

**Safety Data Sheet**
acc. to OSHA HCS

Printing date 06/08/2015

Reviewed on 06/08/2015

1 Identification

- **Product identifier**
- **Product name: Semiquantitative Calibration Standard 2 in 40% Aqua Regia, tr. HF [100ml bottle]**
- **Part number:** 5190-8595
- **Application of the substance / the mixture** Reference material for laboratory use only
- **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.



GHS05 Corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

Acute Tox. 4 H312 Harmful in contact with skin.

Acute Tox. 4 H332 Harmful if inhaled.

STOT SE 3 H335 May cause respiratory irritation.

- **Label elements**

- **GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

- **Hazard pictograms**



GHS03



GHS05



GHS07

- **Signal word** Danger

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

Nitric acid

Hydrofluoric acid -

hydrochloric acid

- **Hazard statements**

H272 May intensify fire; oxidizer.

H302+H312+H332 Harmful if swallowed, in contact with skin or if inhaled.

(Contd. on page 2)



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acc. to OSHA HCS

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Product name: Semiquantitative Calibration Standard 2 in 40% Aqua Regia, tr. HF [100ml bottle]

(Contd. of page 1)

H314 Causes severe skin burns and eye damage.

H335 May cause respiratory irritation.

Precautionary statements

P221 Take any precaution to avoid mixing with combustibles.

P303+P361+P353 **IF ON SKIN (or hair):** Remove/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 = 4

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.

Also contains substances at levels not considered to be hazardous.

Dangerous components:

CAS: 7647-01-0 RTECS: MW 9620000	hydrochloric acid ⚠ Skin Corr. 1B, H314; ⚠ STOT SE 3, H335	10 - 25%
CAS: 7697-37-2 RTECS: QU5775000	Nitric acid ⚠ Ox. Liq. 3, H272; ⚠ Skin Corr. 1A, H314	< 10%
CAS: 7664-39-3 RTECS: MW 7875000	Hydrofluoric acid - ⚠ Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330; ⚠ Skin Corr. 1A, H314	< 1.0%

US

(Contd. on page 3)



Safety Data Sheet

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Product name: Semiquantitative Calibration Standard 2 in 40% Aqua Regia, tr. HF [100ml bottle]

(Contd. of page 2)

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. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

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.

Immediately call a doctor.

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.

6 Accidental release measures

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

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.

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.

(Contd. on page 4)



Safety Data Sheet
acc. to OSHA HCS

Printing date 06/08/2015

Reviewed on 06/08/2015

Product name: Semiquantitative Calibration Standard 2 in 40% Aqua Regia, tr. HF [100ml bottle]

See Section 13 for disposal information.

(Contd. of page 3)

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.
Prevent formation of aerosols.
- **Information about protection against explosions and fires:** No special measures required.
- **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.
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:**

7647-01-0 hydrochloric acid

PEL	Ceiling limit value: 7 mg/m ³ , 5 ppm
REL	Ceiling limit value: 7 mg/m ³ , 5 ppm
TLV	Ceiling limit value: 2.98 mg/m ³ , 2 ppm

7697-37-2 Nitric acid

PEL	Long-term value: 5 mg/m ³ , 2 ppm
REL	Short-term value: 10 mg/m ³ , 4 ppm Long-term value: 5 mg/m ³ , 2 ppm
TLV	Short-term value: 10 mg/m ³ , 4 ppm Long-term value: 5.2 mg/m ³ , 2 ppm

7664-39-3 Hydrofluoric acid -

PEL	Long-term value: 3 ppm as F
REL	Long-term value: 2.5 mg/m ³ , 3 ppm Ceiling limit value: 5 mg/m ³ , 6 ppm 15-min, as F
TLV	Long-term value: 0.41 mg/m ³ , 0.5 ppm Ceiling limit value: 1.64 mg/m ³ , 2 ppm as F; Skin, BEI

(Contd. on page 5)



