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<td><strong>5184-3564(Kit)</strong></td>
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Components:

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<td>Wash-Nitric Acid Blank</td>
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1 Identification

- Product identifier
  - Product Name: Tuning Solution, Part Number 5184-3566
  - Part Number: 5184-3566

- Application of the substance / the mixture
  - Reagents and Standards for Analytical Chemistry Laboratory Use
  - 2 x 500 mL Solution

- Details of the supplier of the safety data sheet
  - Manufacturer/Supplier: Agilent Technologies, Inc.
    - 5301 Stevens Creek Blvd.
    - Santa Clara, CA 95051 USA
  - Information department: product safety department
  - Emergency telephone number:
    - Emergency Phone Number (24 hours)
      - CHEMTREC (800-424-9300)
      - Outside US: 703-527-3887

2 Hazard(s) identification

- Classification of the substance or mixture

  GHS07

  Skin Irrit. 2  H315 Causes skin irritation.
  Eye Irrit. 2A H319 Causes serious eye irritation.

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

- Hazard pictograms

  GHS07

- Signal word Warning

- Hazard statements
  - H315 Causes skin irritation.
  - H319 Causes serious eye irritation.

- Precautionary statements
  - Wash thoroughly after handling.
  - Wear protective gloves / eye protection / face protection.
  - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - If skin irritation occurs: Get medical advice/attention.
  - Take off contaminated clothing and wash it before reuse.
  - If eye irritation persists: Get medical advice/attention.

- Classification system:
  - NFPA ratings (scale 0 - 4)
    - Health = 2
    - Fire = 0
    - Reactivity = 0

- HMIS-ratings (scale 0 - 4)

  HEALTH 2
  FIRE 0
  REACTIVITY 0

(Contd. on page 2)
Safety Data Sheet
acc. to OSHA HCS

Product Name: Tuning Solution, Part Number 5184-3566

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

3 Composition/information on ingredients

- Chemical characterization: Mixtures
- Description: Mixture of the substances listed below with nonhazardous additions.

- Dangerous components:
  - 7697-37-2 nitric acid 2.0%

- Chemical identification of the substance/preparation
  - 10102-45-1 thallium nitrate <0.0001%
  - 7440-45-1 cerium <0.0001%
  - 7440-48-4 cobalt <0.0001%
  - 7440-65-5 yttrium <0.0001%
  - 554-13-2 lithium carbonate <0.0001%
  - 7732-18-5 water, distilled, conductivity or of similar purity 97.9995%

4 First-aid measures

- Description of first aid measures
  - After inhalation: 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. If symptoms persist, consult a doctor.
  - After swallowing: Do not give anything to eat or drink - 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: No further relevant information available.
- Advice for firefighters
  - Protective equipment: No special measures required.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures: Not required.
- Environmental precautions: No special measures required.
- Methods and material for containment and cleaning up:
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  - Ensure adequate ventilation.
- 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-I:
    - 7697-37-2 nitric acid 0.16 ppm
    - 10102-45-1 thallium nitrate 0.078 mg/m³
    - 7440-45-1 cerium 30 mg/m³

(Contd. on page 3)
47.0.8

7440-48-4 cobalt 0.18 mg/m³
7440-65-5 yttrium 3 mg/m³
554-13-2 lithium carbonate 3.1 mg/m³

- PAC-2:
  7697-37-2 nitric acid 24 ppm
  10102-45-1 thallium nitrate 4.3 mg/m³
  7440-45-1 cerium 330 mg/m³
  7440-48-4 cobalt 2 mg/m³
  7440-65-5 yttrium 33 mg/m³
  554-13-2 lithium carbonate 34 mg/m³

- PAC-3:
  7697-37-2 nitric acid 92 ppm
  10102-45-1 thallium nitrate 26 mg/m³
  7440-45-1 cerium 2,000 mg/m³
  7440-48-4 cobalt 20 mg/m³
  7440-65-5 yttrium 200 mg/m³
  554-13-2 lithium carbonate 210 mg/m³

7 Handling and storage

- Handling:
  - Precautions for safe handling
    Ensure good ventilation/exhaustion at the workplace.
    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: No special requirements.
    - Information about storage in one common storage facility: Not required.
    - 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

- 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.
Product Name: Tuning Solution, Part Number 5184-3566

- Respiratory protection:
  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:
  Protective gloves
  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
  Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
  Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

  - Material of gloves
    Nitrile Glove
    Thickness: ≥ 0.11 mm
    Breakthrough time: > 480 minutes

- Penetration time of glove material
  The exact breakthrough 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
    Odour Threshold: Not applicable.
  - pH-value: < 1

- Change in condition
  Melting point/Melting range: 0°C (32°F)
  Boiling point/Boiling range: 100°C (212°F)

- Flash point: Not applicable.

- Flammability (solid, gaseous): Not applicable.

- Decomposition temperature: Not applicable.

- Auto igniting: Product is not selfigniting.

- Danger of explosion: Product does not present an explosion hazard.

- Explosion limits:
  Lower: Not applicable.
  Upper: Not applicable.

- Vapor pressure at 20 °C (68 °F): 23 kPa (17.3 mm Hg)

- Density
  1.0 g/mL @ 20°C

- Relative density
  Not applicable.

- Vapor density
  Not applicable.

- Evaporation rate
  Not applicable.

- Solubility in / Miscibility with
  Water: Miscible

- Partition coefficient (n-octanol/water): Not applicable.
Product Name: Tuning Solution, Part Number 5184-3566

(Contd. of page 4)

- Viscosity:
  - Dynamic: Not applicable.
  - Kinematic: Not applicable.

- Solvent content:
  - Water: 98.0 %
  - VOC content: 0.00 %
  - Solids content: 0.0 %

- Other information
  - No further relevant information available.

10 Stability and reactivity

- Reactivity
  - No further relevant information available.
- Chemical stability
  - Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
  - Possibility of hazardous reactions: No dangerous reactions known.
  - Conditions to avoid: No further relevant information available.
  - Incompatible materials: No further relevant information available.
  - Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

- Information on toxicological effects
  - Acute toxicity:
    - Primary irritant effect:
      - on the skin: Irritant to skin and mucous membranes.
      - on the eye: Irritating effect.
      - Sensitization: No sensitizing effects known.
  - Additional toxicological information:
    - The product shows the following dangers according to internally approved calculation methods for preparations:
      - Irritant

- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    - 7440-48-4 cobalt: 2B
  - NTP (National Toxicology Program)
    - 7440-48-4 cobalt: R
  - OSHA-Ca (Occupational Safety & Health Administration)
    - None of the ingredients is listed.

12 Ecological information

- Toxicity
  - Aquatic toxicity: No further relevant information available.
  - 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: Generally not hazardous for water
  - 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:** Disposal must be made according to official regulations.

14 Transport information

- **UN-Number**
  - DOT, ADR, IMDG, IATA: UN3264

- **UN proper shipping name**
  - DOT: Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid solution)
  - ADR: 3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid solution)
  - IMDG, IATA: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID SOLUTION)

- **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: III

- **Environmental hazards:**
  - Not applicable.

- **Special precautions for user**
  - **Danger code (Kemler):** Warning: Corrosive substances 80
  - **EMS Number:** F-A,S-B
  - **Segregation groups:** Acids
  - **Stowage Category:** A
  - **Stowage Code:** SW2 Clear of living quarters

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

- **Transport/Additional information:**

  - **ADR**
    - **Excepted quantities (EQ):** Code: E1
      - Maximum net quantity per inner packaging: 30 ml
      - Maximum net quantity per outer packaging: 1000 ml

  - **IMDG**
    - **Limited quantities (LQ):** 5L

(Contd. on page 7)
Product Name: Tuning Solution, Part Number 5184-3566

15 Regulatory information

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

- Section 313 (Specific toxic chemical listings):
  - 7697-37-2 nitric acid
  - 10102-45-1 thallium nitrate
  - 7440-48-4 cobalt
  - 554-13-2 lithium carbonate

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

- Proposition 65
  - Chemicals known to cause cancer:
    - 7440-48-4 cobalt
  - 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

- Carcinogenic categories
  - EPA (Environmental Protection Agency)
    - 10102-45-1 thallium nitrate [II]
  - TLV (Threshold Limit Value established by ACGIH)
    - 7440-48-4 cobalt [A3]
  - 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

GHS07

- Signal word Warning

- Hazard statements
  H315 Causes skin irritation.
  H319 Causes serious eye irritation.

- Precautionary statements
  Wash thoroughly after handling.
  Wear protective gloves / eye protection / face protection.
  If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  If skin irritation occurs: Get medical advice/attention.
  Take off contaminated clothing and wash it before reuse.
  If eye irritation persists: Get medical advice/attention.
16 Other information

Disclaimer: 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.

