Safety Data Sheet
acc. to OSHA HCS

Printing date 10/26/2018 *Reviewed on 10/26/2018*

1 Identification

· **Product identifier**

· **Product name:** **Cadmium Standard: 10000 µg/mL Cd in 5% HNO3 [100ml bottle]**

· **Part number:** 5190-8366
· **Application of the substance / the mixture** Reagents and Standards for Analytical Chemical Laboratory Use

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Agilent Technologies, Inc. Tel: 800-227-9770
5301 Stevens Creek Blvd
Santa Clara, CA 95051,
USA

· **Information department:** e-mail: pdl-msds_author@agilent.com
· **Emergency telephone number:** CHEMTREC®: 1-800-424-9300

2 Hazard(s) identification

· **Classification of the substance or mixture**

GHS03 Flame over circle

Ox. Liq. 3	H272 May intensify fire; oxidizer.

GHS08 Health hazard

Muta. 2	H341 Suspected of causing genetic defects.
Carc. 1B	H350 May cause cancer.
Repr. 2	H361 Suspected of damaging fertility or the unborn child.
STOT RE 1	H372 Causes damage to organs through prolonged or repeated exposure.

GHS05 Corrosion

Skin Corr. 1B	H314 Causes severe skin burns and eye damage.
Eye Dam. 1	H318 Causes serious eye damage.

Aquatic Acute 3	H402 Harmful to aquatic life.
Aquatic Chronic 3	H412 Harmful to aquatic life with long lasting effects.

· **Label elements**
· **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS03 GHS05 GHS08

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Product name: **Cadmium Standard: 10000 µg/mL Cd in 5% HNO3 [100ml bottle]**

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· ***Signal word*** *Danger*

· ***Hazard-determining components of labeling:***
Nitric acid
cadmium
· ***Hazard statements***
H272 May intensify fire; oxidizer.
H314 Causes severe skin burns and eye damage.
H341 Suspected of causing genetic defects.
H350 May cause cancer.
H361 Suspected of damaging fertility or the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.
H402 Harmful to aquatic life.
H412 Harmful to aquatic life with long lasting effects.
· ***Precautionary statements***
P221 *Take any precaution to avoid mixing with combustibles.*
P280 *Wear protective gloves/protective clothing/eye protection/face protection.*
P303+P361+P353 *If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.*
P305+P351+P338 *If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.*
P310 *Immediately call a poison center/doctor.*
P405 *Store locked up.*
P501 *Dispose of contents/container in accordance with local/regional/national/international regulations.*
· ***Classification system:***
· ***NFPA ratings (scale 0 - 4)***

Health = 3
Fire = 3
Reactivity = 0

The substance possesses oxidizing properties.
· ***HMIS-ratings (scale 0 - 4)***

Health = 3
Fire = 3
Reactivity = 0

· ***Other hazards***
· ***Results of PBT and vPvB assessment***
· ***PBT:*** *Not applicable.*
· ***vPvB:*** *Not applicable.*

3 Composition/information on ingredients

· ***Chemical characterization: Mixtures***
· ***Description:***
Aqueous solution.
Mixture: consisting of the following components.

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· **Dangerous components:**		
CAS: 7697-37-2 RTECS: QU5775000	Nitric acid Ox. Liq. 2, H272; Skin Corr. 1A, H314	< 10%
CAS: 7440-43-9 RTECS: EU 9800000	cadmium Acute Tox. 2, H330; Muta. 2, H341; Carc. 1B, H350; Repr. 2, H361; STOT RE 1, H372; Aquatic Acute 1, H400; Aquatic Chronic 1, H410	< 1.0%

· **Additional information:**
The concentration of the acid stated in this SDS is calculated as an absolute mass concentration (%w/v). This is less than the acid concentration stated on the product label and COA, which reflects a percent value of the commercially available concentrated aqueous form of the acid.

