1 Identification

- **Product identifier**
  - **Product name:** Quality Control Standard 27 in 5% HNO3, tr. HF [100mL bottle]
  - **Part number:** 5190-9418
  - **Application of the substance / the mixture** Reference material for laboratory use only
  - **Manufacturer/Supplier:**
    Agilent Technologies, Inc.
    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**
  - GHS05 Corrosion
    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.
    Skin Irrit. 2 H315 Causes skin irritation.

- **Label elements**
  - **GHS label elements**
    The product is classified and labeled according to the Globally Harmonized System (GHS).
  - **Hazard pictograms**
    GHS05 GHS07

- **Signal word** Danger

- **Hazard-determining components of labeling**
  - Hydrofluoric acid
  - Nitric acid

- **Hazard statements**
  - H302+H312+H332 Harmful if swallowed, in contact with skin or if inhaled.
  - H315 Causes skin irritation.
  - H318 Causes serious eye damage.

- **Precautionary statements**
  - P261 Avoid breathing dust/fume/gas/mist/vapors/spray
Product name: Quality Control Standard 27 in 5% HNO₃, tr. HF [100mL bottle]

P280 Wear protective gloves / protective clothing.
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.
P321 Specific treatment (see on this label).
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- Classification system:
  - NFPA ratings (scale 0 - 4)
    - Health = 2
    - Fire = 0
    - Reactivity = 0
  - HMIS-ratings (scale 0 - 4)
    - Health = 2
    - Fire = 0
    - 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: 7697-37-2 Nitric acid Ox. Liq. 3, H272; Skin Corr. 1A, H314 < 5%
  - RTECS: QU5775000
  - CAS: 7664-39-3 Hydrofluoric acid Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330; Skin Corr. 1A, H314 < 1,0%
  - RTECS: MW 7875000

4 First-aid measures

- Description of first aid measures
- General information:
  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.
42.0

If skin irritation continues, consult a doctor.

· 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.

· 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 clothing.
· 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:
  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.
    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 manufacturer's 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:

  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 |

  7664-39-3 Hydrofluoric acid -

    | PEL  | Long-term value: 3 ppm as F |
    | REL  | Long-term value: 2.5 mg/m³, 3 ppm |
    |      | Ceiling limit value: 5 mg/m³, 6 ppm |
    | 15-min, as F |
    | TLV  | Long-term value: 0.41 mg/m³, 0.5 ppm |
    |      | Ceiling limit value: 1.64 mg/m³, 2 ppm |
    |      | as F; Skin, BEI |

- 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.
Product name: Quality Control Standard 27 in 5% HNO3, tr. HF [100mL bottle]

- 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 skin.
  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 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: Colorless
  Odor: Odorless
  Odor threshold: Not determined.
- pH-value at 20 °C (68 °F): < 1.5
- 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.
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- Ignition temperature:

- 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 mm Hg)

- Density at 20 °C (68 °F): 1.01275 g/cm³ (8.451 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.

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 |  
  | Oral LD0 | 430 mg/kg (Human) |  
  | Inhalative LC50/4 h | 130 mg/l (rat) |

  | 7664-39-3 Hydrofluoric acid |  
  | Oral LD50 | 1276 mg/kg (rat) |
Product name: Quality Control Standard 27 in 5% HNO3, tr. HF [100mL bottle]

- Primary irritant effect:
  - on the skin: Irritant to skin and mucous membranes.
  - on the eye: Strong irritant with the danger of severe eye injury.
  - Sensitization: No sensitizing effects known.
- Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
  Harmful
  Irritant

- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    None of the ingredients is listed.
  - NTP (National Toxicology Program)
    None of the ingredients is listed.
  - 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)
  - 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 2 (Self-assessment): hazardous for water
      Do not allow product to reach ground water, water course or sewage system.
      Danger to drinking water if even small quantities leak into the ground.
  - 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.
Product name: Quality Control Standard 27 in 5% HNO₃, tr. HF [100mL bottle]

- Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

- UN-Number
  - DOT, ADR, IMDG, IATA: UN3264
  - DOT, IATA: Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrofluoric acid)
  - ADR: 3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrofluoric acid)
  - IMDG: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID, HYDROFLUORIC 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

- Environmental hazards:
  - Marine pollutant: No

- Special precautions for user
  - Danger code (Kemler): Warning: Corrosive substances
  - EMS Number: F-A,S-B
  - Segregation groups: Acids
  - Stowage Category: B
  - Stowage Code: SW2 Clear of living quarters.

- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

- UN "Model Regulation": UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID, HYDROFLUORIC ACID), 8, II

(Contd. on page 9)
### 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
      - 7664-39-3 Hydrofluoric acid -
    - **Section 313 (Specific toxic chemical listings):**
      - 7697-37-2 Nitric acid
      - 7664-39-3 Hydrofluoric acid -
    - **TSCA (Toxic Substances Control Act):**
      - All ingredients are listed.
  - **Proposition 65**
    - **Chemicals known to cause cancer:**
      - None of the ingredients is listed.
    - **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:**
      - 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)**
    - None of the ingredients is listed.
  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    - None of the ingredients is listed.

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

- **Hazard pictograms**
  - GHS05
  - GHS07

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  - Hydrofluoric acid -
  - Nitric acid

- **Hazard statements**
  - H302+H312+H332 Harmful if swallowed, in contact with skin or if inhaled.
  - H315 Causes skin irritation.
**Product name:** Quality Control Standard 27 in 5% HNO₃, tr. HF [100mL bottle]

- **H318:** Causes serious eye damage.

**Precautionary statements**

- **P261:** Avoid breathing dust/fume/gas/mist/vapors/spray.
- **P280:** Wear protective gloves / protective clothing.
- **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.
- **P321:** Specific treatment (see on this label).
- **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.

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**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:** 01/06/2016 / -

**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. 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 Irrit. 2: Skin corrosion/irritation, Hazard Category 2
- Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1

**Sources**