- **Department issuing SDS:** product safety department
- **Contact:**
  Agilent Technologies, Inc.
  800-227-9770
- **Date of preparation / last revision** 09/10/2018 / -
- **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)
  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
  Skin Irrit. 2: Skin corrosion/irritation – Category 2
  Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
1 Identification

- Product identifier
  - Product Name: Wash-Nitric Acid Blank, Part Number G1820-60258
  - Part Number: G1820-60258
  - Application of the substance / the mixture
  Reagents and Standards for Analytical Chemistry Laboratory Use
  A 250 mL Solution

- Details of the supplier of the safety data sheet
  - Manufacturer/Supplier:
    Agilent Technologies, Inc.
    5301 Stevens Creek Blvd.
    Santa Clara, CA 95051 USA
  - Information department: product safety department
  - Emergency telephone number:
    Emergency Phone Number (24 hours)
    CHEMTREC (800-424-9300)
    Outside US: 703-527-3887

2 Hazard(s) identification

- Classification of the substance or mixture
  - GHS05 Corrosion
  Skin Corr. 1B H314 Causes severe skin burns and eye damage.
  Eye Dam. 1 H318 Causes serious eye damage.

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

- Signal word Danger

- Hazard-determining components of labeling:
  - nitric acid
  - Hazard statements
    H314 Causes severe skin burns and eye damage.
  - Precautionary statements
    If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
    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/doctor.
    Specific treatment (see on this label).
    Store locked up.
    Dispose of contents/container in accordance with local/regional/national/international regulations.

- Classification system:
  - NFPA ratings (scale 0 - 4)
    - Health = 3
    - Fire = 0
    - Reactivity = 0
Product Name: Wash-Nitric Acid Blank, Part Number G1820-60258

3 Composition/information on ingredients

- Chemical characterization: Mixtures
- Description: Mixture of the substances listed below with nonhazardous additions.
- Dangerous components:
  - 7697-37-2 nitric acid 5.0%
- Chemical identification of the substance/preparation
  - 7732-18-5 water, distilled, conductivity or of similar purity 95.0%

4 First-aid measures

- Description of first aid measures
  - General information: Immediately remove any clothing soiled by the product.
  - After inhalation: 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: Do not give anything to eat or drink - 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: No further relevant information available.
- Advice for firefighters
  - Protective equipment: No special measures required.

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.
- Methods and material for containment and cleaning up:
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  - Use neutralizing agent.
  - Dispose contaminated material as waste according to item 13.
  - Ensure adequate ventilation.
- 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:
    - 7697-37-2 nitric acid 0.16 ppm

(Contd. on page 3)
### 7 Handling and storage

- **Handling:**
  - Precautions for safe handling: Ensure good ventilation/exhaustion at the workplace. 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: No special requirements. Information about storage in one common storage facility: Not required.
    - 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:
    | Substance   | Limit Value |
    |--------------|-------------|
    | 7697-37-2 nitric acid | Long-term value: 5 mg/m³, 2 ppm |
    |              | Short-term value: 10 mg/m³, 4 ppm |
    |              | Long-term value: 5.2 mg/m³, 2 ppm |
    |              | TLV Short-term value: 10 mg/m³, 4 ppm |

- **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.
    - Respiratory protection:
      - 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:
      - Protective gloves
      - The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

- **Material of gloves**
  - Nitrile Glove
  - Thickness: ≥ 0.11 mm
  - Breakthrough time: > 480 minutes

- **Penetration time of glove material**
  - The exact breakthrough time has to be found out by the manufacturer of the protective gloves and has to be observed.
**9 Physical and chemical properties**

- **Information on basic physical and chemical properties**
- **General Information**
- **Appearance:**
  - Form: Liquid
  - Color: Colorless
- **Odor:** Odorless
- **Odor Threshold:** Not applicable.
- **pH-value:** <1
- **Change in condition**
  - Melting point/Melting range: 0°C (32°F)
  - Boiling point/Boiling range: 100°C (212°F)
- **Flash point:** Not applicable.
- **Flammability (solid, gaseous):** Not applicable.
- **Decomposition temperature:** Not applicable.
- **Auto igniting:** Product is not selfigniting.
- **Danger of explosion:** Product does not present an explosion hazard.
- **Explosion limits:**
  - Lower: Not applicable.
  - Upper: Not applicable.
- **Vapor pressure at 20 °C (68 °F):** 23 hPa (17.3 mm Hg)
- **Density**
  - 1.0 g/mL @ 20°C
- **Relative density**
  - Not applicable.
- **Vapor density**
  - Not applicable.
- **Evaporation rate**
  - Not applicable.
- **Solubility in / Miscibility with Water:** Miscible
- **Partition coefficient (n-octanol/water):** Not applicable.
- **Viscosity:**
  - Dynamic: Not applicable.
  - Kinematic: Not applicable.
- **Solvent content:**
  - Water: 95.0 %
  - VOC content: 0.00 %
- **Solids content:** 0.0 %
- **Other information**
  - No further relevant information available.

**10 Stability and reactivity**

- **Reactivity**
  - No further relevant information available.
- **Chemical stability**
  - **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions**
  - No dangerous reactions known.
- **Conditions to avoid**
  - No further relevant information available.
47.0.8

- Incompatible materials: No further relevant information available.
- Hazardous decomposition products: No dangerous decomposition products known.

### 11 Toxicological information

- Information on toxicological effects
  - Acute toxicity:
    - 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:
    Corrosive
    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)
    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: No further relevant information available.
  - 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:
      Generally not hazardous for water
      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: Disposal must be made according to official regulations.
  - Recommended cleansing agent: Water, if necessary with cleansing agents.

### 14 Transport information

- UN-Number
  - DOT, ADR, IMDG, IATA: UN3264
- UN proper shipping name
  - DOT: Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid solution)

(Contd. on page 6)
Product Name: Wash-Nitric Acid Blank, Part Number G1820-60258

(Contd. of page 5)

- **ADR**
  
  - IMDG, IATA
  
  - 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
  
  - Packing group: III
  
  - Environmental hazards:
    
    Not applicable.

- **Special precautions for user**

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

- **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**

  Not applicable.

- **Transport/Additional information:**

  - **ADR**
    
    - Excepted quantities (EQ)
      
      Code: E1
      
      Maximum net quantity per inner packaging: 30 ml
      
      Maximum net quantity per outer packaging: 1000 ml

  - **IMDG**
    
    - Limited quantities (LQ)
      
      5L
      
      Code: E1
      
      Maximum net quantity per inner packaging: 30 ml
      
      Maximum net quantity per outer packaging: 1000 ml

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

15 Regulatory information

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

  - **Sara**
    
    - Section 313 (Specific toxic chemical listings):
      
      7697-37-2 nitric acid

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

(Contd. on page 7)
**Safety Data Sheet**

**Product Name:** Wash-Nitric Acid Blank, Part Number G1820-60258

### 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

### Signal word Danger
- **Hazard-determining components of labeling:**
  - nitric acid
- **Hazard statements**
  - H314 Causes severe skin burns and eye damage.
- **Precautionary statements**
  - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - 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/doctor.
  - Specific treatment (see on this label).
  - Store locked up.
  - 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**

**Disclaimer:** 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.

**Department issuing SDS:** product safety department

**Contact:**
Agilent Technologies, Inc.
800-227-9770

**Date of preparation / last revision** 09/10/2018 / -

**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)
- VOC: Volatile Organic Compounds (USA, EU)
<table>
<thead>
<tr>
<th>Set</th>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBT</td>
<td></td>
<td>Persistent, Bioaccumulative and Toxic</td>
</tr>
<tr>
<td>vPvB</td>
<td></td>
<td>very Persistent and very Bioaccumulative</td>
</tr>
<tr>
<td>NIOSH</td>
<td></td>
<td>National Institute for Occupational Safety</td>
</tr>
<tr>
<td>OSHA</td>
<td></td>
<td>Occupational Safety &amp; Health</td>
</tr>
<tr>
<td>TLV</td>
<td></td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>PEL</td>
<td></td>
<td>Permissible Exposure Limit</td>
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<tr>
<td>REL</td>
<td></td>
<td>Recommended Exposure Limit</td>
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<tr>
<td>Skin Corr. 1B</td>
<td></td>
<td>Skin corrosion/irritation – Category 1B</td>
</tr>
<tr>
<td>Eye Dam. 1</td>
<td></td>
<td>Serious eye damage/eye irritation – Category 1</td>
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</tbody>
</table>

**Product Name:** Wash-Nitric Acid Blank, Part Number G1820-60258
1 Identification

- **Product identifier**
  - **Product Name:** Wash-Water Blank, Part Number G1820-60259
  - **Part Number:** G1820-60259
  - **CAS Number:** 7732-18-5
  - **EC number:** 231-791-2

- **Application of the substance / the mixture**
  Reagents and Standards for Analytical Chemistry Laboratory Use
  A 250 mL Solution

- **Details of the supplier of the safety data sheet**
  - **Manufacturer/Supplier:** Agilent Technologies, Inc.
    5301 Stevens Creek Blvd.
    Santa Clara, CA 95051 USA
  - **Information department:** product safety department
  - **Emergency telephone number:**
    Emergency Phone Number (24 hours)
    CHEMTREC (800-424-9300)
    Outside US: 703-527-3887

2 Hazard(s) identification

- **Classification of the substance or mixture**
The substance is not classified, according to the Globally Harmonized System (GHS).