4 First-aid measures

· **Description of first aid measures**
· **General information:**
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
Remove breathing apparatus only after contaminated clothing have been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.
· **After inhalation:**
Supply fresh air or oxygen; call for doctor.
In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:** *Immediately wash with water and soap and rinse thoroughly.*
· **After eye contact:** *Rinse opened eye for several minutes under running water. Then consult a doctor.*
· **After swallowing:**
Rinse mouth. Do not induce vomiting.
Drink copious amounts of water and provide fresh air. Immediately call a doctor.
· **Information for doctor:**
· **Most important symptoms and effects, both acute and delayed** *No further relevant information available.*
· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:**
CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· **Special hazards arising from the substance or mixture**
Formation of toxic gases is possible during heating or in case of fire.
· **Advice for firefighters**
· **Protective equipment:**
Mouth respiratory protective device.
Wear self-contained respiratory protective device.

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6 Accidental release measures

· ***Personal precautions, protective equipment and emergency procedures***
Wear protective equipment. Keep unprotected persons away.
· ***Environmental precautions:***
Inform respective authorities in case of seepage into water course or sewage system.
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
· ***Methods and material for containment and cleaning up:***
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
Absorb liquid components with liquid-binding material.
DO NOT USE SAWDUST.
· ***Reference to other sections***
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· ***Handling:***
· ***Precautions for safe handling***
Ensure good ventilation/exhaustion at the workplace.
Store in cool, dry place in tightly closed receptacles.
Open and handle receptacle with care.
Prevent formation of aerosols.
· ***Information about protection against explosions and fires:*** *Keep respiratory protective device available.*

· ***Conditions for safe storage, including any incompatibilities***
· ***Storage:***
· ***Requirements to be met by storerooms and receptacles:***
Store in a cool location.
Please refer to the manufacturers certificate for specific storage and transport temperature conditions.
Store only in the original receptacle unless other advice is given on the CoA.
Keep container in a well-ventilated place. Keep away from sources of ignition and heat.
· ***Information about storage in one common storage facility:*** *Store away from foodstuffs.*
· ***Further information about storage conditions:*** *Keep receptacle tightly sealed.*
· ***Specific end use(s)*** *No further relevant information available.*

8 Exposure controls/personal protection

· ***Additional information about design of technical systems:*** *No further data; see item 7.*

· ***Control parameters***

· ***Components with limit values that require monitoring at the workplace:***	
7697-37-2 Nitric acid	
PEL	*Long-term value: 5 mg/m³, 2 ppm*

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REL	*Short-term value: 10 mg/m³, 4 ppm* *Long-term value: 5 mg/m³, 2 ppm*
TLV	*Short-term value: 10 mg/m³, 4 ppm* *Long-term value: 5.2 mg/m³, 2 ppm*
7440-43-9 cadmium	
PEL	*Long-term value: 0.005 mg/m³* *as Cd; see 29 CFR 1910.1027*
REL	*See Pocket Guide App. A*
TLV	*Long-term value: 0.01 0.002 mg/m³* *as Cd; respirable fraction; BEI*

· ***Ingredients with biological limit values:***

7440-43-9 cadmium	
BEI	*5 µg/g creatinine* *Medium: urine* *Time: not critical* *Parameter: Cadmium (background)* *5 µg/L* *Medium: blood* *Time: not critical* *Parameter: Cadmium (background)*

· ***Additional information:*** *The lists that were valid during the creation were used as basis.*

· ***Exposure controls***
· ***Personal protective equipment:***
· ***General protective and hygienic measures:***
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes.
Avoid contact with the eyes and skin.
· ***Breathing equipment:***
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
· ***Protection of hands:***
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374

Protective gloves

· ***Material of gloves***
PVC gloves
Neoprene gloves

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· ***Penetration time of glove material***
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· ***Eye protection:***

