Safety Data Sheet
acc. to OSHA HCS

Printing date 02/22/2019 *Reviewed on 02/22/2019*

1 Identification

· **Product identifier**

· **Product name:** **Nickel Standard: 10000 µg/mL Ni in 5% HNO3 [500ml bottle]**

· **Part number:** 5190-8423
· **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

Carc. 2 H351 Suspected of causing cancer.
STOT RE 1 H372 Causes damage to organs through prolonged or repeated exposure.

GHS05 Corrosion

Met. Corr.1 H290 May be corrosive to metals.
Skin Corr. 1B H314 Causes severe skin burns and eye damage.
Eye Dam. 1 H318 Causes serious eye damage.

GHS07

Skin Sens. 1 H317 May cause an allergic skin reaction.

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

GHS03 GHS05 GHS07 GHS08

(Contd. on page 2)

Safety Data Sheet
acc. to OSHA HCS

Printing date 02/22/2019 *Reviewed on 02/22/2019*

Product name: Nickel Standard: 10000 µg/mL Ni in 5% HNO3 [500ml bottle]

(Contd. of page 1)

· **Signal word** Danger

· **Hazard-determining components of labeling:**
Nickel
· **Hazard statements**
H272 May intensify fire; oxidizer.
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H351 Suspected of causing cancer.
H372 Causes damage to organs through prolonged or repeated exposure.
· **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.

· **Dangerous components:**		
CAS: 7697-37-2 RTECS: QU5775000	Nitric acid Ox. Liq. 2, H272; Met. Corr.1, H290	≥5-<10%
CAS: 7440-02-0 RTECS: QR5950000	Nickel Carc. 2, H351; STOT RE 1, H372; Skin Sens. 1, H317; Aquatic Chronic 3, H412	≥1-<2%

(Contd. on page 3)

Safety Data Sheet
acc. to OSHA HCS

Printing date 02/22/2019 *Reviewed on 02/22/2019*

Product name: **Nickel Standard: 10000 µg/mL Ni in 5% HNO3 [500ml bottle]**

(Contd. of page 2)

· ***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.
· ***After inhalation:***
Supply fresh air and to be sure call for a 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.
Seek immediate medical advice.
· ***After eye contact:*** *Rinse opened eye for several minutes under running water. Then consult a doctor.*
· ***After swallowing:*** *Rinse mouth. Do not induce vomiting.*
· ***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:*** *Use fire fighting measures that suit the environment.*
· ***Special hazards arising from the substance or mixture***
During heating or in case of fire poisonous gases are produced.
· ***Advice for firefighters***
· ***Protective equipment:***
Mouth respiratory protective device.
Wear self-contained respiratory protective device.

6 Accidental release measures

· ***Personal precautions, protective equipment and emergency procedures***
Mount respiratory protective device.
Wear protective equipment. Keep unprotected persons away.
· ***Environmental precautions:***
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.

(Contd. on page 4)

Safety Data Sheet
acc. to OSHA HCS

Printing date 02/22/2019 *Reviewed on 02/22/2019*

Product name: **Nickel Standard: 10000 µg/mL Ni in 5% HNO3 [500ml bottle]**

(Contd. of page 3)

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.

· ***Protective Action Criteria for Chemicals***

· ***PAC-1:***		
CAS: 7697-37-2	*Nitric acid*	*0.16 ppm*
CAS: 7440-02-0	*Nickel*	*4.5 mg/m³*

· ***PAC-2:***		
CAS: 7697-37-2	*Nitric acid*	*24 ppm*
CAS: 7440-02-0	*Nickel*	*50 mg/m³*

· ***PAC-3:***		
CAS: 7697-37-2	*Nitric acid*	*92 ppm*
CAS: 7440-02-0	*Nickel*	*99 mg/m³*

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:***
Protect from heat.
Keep respiratory protective device available.

· ***Conditions for safe storage, including any incompatibilities***
· ***Storage:***
· ***Requirements to be met by storerooms and receptacles:***
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.
Protect from heat and direct sunlight.
· ***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.*

(Contd. on page 5)

Safety Data Sheet
acc. to OSHA HCS

Printing date 02/22/2019 *Reviewed on 02/22/2019*

Product name: **Nickel Standard: 10000 µg/mL Ni in 5% HNO3 [500ml bottle]**

(Contd. of page 4)

· ***Control parameters***

· ***Components with limit values that require monitoring at the workplace:***	
CAS: 7697-37-2 Nitric acid	
PEL	*Long-term value: 5 mg/m³, 2 ppm*
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*
CAS: 7440-02-0 Nickel	
PEL	*Long-term value: 1 mg/m³*
REL	*Long-term value: 0.015 mg/m³* *as Ni; See Pocket Guide App. A*
TLV	*Long-term value: 1.5 mg/m³* *elemental, inhalable fraction*

· ***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
· ***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.

(Contd. on page 6)

Safety Data Sheet
acc. to OSHA HCS

Printing date 02/22/2019 *Reviewed on 02/22/2019*

Product name: **Nickel Standard: 10000 µg/mL Ni in 5% HNO3 [500ml bottle]**

(Contd. of page 5)

· ***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:***	*<2*
· ***Change in condition***	
Melting point/Melting range:	*Not determined.*
Boiling point/Boiling range:	*83 °C (181.4 °F)*
· ***Flash point:***	*Not applicable.*
· ***Flammability (solid, gaseous):***	*Not determined.*
· ***Ignition temperature:***	*Not determined*
· ***Decomposition temperature:***	*Not determined.*
· ***Auto igniting:***	*Product is not selfigniting.*
· ***Danger of explosion:***	*Not determined.*
· ***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):***	*1.10928 g/cm³ (9.25694 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.*
· ***Other information***	*No further relevant information available.*