  - **Label elements**
    - **GHS label elements** Not Regulated
    - **Hazard pictograms** Not Regulated
    - **Signal word** Not Regulated
    - **Hazard statements** Not Regulated
  - **Classification system:**
    - **NFPA ratings (scale 0 - 4)**
      Health = 0
      Fire = 0
      Reactivity = 0
  - **HMIS-ratings (scale 0 - 4)**
    - **HEALTH** Health = 0
    - **FIRE** Fire = 0
    - **REACTIVITY** Reactivity = 0
  - **Other hazards**
    - **Results of PBT and vPvB assessment**
    - **PBT:** Not applicable.
    - **vPvB:** Not applicable.

3 Composition/information on ingredients

- **Chemical characterization:** Substances
  - **CAS No. Description**
    7732-18-5 water, distilled, conductivity or of similar purity
  - **Identification number(s)**
    - **EC number:** 231-791-2

(Contd. on page 2)
4 First-aid measures

- Description of first aid measures
  - General information: No special measures required.
  - After inhalation: Supply fresh air; consult doctor in case of complaints.
  - After skin contact: Generally the product does not irritate the skin.
  - After eye contact: Rinse opened eye for several minutes under running water.
  - After swallowing: Do not give anything to eat or drink - 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: No further relevant information available.

- Advice for firefighters
  - Protective equipment: No special measures required.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures: Not required.

- Environmental precautions: Dilute with plenty of water.

- Methods and material for containment and cleaning up:
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, 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:
    - Substance is not listed.

  - PAC-2:
    - Substance is not listed.

  - PAC-3:
    - Substance is not listed.

7 Handling and storage

- Handling:
  - Precautions for safe handling: No special measures required.
    - Follow good laboratory practices.

- 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: No special requirements.
  - Information about storage in one common storage facility: Not required.
  - Further information about storage conditions: None.
  - 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.
9 Physical and chemical properties

- **Information on basic physical and chemical properties**
  - **General Information**
  - **Appearance:**
    - **Form:** Liquid
    - **Color:** Colorless
    - **Odor:** Odorless
    - **Odour Threshold:** Not applicable.
  - **pH-value:** 5

- **Change in condition**
  - **Melting point/Melting range:** 0°C (32°F)
  - **Boiling point/Boiling range:** 100°C (212°F)

- **Flash point:** Not applicable.

- **Flammability (solid, gaseous):** Not applicable.

- **Decomposition temperature:** Not applicable.

- **Auto igniting:** Not determined.

- **Danger of explosion:** Product does not present an explosion hazard.

- **Explosion limits:**
  - **Lower:** Not applicable.
  - **Upper:** Not applicable.

- **Vapor pressure at 20 °C (68 °F):** 23 kPa (17.3 mm Hg)

- **Density**
  - **Relative density:** Not applicable.
  - **Vapor density:** Not applicable.
  - **Evaporation rate:** Not applicable.

- **Solubility in / Miscibility with**
  - **Water:** Miscible

- **Partition coefficient (n-octanol/water):** Not applicable.

- **Viscosity:**
  - **Dynamic at 20 °C (68 °F):** 0.952 mPas
  - **Kinematc:** Not applicable.
  - **Water:** 100.0 %
  - **VOC content:** 0.00 %

(Contd. on page 4)
Solids content: 0.0 \%

Other information
No further relevant information available.

10 Stability and reactivity

- Reactivity No further relevant information available.
- Chemical stability
- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- Possibility of hazardous reactions No dangerous reactions known.
- Conditions to avoid: No further relevant information available.
- Incompatible materials: No further relevant information available.
- Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

- Information on toxicological effects
- Acute toxicity:
- Primary irritant effect:
  - on the skin: No irritant effect.
  - on the eye: No irritating effect.
- Sensitization: No sensitizing effects known.
- Additional toxicological information:
  When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.
  The substance is not subject to classification.
- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
  Substance is not listed.
  - NTP (National Toxicology Program)
  Substance is not listed.
  - OSHA-Ca (Occupational Safety & Health Administration)
  Substance is not listed.

12 Ecological information

- Toxicity
- Aquatic toxicity: No further relevant information available.
- 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: Generally not hazardous for water
  - 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: Smaller quantities can be disposed of with household waste.
### 14 Transport information

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN-Number</td>
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<tr>
<td>DOT, ADR, ADN, IMDG, IATA</td>
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<td>DOT, ADR, ADN, IMDG, IATA</td>
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<td>Transport hazard class(es)</td>
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<td>Class</td>
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<tr>
<td>Packing group</td>
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<tr>
<td>DOT, ADR, IMGD, IATA</td>
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<tr>
<td>Environmental hazards</td>
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</tr>
<tr>
<td>Special precautions for user</td>
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</tr>
<tr>
<td>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</td>
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</tr>
<tr>
<td>UN ”Model Regulation”:</td>
<td>Not Regulated</td>
</tr>
</tbody>
</table>

### 15 Regulatory information

<table>
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<tr>
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<td></td>
</tr>
<tr>
<td>Sara</td>
<td></td>
</tr>
<tr>
<td>Section 313 (Specific toxic chemical listings):</td>
<td>Substance is not listed.</td>
</tr>
<tr>
<td>TSCA (Toxic Substances Control Act):</td>
<td>Substance is listed.</td>
</tr>
<tr>
<td>Proposition 65</td>
<td></td>
</tr>
<tr>
<td>Chemicals known to cause cancer:</td>
<td>Substance is not listed.</td>
</tr>
<tr>
<td>Chemicals known to cause reproductive toxicity for females:</td>
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</tr>
<tr>
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</tr>
<tr>
<td>Chemicals known to cause developmental toxicity:</td>
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</tr>
<tr>
<td>Carcinogenic categories</td>
<td></td>
</tr>
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<td>EPA (Environmental Protection Agency)</td>
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</tr>
<tr>
<td>TLV (Threshold Limit Value established by ACGIH)</td>
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</tr>
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<tr>
<td>Hazard pictograms</td>
<td>Not Regulated</td>
</tr>
<tr>
<td>Signal word</td>
<td>Not Regulated</td>
</tr>
<tr>
<td>Hazard statements</td>
<td>Not Regulated</td>
</tr>
</tbody>
</table>

(Contd. on page 6)
Safety Data Sheet
acc. to OSHA HCS

Product Name: Wash-Water Blank, Part Number G1820-60259

16 Other information

Disclaimer: 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.

- **Department issuing SDS:** product safety department
- **Contact:**
  Agilent Technologies, Inc.
  800-227-9770
- **Date of preparation / last revision:** 09/10/2018 / -
- **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
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - HMIS: Hazardous Materials Identification System (USA)
  - VOC: Volatile Organic Compounds (USA, EU)
  - 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

- Chemical safety assessment: A Chemical Safety Assessment has not been carried out.
1 Identification

- Product identifier
  - Product Name: Dual Mode 1 Solution, Part Number G1820-60372
  - Part Number: G1820-60372
- Application of the substance / the mixture
  Reagents and Standards for Analytical Chemistry Laboratory Use
  A 100mL Solution

- Details of the supplier of the safety data sheet
  - Manufacturer/Supplier:
    Agilent Technologies, Inc.
    5301 Stevens Creek Blvd.
    Santa Clara, CA 95051 USA
  - Information department: product safety department
  - Emergency telephone number:
    Emergency Phone Number (24 hours)
    CHEMTREC (800-424-9300)
    Outside US: 703-527-3887

2 Hazard(s) identification

- Classification of the substance or mixture
  The product is not classified, according to the Globally Harmonized System (GHS).