Tightly sealed goggles

9 Physical and chemical properties

· ***Information on basic physical and chemical properties***	
· ***General Information***	
· ***Appearance:***	
Form:	*Liquid*
Color:	*Colorless*
· ***Odor:***	*Odorless*
· ***Odor threshold:***	*Not determined.*
· ***pH-value at 20 °C (68 °F):***	*< 2*
· ***Change in condition***	
Melting point/Melting range:	*Not determined.*
Boiling point/Boiling range:	*100 °C (212 °F)*
· ***Flash point:***	*Not applicable.*
· ***Flammability (solid, gaseous):***	*Not determined.*
· ***Decomposition temperature:***	*Not determined.*
· ***Auto igniting:***	*Product is not selfigniting.*
· ***Danger of explosion:***	*Product does not present an explosion hazard.*
· ***Explosion limits:***	
Lower:	*Not determined.*
Upper:	*Not determined.*
· ***Vapor pressure at 20 °C (68 °F):***	*23 hPa (17.3 mm Hg)*
· ***Density at 20 °C (68 °F):***	*1.1066 g/cm³ (9.23458 lbs/gal)*
· ***Relative density***	*Not determined.*
· ***Vapor density***	*Not determined.*
· ***Evaporation rate***	*Not determined.*
· ***Solubility in / Miscibility with***	
Water:	*Fully miscible.*
· ***Partition coefficient (n-octanol/water):***	*Not determined.*
· ***Viscosity:***	
Dynamic:	*Not determined.*
Kinematic:	*Not determined.*

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· ***Other information*** *No further relevant information available.*

10 Stability and reactivity

· ***Reactivity*** *Stable under normal conditions.*
· ***Chemical stability*** *Stable under normal conditions.*
· ***Thermal decomposition / conditions to be avoided:***
Formation of toxic gases is possible during heating or in case of fire.
· ***Possibility of hazardous reactions*** *No dangerous reactions known.*
· ***Conditions to avoid*** *Heat.*
· ***Incompatible materials:*** *Strong oxidizing agents.*
· ***Hazardous decomposition products:*** *Formation of toxic gases is possible during heating or in case of fire.*

11 Toxicological information

· ***Information on toxicological effects***
· ***Acute toxicity:***

· ***LD/LC50 values that are relevant for classification:***		
7697-37-2 Nitric acid		
Inhalative	*LC50/4 h*	*130 mg/l (rat)*
7440-43-9 cadmium		
Oral	*LD50*	*2,330 mg/kg (rat)*

· ***Primary irritant effect:***
· ***on the skin:*** *Caustic effect on skin and mucous membranes.*
· ***on the eye:*** *Strong caustic effect.*
· ***Sensitization:*** *No sensitizing effects known.*
· ***Additional toxicological information:***
The product shows the following dangers according to internally approved calculation methods for preparations:
Toxic
Corrosive
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.
Carcinogenic.

· ***Carcinogenic categories***

· ***IARC (International Agency for Research on Cancer)***		
7440-43-9	*cadmium*	*1*

· ***NTP (National Toxicology Program)***		
7440-43-9	*cadmium*	*K*

· ***OSHA-Ca (Occupational Safety & Health Administration)***	
7440-43-9	*cadmium*

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12 Ecological information

· ***Toxicity***

· ***Aquatic toxicity:***	
7697-37-2 Nitric acid	
LC50/48	*180 mg/l (crustacean)*

· ***Persistence and degradability*** *No further relevant information available.*
· ***Behavior in environmental systems:***
· ***Bioaccumulative potential*** *No further relevant information available.*
· ***Mobility in soil*** *No further relevant information available.*
· ***Ecotoxical effects:***
· ***Remark:*** *Harmful to fish*
· ***Additional ecological information:***
· ***General notes:***
Water hazard class 2 (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.
Danger to drinking water if even small quantities leak into the ground.
Harmful to aquatic organisms
· ***Results of PBT and vPvB assessment***
· ***PBT:*** *Not applicable.*
· ***vPvB:*** *Not applicable.*
· ***Other adverse effects*** *No further relevant information available.*

13 Disposal considerations

· ***Waste treatment methods***
· ***Recommendation:***
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· ***Uncleaned packagings:***
· ***Recommendation:*** *Dispose in accordance with national regulations.*
· ***Recommended cleansing agent:*** *Water, if necessary with cleansing agents.*

14 Transport information

· ***UN-Number***	
· ***DOT, ADR, IMDG, IATA***	*UN2031*
· ***DOT***	*Nitric acid solution*
· ***ADR***	*2031 Nitric acid solution*
· ***IMDG, IATA***	*NITRIC ACID solution*

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· ***Transport hazard class(es)***