Safety Data Sheet
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Printing date 06/08/2015

Reviewed on 06/08/2015

Product name: Semiquantitative Calibration Standard 2 in 40% Aqua Regia, tr. HF [100ml bottle]

(Contd. of page 4)

· Ingredients with biological limit values:

7664-39-3 Hydrofluoric acid -

BEI	3 mg/g creatinine Medium: urine Time: prior to shift Parameter: Fluorides (background, nonspecific)
	10 mg/g creatinine Medium: urine Time: end of shift Parameter: Fluorides (background, nonspecific)

· 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.
- 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:

Chemical-resistant, impervious gloves with an approved standards should be worn at all times. The selection of the glove material is based on the penetration times, rates of diffusion and its degradation



Protective gloves

· Material of gloves

- PVC gloves
- Neoprene gloves

· Penetration time of glove material

The protection time of the gloves can not be accurately estimated for mixtures consisting of several substances. Refer to and observe manufacturers break through times of the protective gloves.

· Eye protection:



Tightly sealed goggles

9 Physical and chemical properties

· Information on basic physical and chemical properties

· General Information

· Appearance:

Form:	Liquid
Color:	Brown
Odor:	Odorless

(Contd. on page 6)



Safety Data Sheet
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Reviewed on 06/08/2015

Product name: Semiquantitative Calibration Standard 2 in 40% Aqua Regia, tr. HF [100ml bottle]

(Contd. of page 5)

· Odour threshold:	Not determined.
· pH-value at 20 °C (68 °F):	< 1.3
· Change in condition	
Melting point/Melting range:	Not determined.
Boiling point/Boiling range:	83 °C (181 °F)
· Flash point:	Not applicable.
· Flammability (solid, gaseous):	Not determined.
· Ignition temperature:	
Decomposition temperature:	Not determined.
· Auto igniting:	Product is not selfigniting.
· Danger of explosion:	Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
· Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
· Vapor pressure at 20 °C (68 °F):	23 hPa (17 mm Hg)
· Density at 20 °C (68 °F):	0.999 g/cm ³ (8.337 lbs/gal)
· Relative density	Not determined.
· Vapour 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.

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.
Reducing agents.
Bases.
- **Hazardous decomposition products:** Formation of toxic gases is possible during heating or in case of fire.

(Contd. on page 7)



Safety Data Sheet
acc. to OSHA HCS

Printing date 06/08/2015

Reviewed on 06/08/2015

Product name: Semiquantitative Calibration Standard 2 in 40% Aqua Regia, tr. HF [100ml bottle]

(Contd. of page 6)

11 Toxicological information

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

· **LD/LC50 values that are relevant for classification:**

7647-01-0 hydrochloric acid

Oral	LD50	900 mg/kg (rabbit)
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7697-37-2 Nitric acid

Oral	LD0	430 mg/kg (Human)
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Inhalative	LC50/4 h	130 mg/l (rat)
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7664-39-3 Hydrofluoric acid -

Oral	LD50	1276 mg/kg (rat)
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- **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:

Harmful

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)**

7647-01-0	hydrochloric acid	3
19049-40-2	BERYLLIUM OXYACETATE	1
7440-48-4	cobalt	2B
7440-02-0	Nickel	1
1314-62-1	vanadium pentoxide	2B

· **NTP (National Toxicology Program)**

7440-02-0	Nickel	R
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· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

12 Ecological information

- **Toxicity**

· **Aquatic toxicity:**

7697-37-2 Nitric acid

LC50/48	180 mg/l (crustacean)
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- **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.

