1 Identification

· Product identifier
· Trade name: Matrix Modifier
· Article number: MM-9032
· Details of the supplier of the safety data sheet
· Manufacturer/Supplier:
  High-Purity Standards
  7221 Investment Drive, North Charleston, SC 29418 United States
  Telephone: +1-843-767-7900
  Fax: +1-843-767-7906
  highpuritystandards.com
  Email: info@highpuritystandards.com
· Information department: Product safety department
· Emergency telephone number:
  INFOTRAC
  Emergency telephone numbers 1-800-535-5053
  Other emergency telephone numbers 1-352-323-3500

2 Hazard(s) identification

· Classification of the substance or mixture

  GHS08 Health hazard
  Carc. 1A  H350 May cause cancer.

  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  GHS08

· Signal word Danger
· Hazard-determining components of labeling:
  Nitric acid, nickel(2+) salt, hexahydrate
· **Hazard statements**
  H315 Causes skin irritation.
  H319 Causes serious eye irritation.
  H350 May cause cancer.

· **Precautionary statements**
  Obtain special instructions before use.
  Do not handle until all safety precautions have been read and understood.
  Wash thoroughly after handling.
  Wear protective gloves/protective clothing/eye protection/face protection.
  If on skin: Wash with plenty of water.
  If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
  Continue rinsing.
  IF exposed or concerned: Get medical advice/attention.
  Specific treatment (see on this label).
  Take off contaminated clothing and wash it before reuse.
  If skin irritation occurs: Get medical advice/attention.
  If eye irritation persists: Get medical advice/attention.
  Store locked up.
  Dispose of contents/container in accordance with local/regional/national/international regulations.

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

<table>
<thead>
<tr>
<th>Dangerous components:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>13478-00-7</td>
<td>Nitric acid, nickel(2+) salt, hexahydrate</td>
<td>5.0%</td>
</tr>
<tr>
<td>7697-37-2</td>
<td>nitric acid</td>
<td>1.0%</td>
</tr>
</tbody>
</table>
Chemical identification of the substance/preparation
7732-18-5 water, distilled, conductivity or of similar purity 94.0%

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. If symptoms persist, consult a doctor.
· After swallowing: If symptoms persist consult doctor.
· Information for doctor:
· Most important symptoms and effects, both acute and delayed: No further relevant information available.
· Indication of any immediate medical attention and special treatment needed: No further relevant information available.

5 Fire-fighting measures
· Extinguishing media
· Suitable extinguishing agents: 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).
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:
  13478-00-7 Nitric acid, nickel(2+) salt, hexahydrate 1.5 mg/m³
  7697-37-2 nitric acid 0.16 ppm
Trade name: Matrix Modifier

7 Handling and storage

· Handling:
  · Precautions for safe handling
    Ensure good ventilation/exhaustion at the workplace.
    Open and handle receptacle with care.
  · Information about protection against explosions and fires: Keep respiratory protective device available.
  · Conditions for safe storage, including any incompatibilities
  · Storage:
    · Requirements to be met by storerooms and receptacles: 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:
    The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.
    At this time, the remaining constituent has no known exposure limits.

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.
Trade name: Matrix Modifier

Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes and skin.

· Breathing equipment:
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· Protection of hands:

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
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· 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

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9 Physical and chemical properties

· Information on basic physical and chemical properties
· General Information
· Appearance:
  Form: Liquid
  Color: colorless
· Odor: Characteristic
· Odor threshold: Not determined.
· pH-value: Not determined.

· Change in condition
  Melting point/Melting range: Undetermined.
  Boiling point/Boiling range: 100 °C (212 °F)