· ***DOT***

· ***Class***	*8 Corrosive substances*
· ***Label***	*8*

· ***ADR, IMDG, IATA***

· ***Class***	*8 Corrosive substances*
· ***Label***	*8*
· ***Packing group***	
· ***DOT, ADR, IMDG, IATA***	*II*
· ***Environmental hazards:***	
· ***Marine pollutant:***	*No*
· ***Special precautions for user***	*Warning: Corrosive substances*
· ***Danger code (Kemler):***	*80*
· ***EMS Number:***	*F-A,S-B*
· ***Segregation groups***	*Acids*
· ***Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code***	*Not applicable.*
· ***UN "Model Regulation":***	*UN2031, Nitric acid solution, 8, II*

15 Regulatory information

· ***Safety, health and environmental regulations/legislation specific for the substance or mixture***
· ***Sara***

· ***Section 355 (extremely hazardous substances):***	
7697-37-2	*Nitric acid*

· ***Section 313 (Specific toxic chemical listings):***	
7697-37-2	*Nitric acid*
7440-43-9	*cadmium*

· ***TSCA (Toxic Substances Control Act):***
All ingredients are listed.

· ***Proposition 65***

· ***Chemicals known to cause cancer:***	
7440-43-9	*cadmium*

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· ***Chemicals known to cause reproductive toxicity for females:***

None of the ingredients is listed.

· ***Chemicals known to cause reproductive toxicity for males:***

7440-43-9	*cadmium*

· ***Chemicals known to cause developmental toxicity:***

7440-43-9	*cadmium*

· ***Carcinogenic categories***

· ***EPA (Environmental Protection Agency)***

7440-43-9	*cadmium*	*B1*

· ***TLV (Threshold Limit Value established by ACGIH)***

7440-43-9	*cadmium*	*A2*

· ***NIOSH-Ca (National Institute for Occupational Safety and Health)***

7440-43-9	*cadmium*

· ***Hazard pictograms***

GHS03 GHS05 GHS08

· ***Signal word*** *Danger*

· ***Hazard-determining components of labeling:***
Nitric acid
cadmium

· ***Hazard statements***
H272 May intensify fire; oxidizer.
H314 Causes severe skin burns and eye damage.
H341 Suspected of causing genetic defects.
H350 May cause cancer.
H361 Suspected of damaging fertility or the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.
H402 Harmful to aquatic life.
H412 Harmful to aquatic life with long lasting effects.

· ***Precautionary statements***

P221	*Take any precaution to avoid mixing with combustibles.*
P280	*Wear protective gloves/protective clothing/eye protection/face protection.*
P303+P361+P353	*If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.*
P305+P351+P338	*If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.*
P310	*Immediately call a poison center/doctor.*
P405	*Store locked up.*
P501	*Dispose of contents/container in accordance with local/regional/national/international regulations.*

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· ***National regulations:***
· ***Additional classification according to Decree on Hazardous Materials:***
Carcinogenic hazardous material group III (dangerous).

· ***Information about limitation of use:***
Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation. Exceptions can be made by the authorities in certain cases.
· ***Chemical safety assessment:*** *A Chemical Safety Assessment has not been carried out.*

16 Other information

The information contained in this document is based on Agilent's state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.

· ***Date of preparation / last revision*** *10/26/2018 / -*
· ***Abbreviations and acronyms:***
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
BEI: Biological Exposure Limit
Ox. Liq. 2: Oxidizing liquids – Category 2
Ox. Liq. 3: Oxidizing liquids – Category 3
Acute Tox. 2: Acute toxicity – Category 2
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
Muta. 2: Germ cell mutagenicity – Category 2
Carc. 1B: Carcinogenicity – Category 1B
Repr. 2: Reproductive toxicity – Category 2
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
Aquatic Acute 3: Hazardous to the aquatic environment - acute aquatic hazard – Category 3
Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3
· ***Sources***
Tables 3.1 and 3.2 from Annex 6 of EC 1272/2008, EC 1907/2006, EH40/2005 as amended 2011, Registry of Toxic Effects of Chemical Substances (RTECS), The Dictionary of Substances and their Effects, 1st Edition, IUCLID.