- Label elements
  - GHS label elements: Not Regulated
  - Hazard pictograms: Not Regulated
  - Signal word: Not Regulated
  - Hazard statements: Not Regulated
  - Classification system:
    - NFPA ratings (scale 0 - 4)
      Health = 0
      Fire = 0
      Reactivity = 0
  - HMIS-ratings (scale 0 - 4)
    HEALTH
    Health = 0
    FIRE
    Fire = 0
    REACTIVITY
    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: Mixture of the substances listed below with nonhazardous additions.

- Dangerous components: Not Regulated

- Chemical identification of the substance/preparation
  - 7697-37-2 nitric acid
    0.2%
  - 7440-52-0 Erbium from Erbium(III) oxide
    0.0001%
  - 7732-18-5 water, distilled, conductivity or of similar purity
    99.8%

(Contd. on page 2)
4 First-aid measures

- **Description of first aid measures**
  - **General information:** No special measures required.
  - **After inhalation:** Supply fresh air; consult doctor in case of complaints.
  - **After skin contact:** Generally the product does not irritate the skin.
  - **After eye contact:** Rinse opened eye for several minutes under running water.
  - **After swallowing:** Do not give anything to eat or drink - 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: No further relevant information available.
  - Advice for firefighters
    - Protective equipment: No special measures required.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures:** Not required.
  - Environmental precautions: No special measures required.
  - Methods and material for containment and cleaning up:
    - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, 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:**
      - 7697-37-2 nitric acid 0.16 ppm
    - **PAC-2:**
      - 7697-37-2 nitric acid 24 ppm
    - **PAC-3:**
      - 7697-37-2 nitric acid 92 ppm

7 Handling and storage

- **Handling:**
  - Precautions for safe handling: No special measures required.
  - Follow good laboratory practices.
  - 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: No special requirements.
  - Information about storage in one common storage facility: Not required.
  - Further information about storage conditions: None.
  - 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 3)
Control parameters
- Components with limit values that require monitoring at the workplace:
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- Additional information: The lists that were valid during the creation were used as basis.

Exposure controls
- Personal protective equipment:
- General protective and hygienic measures: The usual precautionary measures for handling chemicals should be followed.
- Respiratory protection: Not required.
- Protection of hands:
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- Material of gloves
  Nitrile Glove
  Thickness: ≥ 0.11 mm
  Breakthrough time: > 480 minutes
- 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: Goggles recommended during refilling.

Physical and chemical properties
- Information on basic physical and chemical properties
  - General Information
  - Appearance:
    Form: Liquid
    Color: Colorless
    Odor: Odorless
    Odour Threshold: Not applicable.
  - pH-value: < 1
  - Change in condition
    Melting point/Melting range: 0°C (32°F)
    Boiling point/Boiling range: 100°C (212°F)
  - Flash point: Not applicable.
  - Flammability (solid, gaseous): Not applicable.
  - Decomposition temperature: Not applicable.
  - Auto igniting: Product is not selfigniting.
  - Danger of explosion: Product does not present an explosion hazard.
- Explosion limits:
  Lower: Not applicable.
  Upper: Not applicable.
- Vapor pressure at 20 °C (68 °F):
  23 kPa (17.3 mm Hg)
- Density
  1.0 g/mL @ 20°C
- Relative density
  Not applicable.
  Vapor density
  Not applicable.
  Evaporation rate
  Not applicable.
- Solubility in / Miscibility with
  Water: Miscible
- Partition coefficient (n-octanol/water): Not applicable.
- Viscosity:
  Dynamic: Not applicable.
  Kinematic: Not applicable.
47.0.8
· Solvent content: 
  Water: 99.8 %
  VOC content: 0.00 %
· Solids content: 0.0 %
· Other information: No further relevant information available.

10 Stability and reactivity
· Reactivity: No further relevant information available.
· Chemical stability: No decomposition if used according to specifications.
· Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
· Possibility of hazardous reactions: No dangerous reactions known.
· Conditions to avoid: No further relevant information available.
· Incompatible materials: No further relevant information available.
· Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information
· Information on toxicological effects: No further relevant information available.
· Acute toxicity: No irritant effect.
· Primary irritant effect: No irritating effect.
· Sensitization: No sensitizing effects known.
· Additional toxicological information: When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.
· 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: No further relevant information available.
· Aquatic toxicity: No further relevant information available.
· Persistence and degradability: No further relevant information available.
· Behavior in environmental systems: No further relevant information available.
· Bioaccumulative potential: No further relevant information available.
· Mobility in soil: No further relevant information available.
· General notes: Generally not hazardous for water.
· 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: Smaller quantities can be disposed of with household waste.

- Uncleaned packaging:
  - Recommendation: Disposal must be made according to official regulations.

14 Transport information

- UN-Number
  - DOT, ADR, ADN, IMDG, IATA: Not Regulated

- UN proper shipping name
  - DOT, ADR, ADN, IMDG, IATA: Not Regulated

- Transport hazard class(es)
  - DOT, ADR, ADN, IMDG, IATA: Not Regulated
    - Class: Not Regulated

- Packing group
  - DOT, ADR, IMDG, IATA: Not Regulated

- Environmental hazards:
  - Not applicable.

- Special precautions for user:
  - Not applicable.

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

- UN "Model Regulation":
  - Not Regulated

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
  - Sara
    - Section 313 (Specific toxic chemical listings):
      - 7697-37-2 nitric 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: Not Regulated
Product Name: Dual Mode 1 Solution, Part Number G1820-60372

- Hazard pictograms: Not Regulated
- Signal word: Not Regulated
- Hazard statements: Not Regulated
- Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

Disclaimer: 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.

- Department issuing SDS: Product Safety Department
- Contact: Agilent Technologies, Inc.
  800-227-9770
- Date of preparation / last revision: 09/10/2018
- 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)
  - IATA: International Air Transport Association
  - VOC: Volatile Organic Compounds (USA, EU)
  - 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
1 Identification

- Product identifier
  - Product Name: Dual Mode 2 Solution, Part Number G1820-60410
  - Part Number: G1820-60410
  - Application of the substance / the mixture
    Reagents and Standards for Analytical Chemistry Laboratory Use
    A 100mL Solution

- Details of the supplier of the safety data sheet
  - Manufacturer/Supplier:
    Agilent Technologies, Inc.
    5301 Stevens Creek Blvd.
    Santa Clara, CA 95051 USA
  - Information department: product safety department
  - Emergency telephone number:
    Emergency Phone Number (24 hours)
    CHEMTREC (800-424-9300)
    Outside US: 703-527-3887

2 Hazard(s) identification

- Classification of the substance or mixture
  The product is not classified, according to the Globally Harmonized System (GHS).

- Label elements
  - GHS label elements Not Regulated
  - Hazard pictograms Not Regulated
  - Signal word Not Regulated
  - Hazard statements Not Regulated

- Classification system:
  - NFPA ratings (scale 0 - 4)
    Health = 0
    Fire = 0
    Reactivity = 0
  - HMIS-ratings (scale 0 - 4)
    HEALTH Health = 0
    FIRE Fire = 0
    REACTIVITY 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: Mixture of the substances listed below with nonhazardous additions.

- Dangerous components: Not Regulated

- Chemical identification of the substance/preparation
<table>
<thead>
<tr>
<th>Substance/Preparation</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>nitric acid</td>
<td>0.2%</td>
</tr>
<tr>
<td>Erbium from Erbium(III) oxide</td>
<td>&lt;0.0001%</td>
</tr>
<tr>
<td>water, distilled, conductivity or of similar purity</td>
<td>99.8%</td>
</tr>
</tbody>
</table>
4 First-aid measures

- Description of first aid measures
- General information: No special measures required.
- After inhalation: Supply fresh air; consult doctor in case of complaints.
- After skin contact: Generally the product does not irritate the skin.
- After eye contact: Rinse opened eye for several minutes under running water.
- After swallowing: Do not give anything to eat or drink - 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: No further relevant information available.
- Advice for firefighters
  - Protective equipment: No special measures required.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures: Not required.
- Environmental precautions: No special measures required.
- Methods and material for containment and cleaning up:
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, 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:
    - 7697-37-2 nitric acid: 0.16 ppm
  - PAC-2:
    - 7697-37-2 nitric acid: 24 ppm
  - PAC-3:
    - 7697-37-2 nitric acid: 92 ppm