(Contd. on page 8)



Safety Data Sheet

acc. to OSHA HCS

Printing date 06/08/2015

Reviewed on 06/08/2015

Product name: Semiquantitative Calibration Standard 2 in 40% Aqua Regia, tr. HF [100ml bottle]

(Contd. of page 7)

- **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** UN3264
- **DOT** Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrochloric acid)
- **ADR** 3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrochloric acid)
- **IMDG, IATA** CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID, HYDROCHLORIC ACID)

· **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

(Contd. on page 9)



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acc. to OSHA HCS

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Reviewed on 06/08/2015

Product name: Semiquantitative Calibration Standard 2 in 40% Aqua Regia, tr. HF [100ml bottle]

(Contd. of page 8)

· 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":	UN3264, Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrochloric acid), 8, II

15 Regulatory information

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

· **Section 355 (extremely hazardous substances):**

7647-01-0	hydrochloric acid
7697-37-2	Nitric acid
7664-39-3	Hydrofluoric acid -
1314-62-1	vanadium pentoxide

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

7647-01-0	hydrochloric acid
7697-37-2	Nitric acid
7664-39-3	Hydrofluoric acid -
7440-48-4	cobalt
7440-50-8	Copper
554-13-2	Lithium carbonate
7439-96-5	Manganese
7440-02-0	Nickel
7440-36-0	antimony
1314-62-1	vanadium pentoxide
7440-66-6	Zinc

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

7647-01-0	hydrochloric acid
7697-37-2	Nitric acid
7664-39-3	Hydrofluoric acid -
7440-57-5	Gold
10043-35-3	Boric acid
7440-48-4	cobalt
13548-38-4	Chromium nitrate
7440-50-8	Copper
7440-56-4	germanium
13759-17-6	hafnium dichloride oxide

(Contd. on page 10)



Safety Data Sheet
acc. to OSHA HCS

Printing date 06/08/2015

Reviewed on 06/08/2015

Product name: Semiquantitative Calibration Standard 2 in 40% Aqua Regia, tr. HF [100ml bottle]

(Contd. of page 9)

7757-79-1	Potassium nitrate
554-13-2	Lithium carbonate
7439-96-5	Manganese
7439-98-7	Molybdenum
10026-12-7	niobium pentachloride

· **Proposition 65**

· **Chemicals known to cause cancer:**

7440-48-4	cobalt
7440-02-0	Nickel
1314-62-1	vanadium pentoxide

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

None of the ingredients is listed.

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

None of the ingredients is listed.

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

554-13-2	Lithium carbonate
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· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

7440-50-8	Copper	D
7439-96-5	Manganese	D
7440-66-6	Zinc	II

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

7647-01-0	hydrochloric acid	A4
10043-35-3	Boric acid	A4
7440-48-4	cobalt	A3
7439-98-7	Molybdenum	A3
7440-02-0	Nickel	A5
10049-07-7	rhodium trichloride	A4
1314-62-1	vanadium pentoxide	A3

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

7440-02-0	Nickel
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· **GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**



GHS03 GHS05 GHS07

· **Signal word Danger**

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

Nitric acid
Hydrofluoric acid -
hydrochloric acid

(Contd. on page 11)



Safety Data Sheet

acc. to OSHA HCS

Printing date 06/08/2015

Reviewed on 06/08/2015

Product name: Semiquantitative Calibration Standard 2 in 40% Aqua Regia, tr. HF [100ml bottle]

(Contd. of page 10)

Hazard statements

- H272 May intensify fire; oxidizer.
H302+H312+H332 Harmful if swallowed, in contact with skin or if inhaled.
H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.

Precautionary statements

- P221 Take any precaution to avoid mixing with combustibles.
P303+P361+P353 IF ON SKIN (or hair): Remove/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** 06/08/2015 / -

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
Ox. Liq. 3: Oxidising Liquids, Hazard Category 3
Acute Tox. 2: Acute toxicity, Hazard Category 2
Acute Tox. 4: Acute toxicity, Hazard Category 4
Acute Tox. 1: Acute toxicity, Hazard Category 1
Skin Corr. 1A: Skin corrosion/irritation, Hazard Category 1A
Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B
Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1
STOT SE 3: Specific target organ toxicity - Single exposure, 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.