(Contd. on page 7)

Safety Data Sheet
acc. to OSHA HCS

Printing date 02/22/2019 *Reviewed on 02/22/2019*

Product name: **Nickel Standard: 10000 µg/mL Ni in 5% HNO3 [500ml bottle]**

(Contd. of page 6)

10 Stability and reactivity

· ***Reactivity***
Stable under normal conditions.
No further relevant information available.
· ***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.
Metals.
· ***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:***		
CAS: 7697-37-2 Nitric acid		
Inhalative	*LC50/4 h*	*130 mg/l (rat)*

· ***Primary irritant effect:***
· ***on the skin:*** *Caustic effect on skin and mucous membranes.*
· ***on the eye:***
Strong caustic effect.
Strong irritant with the danger of severe eye injury.
· ***Sensitization:*** *Sensitization possible through skin contact.*
· ***Additional toxicological information:***
The product shows the following dangers according to internally approved calculation methods for preparations:
Corrosive
Irritant
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

· ***Carcinogenic categories***

· ***IARC (International Agency for Research on Cancer)***		
CAS: 7440-02-0	*Nickel*	*2B*

· ***NTP (National Toxicology Program)***		
CAS: 7440-02-0	*Nickel*	*R*

· ***OSHA-Ca (Occupational Safety & Health Administration)***
None of the ingredients is listed.

(Contd. on page 8)

Safety Data Sheet
acc. to OSHA HCS

Printing date 02/22/2019 *Reviewed on 02/22/2019*

Product name: **Nickel Standard: 10000 µg/mL Ni in 5% HNO3 [500ml bottle]**

(Contd. of page 7)

12 Ecological information

· ***Toxicity***

· ***Aquatic toxicity:***	
CAS: 7697-37-2 Nitric acid	
LC50/48	*180 mg/l (crustacean)*
CAS: 7440-02-0 Nickel	
LC50/48	*8.85 mg/l (crustacean)*
EC50/48 h	*1 mg/l (crustacean)*
LC50/96 h	*40 mg/l (fish)*

· ***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.*
· ***Additional ecological information:***
· ***General notes:***
Water hazard class 1 (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.
· ***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*

(Contd. on page 9)

Safety Data Sheet
acc. to OSHA HCS

Printing date 02/22/2019 *Reviewed on 02/22/2019*

Product name: **Nickel Standard: 10000 µg/mL Ni in 5% HNO3 [500ml bottle]**

(Contd. of page 8)

· ***Transport hazard class(es)***

· ***DOT, ADR, IMDG, IATA***

· ***Class***	*8 Corrosive substances*
· ***Label***	*8*
· ***Packing group***	
· ***DOT, ADR, IMDG, IATA***	*II*
· ***Environmental hazards:***	*Not applicable.*
· ***Special precautions for user***	*Warning: Corrosive substances*
· ***Danger code (Kemler):***	*80*
· ***EMS Number:***	*F-A,S-B*
· ***Segregation groups***	*Acids*
· ***Stowage Category***	*D*
· ***Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code***	*Not applicable.*
· ***Transport/Additional information:***	
· ***ADR***	
· ***Excepted quantities (EQ)***	*Code: E2* *Maximum net quantity per inner packaging: 30 ml* *Maximum net quantity per outer packaging: 500 ml*
· ***UN "Model Regulation":***	*UN 2031 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):***

CAS: 7697-37-2	*Nitric acid*

· ***Section 313 (Specific toxic chemical listings):***

CAS: 7697-37-2	*Nitric acid*
CAS: 7440-02-0	*Nickel*

· ***TSCA (Toxic Substances Control Act):***

All ingredients are listed.

· ***Proposition 65***

· ***Chemicals known to cause cancer:***

CAS: 7440-02-0	*Nickel*

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

None of the ingredients is listed.

(Contd. on page 10)

Safety Data Sheet
acc. to OSHA HCS

Printing date 02/22/2019 *Reviewed on 02/22/2019*

Product name: **Nickel Standard: 10000 µg/mL Ni in 5% HNO3 [500ml bottle]**

(Contd. of page 9)

· ***Chemicals known to cause reproductive toxicity for males:***
None of the ingredients is listed.

· ***Chemicals known to cause developmental toxicity:***
None of the ingredients is listed.

· ***Carcinogenic categories***

· ***EPA (Environmental Protection Agency)***
None of the ingredients is listed.

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

CAS: 7440-02-0	*Nickel*	*A5*

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

CAS: 7440-02-0	*Nickel*

· ***Hazard pictograms***

GHS03 GHS05 GHS07 GHS08

· ***Signal word*** *Danger*

· ***Hazard-determining components of labeling:***
Nickel

· ***Hazard statements***
H272 May intensify fire; oxidizer.
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H351 Suspected of causing cancer.
H372 Causes damage to organs through prolonged or repeated exposure.

· ***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.*

· ***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*** *02/22/2019 / -*

(Contd. on page 11)

Safety Data Sheet
acc. to OSHA HCS

Printing date 02/22/2019 *Reviewed on 02/22/2019*

Product name: **Nickel Standard: 10000 µg/mL Ni in 5% HNO3 [500ml bottle]**

(Contd. of page 10)

· ***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
Ox. Liq. 2: Oxidizing liquids – Category 2
Ox. Liq. 3: Oxidizing liquids – Category 3
Met. Corr.1: Corrosive to metals – Category 1
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
Skin Sens. 1: Skin sensitisation – Category 1
Carc. 2: Carcinogenicity – Category 2
STOT RE 1: Specific target organ toxicity (repeated exposure) – 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.

· ***Data compared to the previous version altered.*** *All sections have been updated.*