7 Handling and storage

- Handling:
  - Precautions for safe handling
    - No special measures required.
    - Follow good laboratory practices.
- 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: No special requirements.
  - Information about storage in one common storage facility: Not required.
  - Further information about storage conditions: None.
- 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.
## 9 Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Information</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Appearance</strong></td>
<td>Liquid</td>
</tr>
<tr>
<td><strong>Form</strong></td>
<td>Liquid</td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>Colorless</td>
</tr>
<tr>
<td><strong>Odor</strong></td>
<td>Odorless</td>
</tr>
<tr>
<td><strong>Odour Threshold</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>pH-value</strong></td>
<td>&lt; 1</td>
</tr>
<tr>
<td><strong>Melting point/Melting range</strong></td>
<td>0°C (32°F)</td>
</tr>
<tr>
<td><strong>Boiling point/Boiling range</strong></td>
<td>100°C (212°F)</td>
</tr>
<tr>
<td><strong>Flash point</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Flammability (solid, gaseous)</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Decomposition temperature</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Auto igniting</strong></td>
<td>Product is not selfigniting</td>
</tr>
<tr>
<td><strong>Danger of explosion</strong></td>
<td>Product does not present an explosion hazard.</td>
</tr>
<tr>
<td><strong>Explosion limits</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Lower</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Upper</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Vapor pressure at 20 °C (68 °F)</strong></td>
<td>23 kPa (17.3 mm Hg)</td>
</tr>
<tr>
<td><strong>Density</strong></td>
<td>1.0 g/mL @ 20°C</td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Vapor density</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Solubility in / Miscibility with Water</strong></td>
<td>Miscible</td>
</tr>
<tr>
<td><strong>Partition coefficient (n-octanol/water)</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Viscosity</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Dynamic</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Kinematic</strong></td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

(Contd. on page 4)
Safety Data Sheet
acc. to OSHA HCS

Product Name: Dual Mode 2 Solution, Part Number G1820-60410

Solvent content:
- Water: 99.8 %
- VOC content: 0.00 %
- Solids content: 0.0 %
- Other information: No further relevant information available.

10 Stability and reactivity

- Reactivity: No further relevant information available.
- Chemical stability:
- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- Possibility of hazardous reactions: No dangerous reactions known.
- Conditions to avoid: No further relevant information available.
- Incompatible materials: No further relevant information available.
- Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

- Information on toxicological effects
- Acute toxicity:
- Primary irritant effect:
  - on the skin: No irritant effect.
  - on the eye: No irritating effect.
- Sensitization: No sensitizing effects known.
- Additional toxicological information:
  The product is not subject to classification according to internally approved calculation methods for preparations:
  When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.
- 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: No further relevant information available.
- 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: Generally not hazardous for water
- 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:** Smaller quantities can be disposed of with household waste.

- **Uncleaned packagings:**
  - **Recommendation:** Disposal must be made according to official regulations.

### 14 Transport information

<table>
<thead>
<tr>
<th><strong>UN-Number</strong></th>
<th>Not Regulated</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT, ADR, ADN, IMDG, IATA</td>
<td></td>
</tr>
</tbody>
</table>

| **UN proper shipping name** | Not Regulated |
| DOT, ADR, ADN, IMDG, IATA | |

| **Transport hazard class(es)** | Not Regulated |
| DOT, ADR, ADN, IMDG, IATA | |

| **Packing group** | Not Regulated |
| DOT, ADR, IMDG, IATA | |

| **Environmental hazards:** | Not applicable. |
| **Special precautions for user** | Not applicable. |

| **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** | Not applicable. |
| **UN "Model Regulation":** | Not Regulated |

### 15 Regulatory information

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

  - **Sara**
    - **Section 313 (Specific toxic chemical listings):**
      - 7697-37-2 nitric 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**
    - Not Regulated
Safety Data Sheet
acc. to OSHA HCS

Product Name: Dual Mode 2 Solution, Part Number G1820-60410

47.0.8

- Hazard pictograms Not Regulated
- Signal word Not Regulated
- Hazard statements Not Regulated
- Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

Disclaimer: 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.

- Department issuing SDS: product safety department
- Contact: Agilent Technologies, Inc.
  800-227-9770
- Date of preparation / last revision 09/10/2018 / -
- 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)
  VOC: Volatile Organic Compounds (USA, EU)
  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
1 Identification

- Product identifier
  - **Product Name**: Abundance Sensitivity (1), Part Number ZHP-18-100
  - **Part Number**: ZHP-18-100

- Application of the substance / the mixture
  - Reagents and Standards for Analytical Chemistry Laboratory Use
  - A 100mL Solution

- Details of the supplier of the safety data sheet
  - **Manufacturer/Supplier**: Agilent Technologies, Inc.
    5301 Stevens Creek Blvd.
    Santa Clara, CA 95051 USA
  - **Information department**: product safety department
  - **Emergency telephone number**:
    - **Emergency Phone Number (24 hours)**
      CHEMTREC (800-424-9300)
      Outside US: 703-527-3887

2 Hazard(s) identification

- Classification of the substance or mixture
  - GHS07
  - Skin Irrit. 2  **H315** Causes skin irritation.
  - Eye Irrit. 2A **H319** Causes serious eye irritation.

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

- Signal word **Warning**

- **Hazard statements**
  - **H315** Causes skin irritation.
  - **H319** Causes serious eye irritation.

- **Precautionary statements**
  - Wash thoroughly after handling.
  - Wear protective gloves / eye protection / face protection.
  - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - If skin irritation occurs: Get medical advice/attention.
  - Take off contaminated clothing and wash it before reuse.
  - If eye irritation persists: Get medical advice/attention.

- **Classification system**:
  - **NFPA ratings (scale 0 - 4)**
    - Health = 2
    - Fire = 0
    - Reactivity = 0
  - **HMIS-ratings (scale 0 - 4)**
    - **HEALTH** = 2
    - **FIRE** = 0
    - **REACTIVITY** = 0

(Contd. on page 2)
4 First-aid measures

- Description of first aid measures
- After inhalation: 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. If symptoms persist, consult a doctor.
- After swallowing: Do not give anything to eat or drink - 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: No further relevant information available.
- Advice for firefighters
- Protective equipment: No special measures required.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures: Not required.
- Environmental precautions: Do not allow to enter sewers/surface or ground water.
- Methods and material for containment and cleaning up:
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  Ensure adequate ventilation.
- 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:
    - 7697-37-2 nitric acid: 0.16 ppm
    - 7440-46-2 Cesium from Cesium nitrate: 5.6 mg/m³
  - PAC-2:
    - 7697-37-2 nitric acid: 24 ppm
    - 7440-46-2 Cesium from Cesium nitrate: 61 mg/m³
  - PAC-3:
    - 7697-37-2 nitric acid: 92 ppm

See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

See Section 13 for disposal information.

Protective Action Criteria for Chemicals

- PAC-1:
  - 7697-37-2 nitric acid: 0.16 ppm
  - 7440-46-2 Cesium from Cesium nitrate: 5.6 mg/m³
- PAC-2:
  - 7697-37-2 nitric acid: 24 ppm
  - 7440-46-2 Cesium from Cesium nitrate: 61 mg/m³
- PAC-3:
  - 7697-37-2 nitric acid: 92 ppm

(Contd. on page 3)
7 Handling and storage

- Handling:
  - Precautions for safe handling
    - Ensure good ventilation/exhaustion at the workplace.
    - 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: No special requirements.
  - Information about storage in one common storage facility: Not required.
  - 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
      - 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.
  - Respiratory protection:
    - 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:
    - Protective gloves
      - The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
      - Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
      - Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
      - Material of gloves
        - Nitrile Glove
        - Thickness: ≥0.11 mm
        - Breakthrough time: ≥ 480 minutes
        - 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.
### 9 Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>Liquid</td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>Colorless</td>
</tr>
<tr>
<td><strong>Odor</strong></td>
<td>Odorless</td>
</tr>
<tr>
<td><strong>Odour Threshold</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>pH-value</strong></td>
<td>&lt;1</td>
</tr>
<tr>
<td><strong>Melting point/Melting range</strong></td>
<td>0°C (32°F)</td>
</tr>
<tr>
<td><strong>Boiling point/Boiling range</strong></td>
<td>100°C (212°F)</td>
</tr>
<tr>
<td><strong>Flash point</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Flammability (solid, gaseous)</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Decomposition temperature</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Auto igniting</strong></td>
<td>Product is not selfigniting.</td>
</tr>
<tr>
<td><strong>Explosion limits</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Explosion limits: Upper</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Flash point</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Vapor pressure at 20 °C (68 °F):</strong></td>
<td>23 hPa (17.3 mm Hg)</td>
</tr>
<tr>
<td><strong>Density</strong></td>
<td>1.0 g/mL @ 20°C</td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Vapor density</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Solubility in / Miscibility with Water</strong></td>
<td>Miscible</td>
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<tr>
<td><strong>Partition coefficient (n-octanol/water):</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Viscosity</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Dynamic</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Kinematic</strong></td>
<td>Not applicable</td>
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<td><strong>Solvent content</strong></td>
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<td><strong>Water:</strong></td>
<td>98.0 %</td>
</tr>
<tr>
<td><strong>VOC content:</strong></td>
<td>0.00 %</td>
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<tr>
<td><strong>Solids content:</strong></td>
<td>0.0 %</td>
</tr>
<tr>
<td><strong>Other information</strong></td>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>
### 11 Toxicological information

- **Information on toxicological effects**
  - **Acute toxicity:**
  - **Primary irritant effect:**
    - **on the skin:** Irritant to skin and mucous membranes.
    - **on the eye:** Irritating effect.
  - **Sensitization:** No sensitizing effects known.
  - **Additional toxicological information:** The product shows the following dangers according to internally approved calculation methods for preparations:
    - 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:** No further relevant information available.
  - **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.
    - **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:** Disposal must be made according to official regulations.

