agent.

**Hazardous Decomposition Products**

Carbon oxides.

**11. TOXICOLOGICAL INFORMATION****Information on likely routes of exposure****Product Information****Inhalation**

Specific test data for the substance or mixture is not available. Corrosive by inhalation. (based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal. May cause irritation of respiratory tract.

**Eye contact**

Specific test data for the substance or mixture is not available. Causes burns. (based on components). Corrosive to the eyes and may cause severe damage including blindness. Causes serious eye damage. May cause irreversible damage to eyes.

**Skin contact**

Specific test data for the substance or mixture is not available. May cause irritation. Prolonged contact may cause redness and irritation.

**Ingestion**

Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways. Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

**Component Information**

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Nitric Acid 7697-37-2	-	-	= 130 mg/m <sup>3</sup> ( Rat ) 4 h = 67 ppm ( Rat ) 4 h

**Information on toxicological effects**

**Symptoms** Erythema (skin redness). Burning. May cause blindness. Coughing and/ or wheezing.  
**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Sensitization** No information available.  
**Carcinogenicity** The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	ACGIH	IARC	NTP	OSHA
Nitric Acid 7697-37-2		Group 1 Group 2A		X

*IARC (International Agency for Research on Cancer)*

*Group 2A - Probably Carcinogenic to Humans*

*OSHA (Occupational Safety and Health Administration of the US Department of Labor)*

*X - Present*

**Reproductive toxicity** No information available.  
**STOT - single exposure** No information available.  
**STOT - repeated exposure** No information available.  
**Chronic toxicity** No known effect based on information supplied. Chronic exposure to corrosive fumes/gases may cause erosion of the teeth followed by jaw necrosis. Bronchial irritation with chronic cough and frequent attacks of pneumonia are common. Gastrointestinal disturbances may also be seen. Contains a known or suspected carcinogen.  
**Target Organ Effects** Respiratory system. Eyes. Skin. Gastrointestinal tract (GI). Teeth.  
**Aspiration Hazard** No information available.

**Numerical measures of toxicity Product Information**

The following values are calculated based on chapter 3.1 of the GHS document

Not applicable

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

Harmful to aquatic life.

Chemical name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Nitric Acid 7697-37-2		96h LC50: = 72 mg/L (Gambusia affinis)		

**Persistence and Degradability**

No information available.

**Bioaccumulation**

Chemical name	Log Pow
Nitric Acid 7697-37-2	-2.3

**Other adverse effects**

No information available.

### 13. DISPOSAL CONSIDERATIONS

#### Waste treatment methods

**Disposal methods** This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261).

**Contaminated Packaging** Dispose of contents/containers in accordance with local regulations.

**US EPA Waste Number** D002 P120

#### **California Hazardous Waste Codes 791**

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical name	California Hazardous Waste
Nitric Acid 7697-37-2	Toxic Corrosive Ignitable

### 14. TRANSPORT INFORMATION

#### DOT

**UN-No.** UN2031  
**Proper Shipping Name** NITRIC ACID  
**Hazard Class** 8  
**Subsidiary class** 5.1  
**Packing Group** II  
**Description** UN2031, NITRIC ACID, 8 (5.1), II  
**Emergency Response Guide Number** 157

#### TDG

**UN-No.** UN2031  
**Proper Shipping Name** NITRIC ACID  
**Hazard Class** 8  
**Packing Group** II  
**Description** UN2031, NITRIC ACID, 8, II, MARINE POLLUTANT

#### MEX

**UN-No.** UN2031  
**Proper Shipping Name** NITRIC ACID  
**Hazard Class** 8  
**Subsidiary class** 5.1  
**Packing Group** II  
**Description** UN2031, NITRIC ACID, 8 (5.1), II

#### ICAO

**UN-No.** UN2031  
**Proper Shipping Name** NITRIC ACID  
**Hazard Class** 8  
**Packing Group** II  
**Description** UN2031, NITRIC ACID, 8, II

#### IATA

**UN-No.** UN2031  
**Proper Shipping Name** NITRIC ACID  
**Hazard Class** 8  
**Packing Group** II  
**Special Provisions** None  
**Description** UN2031, NITRIC ACID, 8, II

#### IMDG/IMO

<b>UN-No.</b>	UN2031
<b>Proper Shipping Name</b>	NITRIC ACID
<b>Hazard Class</b>	8
<b>Subsidiary class</b>	5.1
<b>Packing Group</b>	II
<b>EmS-No.</b>	F-A, S-Q
<b>Special Provisions</b>	None
<b>Marine Pollutant</b>	Not applicable
<b>Description</b>	UN2031, NITRIC ACID, 8 (5.1), II, MARINE POLLUTANT