· Flash point: Not applicable.
Trade name: Matrix Modifier

- **Flammability (solid, gaseous):** Not applicable.
- **Decomposition temperature:** Not determined.
- **Auto igniting:** Product is not selfigniting.
- **Danger of explosion:** Product does not present an explosion hazard.
- **Explosion limits:**
  - **Lower:** Not determined.
  - **Upper:** Not determined.
- **Vapor pressure at 20 °C (68 °F):** 23 hPa (17.3 mm Hg)
- **Density:** Not determined.
  - **Relative density**
  - **Vapor density**
  - **Evaporation rate**
- **Solubility in / Miscibility with Water:** Not miscible or difficult to mix.
- **Partition coefficient (n-octanol/water):** Not determined.
- **Viscosity:**
  - **Dynamic:** Not determined.
  - **Kinematic:** Not determined.
- **Solvent content:**
  - **Water:** 94.0 %
  - **VOC content:** 0.00 %
    - 0.0 g/l / 0.00 lb/gal
- **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)
    13478-00-7 Nitric acid, nickel(2+) salt, hexahydrate 1
  - NTP (National Toxicology Program)
    13478-00-7 Nitric acid, nickel(2+) salt, hexahydrate K
  - 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.
### 14 Transport information

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<tr>
<th>UN-Number</th>
<th>DOT, ADR, IMDG, IATA</th>
<th>UN3264</th>
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<tbody>
<tr>
<td>UN proper shipping name</td>
<td>DOT</td>
<td>Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid)</td>
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<tr>
<td>UN proper shipping name</td>
<td>ADR</td>
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<td>CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)</td>
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<tr>
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<td>8 Corrosive substances</td>
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<td>Label</td>
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<tbody>
<tr>
<td>Environmental hazards</td>
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<td></td>
</tr>
<tr>
<td>Special precautions for user</td>
<td>Warning: Corrosive substances</td>
<td></td>
</tr>
</tbody>
</table>

(Contd. on page 9)
| · Danger code (Kemler):  | 80          |
| · EMS Number:           | F-A,S-B     |
| · Segregation groups:   | Acids       |
| · Stowage Category:     | A           |
| · Stowage Code:         | SW2 Clear of living quarters. |

- Transport/Additional information:
  - DOT
    - Quantity limitations: On passenger aircraft/rail: 5 L
      On cargo aircraft only: 60 L
  - 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): 5 L
    - Excepted 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), 8, III

15 Regulatory information

· Safety, health and environmental regulations/legislation specific for the substance or mixture
  · Sara
    · Section 355 (extremely hazardous substances):
      7697-37-2 nitric acid
    · Section 313 (Specific toxic chemical listings):
      13478-00-7 Nitric acid, nickel(2+) salt, hexahydrate
      7697-37-2 nitric acid
    · TSCA (Toxic Substances Control Act):
      7697-37-2 nitric acid ACTIVE
      7732-18-5 water, distilled, conductivity or of similar purity ACTIVE
  · Hazardous Air Pollutants
    None of the ingredients is listed.
Trade name: Matrix Modifier

· Proposition 65

· Chemicals known to cause cancer:
  13478-00-7 Nitric acid, nickel(2+) salt, hexahydrate

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

· Chemicals known to cause reproductive toxicity for males:
  13478-00-7 Nitric acid, nickel(2+) salt, hexahydrate

· Chemicals known to cause developmental toxicity:
  13478-00-7 Nitric acid, nickel(2+) salt, hexahydrate

· 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)
    13478-00-7 Nitric acid, nickel(2+) salt, hexahydrate

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

· Hazard pictograms
  
  GHS07  GHS08

· Signal word Danger

· Hazard-determining components of labeling:
  Nitric acid, nickel(2+) salt, hexahydrate

· Hazard statements
  H315 Causes skin irritation.
  H319 Causes serious eye irritation.
  H350 May cause cancer.

· Precautionary statements
  Obtain special instructions before use.
  Do not handle until all safety precautions have been read and understood.
  Wash thoroughly after handling.
  Wear protective gloves/protective clothing/eye protection/face protection.
  If on skin: Wash with plenty of water.
  If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
  Continue rinsing.
  IF exposed or concerned: Get medical advice/attention.
  Specific treatment (see on this label).
  Take off contaminated clothing and wash it before reuse.

(Contd. on page 11)
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

· National regulations:

· Information about limitation of use:
Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation.
Exceptions can be made by the authorities in certain cases.

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

16 Other information
This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Department issuing SDS: Environment protection department.
· Contact:
High-Purity Standards
Tel: 843-767-7900
Fax: 843-767-7906
· Date of preparation / last revision 01/08/2020 / -
· 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
Carc. 1A: Carcinogenicity – Category 1A