### 14 Transport information

- **UN-Number**
  - DOT, ADR, IMDG, IATA
  - DOT: UN3264

- **UN proper shipping name**
  - DOT
  - 3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid solution)
### IM3G, IATA
- **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**
  - **Class**: III

### 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**: A
- **Stowage Code**: SW2 Clear of living quarters.

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

### Transport/Additional information:
- **ADR**
  - **Excepted quantities (EQ)**
    - **Code**: E1
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 1000 ml

- **IMDG**
  - **Limited quantities (LQ)**
    - **Code**: E1
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 1000 ml

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

## 15 Regulatory information
- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Sara**
  - **Section 313 (Specific toxic chemical listings):**
    - 7697-37-2 nitric 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

  GHS07

- Signal word
  Warning

- Hazard statements
  H315 Causes skin irritation.
  H319 Causes serious eye irritation.

- Precautionary statements
  Wash thoroughly after handling.
  Wear protective gloves / eye protection / face protection.
  If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  If skin irritation occurs: Get medical advice/attention.
  Take off contaminated clothing and wash it before reuse.
  If eye irritation persists: Get medical advice/attention.

- Chemical safety assessment:
  A Chemical Safety Assessment has not been carried out.

16 Other information

Disclaimer: 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.

- Department issuing SDS: product safety department
- Contact:
  Agilent Technologies, Inc.
  800-227-9770
- Date of preparation / last revision 09/10/2018 / -
- 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)
  VOC: Volatile Organic Compounds (USA, EU)
  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
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
1 Identification

- Product identifier
  - Product Name: Abundance Sensitivity (2), Part Number ZHP-19-100
  - Part Number: ZHP-19-100
  - Application of the substance / the mixture
    Reagents and Standards for Analytical Chemistry Laboratory Use
    A 100mL Solution
- Details of the supplier of the safety data sheet
  - Manufacturer/Supplier: Agilent Technologies, Inc.
    5301 Stevens Creek Blvd.
    Santa Clara, CA 95051 USA
  - Information department: product safety department
  - Emergency telephone number:
    Emergency Phone Number (24 hours)
    CHEMTREC (800-424-9300)
    Outside US: 703-527-3887

2 Hazard(s) identification

- Classification of the substance or mixture
  The product is not classified, according to the Globally Harmonized System (GHS).
- Label elements
  - GHS label elements Not Regulated
  - Hazard pictograms Not Regulated
  - Signal word Not Regulated
  - Hazard statements Not Regulated
  - Classification system:
    - NFPA ratings (scale 0 - 4)
      Health = 0
      Fire = 0
      Reactivity = 0
    - HMIS-ratings (scale 0 - 4)
      HEALTH Health = 0
      FIRE Fire = 0
      REACTIVITY 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: Mixture of the substances listed below with nonhazardous additions.
- Dangerous components: Not Regulated
- Chemical identification of the substance/preparation
  - Chemicals:
    - 7697-37-2 nitric acid: 0.5%
    - 7440-46-2 Cesium from Cesium nitrate: 0.002%
    - 7732-18-5 water, distilled, conductivity or of similar purity: 99.498%
4 First-aid measures

- Description of first aid measures
- General information: No special measures required.
- After inhalation: Supply fresh air; consult doctor in case of complaints.
- After skin contact: Generally the product does not irritate the skin.
- After eye contact: Rinse opened eye for several minutes under running water.
- After swallowing: Do not give anything to eat or drink - 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: No further relevant information available.
- Advice for firefighters
- Protective equipment: No special measures required.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures: Not required.
- Environmental precautions: Do not allow to enter sewers/surface or ground water.
- Methods and material for containment and cleaning up:
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, 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:
  - 7697-37-2 nitric acid 0.16 ppm
  - 7440-46-2 Cesium from Cesium nitrate 5.6 mg/m³
  PAC-2:
  - 7697-37-2 nitric acid 24 ppm
  - 7440-46-2 Cesium from Cesium nitrate 61 mg/m³
  PAC-3:
  - 7697-37-2 nitric acid 92 ppm
  - 7440-46-2 Cesium from Cesium nitrate 370 mg/m³

7 Handling and storage

- Handling:
  - Precautions for safe handling: No special measures required. Follow good laboratory practices.
  - 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: No special requirements.
  - Information about storage in one common storage facility: Not required.
  - Further information about storage conditions: None.
  - Specific end use(s): No further relevant information available.

(Contd. on page 3)
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:
  The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- Additional information: The lists that were valid during the creation were used as basis.
- Exposure controls
- Personal protective equipment:
  - General protective and hygienic measures: The usual precautionary measures for handling chemicals should be followed.
  - Respiratory protection: Not required.
- Protection of hands:
  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
  Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
  Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- Material of gloves
  Nitrile Glove
  Thickness: ≥ 0.11 mm
  Breakthrough time: > 480 minutes
- 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: Goggles recommended during refilling.

9 Physical and chemical properties

- Information on basic physical and chemical properties
- General Information
- Appearance:
  Form: Liquid
  Color: Colorless
- Odor:
- Odour Threshold:
  Not applicable.
- pH-value:
  <1
- Change in condition
  Melting point/Melting range: 0°C (32°F)
  Boiling point/Boiling range: 100°C (212°F)
- Flash point:
  Not applicable.
- Flammability (solid, gaseous):
  Not applicable.
- Decomposition temperature:
  Not applicable.
- Auto igniting:
  Product is not selfigniting.
- Danger of explosion:
  Product does not present an explosion hazard.
- Explosion limits:
  Lower:
  Not applicable.
  Upper:
  Not applicable.
- Vapor pressure at 20 °C (68 °F):
  23 hPa (17.3 mm Hg)
- Density
  1.0 g/mL @ 20°C
- Relative density
  Not applicable.
- Vapor density
  Not applicable.
- Evaporation rate
  Not applicable.
- Solubility in / Miscibility with
  Water:
  Miscible
- Partition coefficient (n-octanol/water):
  Not applicable.
Product Name: Abundance Sensitivity (2), Part Number ZHP-19-100

47.0.8

· Viscosity:
  Dynamic: Not applicable.
  Kinematic: Not applicable.

· Solvent content:
  Water: 99.5 %
  VOC content: 0.00 %

· Solids content: 0.0 %

· Other information
  No further relevant information available.

10 Stability and reactivity

· Reactivity
  No further relevant information available.

· Chemical stability
  No decomposition if used according to specifications.

· Thermal decomposition / conditions to be avoided
  No dangerous reactions known.

· Possibility of hazardous reactions
  No further relevant information available.

· Conditions to avoid
  No further relevant information available.

· Incompatible materials
  No further relevant information available.

· Hazardous decomposition products
  No dangerous decomposition products known.

11 Toxicological information

· Information on toxicological effects
  Acute toxicity:
  - on the skin: No irritant effect.
  - on the eye: No irritating effect.

· Primary irritant effect
  - on the skin: No irritant effect.
  - on the eye: No irritating effect.

· Sensitization
  No sensitizing effects known.

· Additional toxicological information
  When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· 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
  No further relevant information available.

· Aquatic toxicity
  No further relevant information available.

· Persistence and degradability
  No further relevant information available.

· Behavior in environmental systems
  No further relevant information available.

· 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.

· Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.
13 Disposal considerations

- Waste treatment methods
  - Recommendation: Smaller quantities can be disposed of with household waste.

- Uncleaned packagings:
  - Recommendation: Disposal must be made according to official regulations.

14 Transport information

- UN-Number
  - DOT, ADR, ADN, IMDG, IATA: Not Regulated

- UN proper shipping name
  - DOT, ADR, ADN, IMDG, IATA: Not Regulated

- Transport hazard class(es)
  - DOT, ADR, ADN, IMDG, IATA: Not Regulated

- Class
  - DOT, ADR, IMDG, IATA: Not Regulated

- Packing group
  - DOT, ADR, IMDG, IATA: Not Regulated

- Environmental hazards:
  - Not applicable.