**RID**

<b>UN-No.</b>	UN2031
<b>Proper Shipping Name</b>	NITRIC ACID
<b>Hazard Class</b>	8
<b>Packing Group</b>	II
<b>Classification code</b>	CO1
<b>Special Provisions</b>	None
<b>Description</b>	UN2031, NITRIC ACID, 8 (5.1), II
<b>ADR/RID-Labels</b>	5.1

**ADR**

<b>UN-No.</b>	UN2031
<b>Proper Shipping Name</b>	NITRIC ACID
<b>Hazard Class</b>	8
<b>Packing Group</b>	II
<b>Classification code</b>	CO1
<b>Tunnel restriction code</b>	(E)
<b>Special Provisions</b>	None
<b>Description</b>	UN2031, NITRIC ACID, 8 (5.1), II
<b>ADR/RID-Labels</b>	8 5.1

**ADN**

<b>UN-No.</b>	UN2031
<b>Proper Shipping Name</b>	NITRIC ACID
<b>Hazard Class</b>	8
<b>Packing Group</b>	II
<b>Classification code</b>	CO1
<b>Description</b>	UN2031, NITRIC ACID, 8 (5.1), II
<b>Hazard Labels</b>	8 + 5.1
<b>Limited Quantity</b>	1 L

<b>15. REGULATORY INFORMATION</b>
-----------------------------------

**International Inventories**

<b>TSCA</b>	Complies
<b>DSL</b>	All components are listed either on the DSL or NDSL.
<b>ENCS</b>	Contact supplier for inventory compliance status
<b>IECSC</b>	-
<b>KECL</b>	Contact supplier for inventory compliance status
<b>PICCS</b>	Contact supplier for inventory compliance status
<b>AICS</b>	Contact supplier for inventory compliance status

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory  
**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List  
**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances  
**ENCS** - Japan Existing and New Chemical Substances  
**IECSC** - China Inventory of Existing Chemical Substances  
**KECL** - Korean Existing and Evaluated Chemical Substances  
**PICCS** - Philippines Inventory of Chemicals and Chemical Substances  
**AICS** - Australian Inventory of Chemical Substances

**US Federal Regulations**



**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical name	CAS No	Weight-%	SARA 313 - Threshold Values %
Nitric Acid - 7697-37-2	7697-37-2	1	1.0

**SARA 311/312 Hazard Categories**

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

**CWA (Clean Water Act)**

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Nitric Acid 7697-37-2	1000 lb			X

**CERCLA**

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
Nitric Acid 7697-37-2	1000 lb	1000 lb	RQ 1000 lb final RQ RQ 454 kg final RQ

**US State Regulations****California Proposition 65**

This product contains the following Proposition 65 chemicals.

**U.S. State Right-to-Know Regulations****International Regulations****Mexico****National occupational exposure limits**

Component	Carcinogen Status	Exposure Limits
Nitric Acid 7697-37-2 ( 1 )		Mexico: TWA 2 ppm Mexico: TWA 5 mg/m <sup>3</sup> Mexico: STEL 4 ppm Mexico: STEL 10 mg/m <sup>3</sup>

Mexico - Occupational Exposure Limits - Carcinogens

**Canada****WHMIS Hazard Class**

Not determined

**16. OTHER INFORMATION**

<b>NFPA</b>	<b>Health Hazards 3</b>	<b>Flammability 0</b>	<b>Instability 0</b>	<b>Physical and Chemical Hazards - Personal Protection</b> X
<b>HMIS</b>	<b>Health Hazards 3</b>	<b>Flammability 0</b>	<b>Physical Hazard 0</b>	

**Prepared By** Product Stewardship  
23 British American Blvd.  
Latham, NY 12110  
1-800-572-6501

**Issuing Date** 25-Nov-2015

**Revision Date** 25-Nov-2015

**Revision Note**

No information available

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text



The supplier identified below generated this SDS using the UL SDS template. UL did not test, certify, or approve the substance described in this SDS, and all information in this SDS was provided by the supplier or was reproduced from publically available regulatory data sources. UL makes no representations or warranties regarding the completeness or accuracy of the information in this SDS and disclaims all liability in connection with the use of this information or the substance described in this SDS. The layout, appearance and format of this SDS is © 2014 UL LLC. All rights reserved

**End of Safety Data Sheet**