- Special precautions for user
  - Not applicable.

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

- UN "Model Regulation":
  - Not Regulated

15 Regulatory information

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

- Sara
  - Section 313 (Specific toxic chemical listings):
    - 7697-37-2 nitric 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.

(Contd. on page 6)
Product Name: Abundance Sensitivity (2), Part Number ZHP-19-100

- **NIOSH-Ca (National Institute for Occupational Safety and Health)**
  - None of the ingredients is listed.
- **GHS label elements** Not Regulated
- **Hazard pictograms** Not Regulated
- **Signal word** Not Regulated
- **Hazard statements** Not Regulated
- **Chemical safety assessment**: A Chemical Safety Assessment has not been carried out.

### Other information

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

- **Department issuing SDS**: product safety department
- **Contact**: Agilent Technologies, Inc. 800-227-9770
- **Date of preparation / last revision** 09/10/2018 /
- **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)
  - VOC: Volatile Organic Compounds (USA, EU)
  - 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
1 Identification

- Product identifier
- Product Name: Detection Limit (1), Part Number ZHP-20-100
- Part Number: ZHP-20-100
- Application of the substance / the mixture
  Reagents and Standards for Analytical Chemistry Laboratory Use
  A 100mL Solution
- Details of the supplier of the safety data sheet
- Manufacturer/Supplier:
  Agilent Technologies, Inc.
  5301 Stevens Creek Blvd.
  Santa Clara, CA 95051 USA
- Information department: product safety department
- Emergency telephone number:
  Emergency Phone Number (24 hours)
  CHEMTREC (800-424-9300)
  Outside US: 703-527-3887

2 Hazard(s) identification

- Classification of the substance or mixture

  GHS07

  Skin Irrit. 2  H315  Causes skin irritation.
  Eye Irrit. 2A H319  Causes serious eye irritation.

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

  GHS07

- Signal word Warning
- Hazard statements
  H315 Causes skin irritation.
  H319 Causes serious eye irritation.
- Precautionary statements
  Wash thoroughly after handling.
  Wear protective gloves / eye protection / face protection.
  If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  If skin irritation occurs: Get medical advice/attention.
  Take off contaminated clothing and wash it before reuse.
  If eye irritation persists: Get medical advice/attention.
- Classification system:
- NFPA ratings (scale 0 - 4)

  2
  0
  0

- HMIS-ratings (scale 0 - 4)

  HEALTH  2
  FIRE    0
  REACTIVITY  0

(Contd. on page 2)
3 Composition/information on ingredients

- Chemical characterization: Mixtures
- Description: Mixture of the substances listed below with nonhazardous additions.

- Dangerous components:
  - 7697-37-2 nitric acid 2.0%

- Chemical identification of the substance/preparation
  - 7440-69-9 bismuth <0.0001%
  - 7440-74-6 indium <0.0001%
  - 7440-41-7 Beryllium from Beryllium Acetate <0.0001%
  - 7732-18-5 water, distilled, conductivity or of similar purity 97.9997%

4 First-aid measures

- Description of first aid measures
  - After inhalation: 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. If symptoms persist, consult a doctor.
  - After swallowing: Do not give anything to eat or drink - 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: No further relevant information available.

- Advice for firefighters
  - Protective equipment: No special measures required.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures: Not required.

- Environmental precautions: No special measures required.

- Methods and material for containment and cleaning up:
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  - Ensure adequate ventilation.

- 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:
    - 7697-37-2 nitric acid 0.16 ppm
    - 7440-69-9 bismuth 15 mg/m³
    - 7440-74-6 indium 0.3 mg/m³
    - 7440-41-7 Beryllium from Beryllium Acetate 0.0023 mg/m³
Product Name: Detection Limit (1), Part Number ZHP-2 0-100

7 Handling and storage

- Handling:
  - Precautions for safe handling
    Ensure good ventilation/exhaustion at the workplace.
    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: No special requirements.
  - Information about storage in one common storage facility: Not required.
  - 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:

    | Component                  | Limit Value |
    |---------------------------|-------------|
    | 7697-37-2 nitric acid     | 24 ppm      |
    | 7440-69-9 bismuth         | 170 mg/m³   |
    | 7440-74-6 indium          | 3.3 mg/m³   |
    | 7440-41-7 Beryllium from Beryllium Acetate | 0.025 mg/m³ |

- 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.
  - Respiratory protection:
    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:

    Protective gloves

    The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
    Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
### Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

- **Material of gloves**
  - Nitrile Glove
  - **Thickness:** ≥ 0.11 mm
  - **Breakthrough time:** > 480 minutes

- **Penetration time of glove material**
  - The exact breakthrough time has to be found out by the manufacturer of the protective gloves and has to be observed.

### Eye protection:
- Tightly sealed goggles

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### 9 Physical and chemical properties

- **Form:** Liquid
- **Color:** Colorless
- **Odor:** Odorless
- **Odour Threshold:** Not applicable.
- **pH-value:** <1

- **Melting point/Melting range:** 0°C (32°F)
- **Boiling point/Boiling range:** 100°C (212°F)
- **Flash point:** Not applicable.
- **Flammability (solid, gaseous):** Not applicable.
- **Decomposition temperature:** Not applicable.
- **Auto igniting:** Product is not selfigniting.
- **Danger of explosion:** Product does not present an explosion hazard.

- **Explosion limits:**
  - **Lower:** Not applicable.
  - **Upper:** Not applicable.

- **Vapor pressure at 20 °C (68 °F):** 23 hPa (17.3 mm Hg)

- **Density**
  - **Relative density:** Not applicable.
  - **Vapor density:** Not applicable.
  - **Evaporation rate:** Not applicable.

- **Solubility in / Miscibility with Water:** Miscible

- **Partition coefficient (n-octanol/water):** Not applicable.

- **Viscosity:**
  - **Dynamic:** Not applicable.
  - **Kinematic:** Not applicable.

- **Solvent content:**
  - **Water:** 98.0 %
  - **VOC content:** 0.00 %

- **Solids content:** 0.0 %
Product Name: Detection Limit (1), Part Number ZHP-20-100

10 Stability and reactivity
· Reactivity: No further relevant information available.
· Chemical stability
· Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
· Possibility of hazardous reactions: No dangerous reactions known.
· Conditions to avoid: No further relevant information available.
· Incompatible materials: No further relevant information available.
· Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information
· Information on toxicological effects
· Acute toxicity:
· Primary irritant effect:
· on the skin: Irritant to skin and mucous membranes.
· on the eye: Irritating effect.
· Sensitization: No sensitizing effects known.
· Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
   Irritant
· Carcinogenic categories
   · IARC (International Agency for Research on Cancer)
     7440-41-7 Beryllium from Beryllium Acetate
   · NTP (National Toxicology Program)
     7440-41-7 Beryllium from Beryllium Acetate
   · OSHA-Ca (Occupational Safety & Health Administration)
     None of the ingredients is listed.

12 Ecological information
· Toxicity
· Aquatic toxicity: No further relevant information available.
· 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: Generally not hazardous for water
· 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.
14 Transport information

- **UN-Number**
  - DOT, ADR, IMDG, IATA UN3264

- **UN proper shipping name**
  - DOT Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid solution)
  - ADR 3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid solution)
  - IMDG, IATA CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID SOLUTION)

- **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 III

- **Environmental hazards:** Not applicable.

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

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

- **Transport/Additional information:**
  - **ADR**
    - Excepted quantities (EQ) Code: E1
      - Maximum net quantity per inner packaging: 30 ml
      - Maximum net quantity per outer packaging: 1000 ml
  - **IMDG**
    - Limited quantities (LQ) 5L
    - Excepted quantities (EQ) Code: E1
      - Maximum net quantity per inner packaging: 30 ml
      - Maximum net quantity per outer packaging: 1000 ml
15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
  - Sara
    - Section 313 (Specific toxic chemical listings):
      - 7697-37-2 nitric acid
      - 7440-41-7 Beryllium from Beryllium Acetate
    - TSCA (Toxic Substances Control Act):
      All ingredients are listed.
  - Proposition 65
    - Chemicals known to cause cancer:
      - 7440-41-7 Beryllium from Beryllium Acetate
    - 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)
      - 7440-41-7 Beryllium from Beryllium Acetate [B1, K/L(ink), CBD(oral)]
    - 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
    - GHS07

- Signal word
  - Warning

- Hazard statements
  - H315 Causes skin irritation.
  - H319 Causes serious eye irritation.

- Precautionary statements
  - Wash thoroughly after handling.
  - Wear protective gloves / eye protection / face protection.
  - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - If skin irritation occurs: Get medical advice/attention.
  - Take off contaminated clothing and wash it before reuse.
  - If eye irritation persists: Get medical advice/attention.

- Chemical safety assessment
  - A Chemical Safety Assessment has not been carried out.
16 Other information

Disclaimer: 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.

- Department issuing SDS: product safety department
- Contact:
  Agilent Technologies, Inc.
  800-227-9770
- Date of preparation / last revision 09/10/2018 / -
- 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)
  VOC: Volatile Organic Compounds (USA, EU)
  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
  Skin Irrit. 2: Skin corrosion/irritation – Category 2
  Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
1 Identification

- Product identifier
  - Product Name: High Sensitivity Tune, Part Number ZHP-21-500
- Part Number: ZHP-21-500
- Application of the substance / the mixture
  Reagents and Standards for Analytical Chemistry Laboratory Use
  A 500 mL Solution
- Details of the supplier of the safety data sheet
  - Manufacturer/Supplier: Agilent Technologies, Inc.
    5301 Stevens Creek Blvd.
    Santa Clara, CA 95051 USA
  - Information department: product safety department
  - Emergency telephone number:
    Emergency Phone Number (24 hours)
    CHEMTREC (800-424-9300)
    Outside US: 703-527-3887

2 Hazard(s) identification

- Classification of the substance or mixture
  - GHS label elements
    The product is classified and labeled according to the Globally Harmonized System (GHS).
  - Hazard pictograms
    - Signal word Warning
    - Hazard statements
      H315 Causes skin irritation.
      H319 Causes serious eye irritation.
    - Precautionary statements
      Wash thoroughly after handling.
      Wear protective gloves / eye protection / face protection.
      If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
      If skin irritation occurs: Get medical advice/attention.
      Take off contaminated clothing and wash it before reuse.
      If eye irritation persists: Get medical advice/attention.

- NFPA ratings (scale 0 - 4)
  - Health = 2
  - Fire = 0
  - Reactivity = 0

- HMIS-ratings (scale 0 - 4)

(Contd. on page 2)
3 Composition/information on ingredients

- Chemical characterization: Mixtures
- Description: Mixture of the substances listed below with nonhazardous additions.

- Dangerous components:
  - 7697-37-2 nitric acid 2.0%
  - 7439-95-4 magnesium <0.0001%
  - 10102-45-1 thallium nitrate <0.0001%
  - 7440-45-1 cerium <0.0001%
  - 7440-65-5 yttrium <0.0001%
  - 554-13-2 lithium carbonate <0.0001%
  - 7732-18-5 water, distilled, conductivity or of similar purity 97.9995%

4 First-aid measures

- Description of first aid measures
  - After inhalation: 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. If symptoms persist, consult a doctor.
  - After swallowing: Do not give anything to eat or drink - 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: No further relevant information available.

Advice for firefighters

- Protective equipment: No special measures required.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures: Not required.
- Environmental precautions: No special measures required.
- Methods and material for containment and cleaning up:
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  - Ensure adequate ventilation.
- 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-I:
  - 7697-37-2 nitric acid 0.16 ppm
  - 7439-95-4 magnesium 18 mg/m³
  - 10102-45-1 thallium nitrate 0.078 mg/m³

(Contd. on page 3)
7 Handling and storage

- Handling:
  - Precautions for safe handling
  Ensure good ventilation/exhaustion at the workplace.
  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: No special requirements.
  - Information about storage in one common storage facility: Not required.
- 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:

<table>
<thead>
<tr>
<th>Component</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2 nitric acid</td>
<td>92 ppm</td>
</tr>
<tr>
<td>7439-95-4 magnesium</td>
<td>1,200 mg/m³</td>
</tr>
<tr>
<td>10102-45-1 thallium nitrate</td>
<td>26 mg/m³</td>
</tr>
<tr>
<td>7440-45-1 cerium</td>
<td>2,000 mg/m³</td>
</tr>
<tr>
<td>7440-65-5 yttrium</td>
<td>200 mg/m³</td>
</tr>
<tr>
<td>554-13-2 lithium carbonate</td>
<td>210 mg/m³</td>
</tr>
</tbody>
</table>

- Additional information: The lists that were valid during the creation were used as basis.
47. Respiratory protection:
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:

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves
Nitrile Glove
Thickness: ≥ 0.11 mm
Breakthrough time: > 480 minutes

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
    Odour Threshold: Not applicable.
  - pH-value: < 1
- Change in condition
  Melting point/Melting range: 0°C (32°F)
  Boiling point/Boiling range: 100°C (212°F)
- Flash point: Not applicable.
- Flammability (solid, gaseous): Not applicable.
- Decomposition temperature: Not applicable.
- Auto igniting: Product is not selfigniting.
- Danger of explosion: Product does not present an explosion hazard.
- Explosion limits:
  Lower: Not applicable.
  Upper: Not applicable.
- Vapor pressure at 20 °C (68 °F): 23 hPa (17.3 mm Hg)
- Density: 1.0 g/mL @ 20°C
- Relative density: Not applicable.
- Vapor density: Not applicable.
- Evaporation rate: Not applicable.
- Solubility in / Miscibility with
  Water: Miscible
- Partition coefficient (n-octanol/water): Not applicable.
Product Name: High Sensitivity Tune, Part Number ZHP-21-500

47. Viscosity:
   - Dynamic: Not applicable.
   - Kinematic: Not applicable.

48. Solvent content:
   - Water: 98.0 %
   - VOC content: 0.00 %
   - Solids content: 0.0 %

49. Other information
   No further relevant information available.

10 Stability and reactivity

- Reactivity
  No further relevant information available.
- Chemical stability
- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- Possibility of hazardous reactions: No dangerous reactions known.
- Conditions to avoid: No further relevant information available.
- Incompatible materials: No further relevant information available.
- Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

- Information on toxicological effects
- Acute toxicity:
  - Primary irritant effect:
    - on the skin: Irritant to skin and mucous membranes.
    - on the eye: Irritating effect.
  - Sensitization: No sensitizing effects known.
- Additional toxicological information:
  The product shows the following dangers according to internally approved calculation methods for preparations: 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: No further relevant information available.
- 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: Generally not hazardous for water
- 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: Disposal must be made according to official regulations.

14 Transport information

- UN-Number
  - DOT, ADR, IMDG, IATA
  - UN Number UN3264

- UN proper shipping name
  - DOT
  - ADR
  - IMDG, IATA
  - Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid solution)
  - 3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid solution)
  - CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID SOLUTION)

- 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
  - III

- Environmental hazards:
  - Not applicable.

- Special precautions for user
  - Danger code (Kemler):
    - Warning: Corrosive substances
    - 80
    - F-A,S-B
    - Acids
    - A
    - SW2 Clear of living quarters.

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

- Transport/Additional information:
  - ADR
    - Excepted quantities (EQ)
      - Code: E1
      - Maximum net quantity per inner packaging: 30 ml
      - Maximum net quantity per outer packaging: 1000 ml
  - IMDG
    - Limited quantities (LQ)
      - 5L
Product Name: High Sensitivity Tune, Part Number ZHP-21-500

15 Regulatory information

- Expected quantities (EQ)
  - Code: E1
  - Maximum net quantity per inner packaging: 30 ml
  - Maximum net quantity per outer packaging: 1000 ml

- UN “Model Regulation”:
  - UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID SOLUTION), 8, III

- Safety, health and environmental regulations/legislation specific for the substance or mixture
  - Section 313 (Specific toxic chemical listings):
    - 7697-37-2 nitric acid
    - 10102-45-1 thallium nitrate
    - 554-13-2 lithium carbonate

- 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:
    - 554-13-2 lithium carbonate

- Carcinogenic categories
  - EPA (Environmental Protection Agency)
    - 10102-45-1 thallium nitrate

- 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
  - GHS07

- Signal word
  - Warning

- Hazard statements
  - H315 Causes skin irritation.
  - H319 Causes serious eye irritation.

- Precautionary statements
  - Wash thoroughly after handling.
  - Wear protective gloves / eye protection / face protection.
  - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - If skin irritation occurs: Get medical advice/attention.
  - Take off contaminated clothing and wash it before reuse.
  - If eye irritation persists: Get medical advice/attention.

(Contd. on page 8)
16 Other information

Disclaimer: 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.

- **Department issuing SDS:** product safety department
- **Contact:**
  Agilent Technologies, Inc.
  800-227-9770
- **Date of preparation / last revision** 09/10/2018 / -
- **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)
  - 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
  - REL: Recommended Exposure Limit
  - Skin Irrit. 2: Skin corrosion/irritation – Category 2
  - Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A