

### Safety Data Sheet acc. to OSHA HCS (HazCom 2012)

Printing date 03/10/2022

Reviewed on 03/10/2022

## 1 Identification

- **Product identifier**
- **Trade name: DEHA Reagent Solution**
- **Catalogue number:** 424403, 461181, 461184, 461185, 424403-0, 424403-100
- **Application of the substance / the mixture:** Reagent for water analysis
- **Manufacturer/Supplier:**  
Tintometer Inc.  
6456 Parkland Drive  
Sarasota, FL 34243  
USA  
phone: (941) 756-6410  
fax: (941) 727-9654  
www.lovibond.us  
Made in Germany
- **Emergency telephone number:** + 1 866 928 0789 (English, French, Spanish)

## 2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS05 Corrosion

Corrosive to Metals 1 H290 May be corrosive to metals.  
Eye Damage 1 H318 Causes serious eye damage.



GHS07

Skin Irritation 2 H315 Causes skin irritation.

- **Label elements**

- **GHS label elements** The product is classified and labeled according to the Hazard Communication Standard (HCS).
- **Hazard pictograms**



GHS05

- **Signal word** Danger

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

nitric acid 4.8%

- **Hazard statements**

H290 May be corrosive to metals.  
H315 Causes skin irritation.  
H318 Causes serious eye damage.

- **Precautionary statements**

P280 Wear protective gloves/protective clothing/eye protection.  
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P310 Immediately call a doctor.  
P302+P352 If on skin: Wash with plenty of water.  
P390 Absorb spillage to prevent material damage.

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- **Other hazards** No further relevant information available.

### 3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** aqueous solution
- **Composition and Information on Ingredients:**  
Percent ranges are used due to the confidential product information.

CAS: 7697-37-2	nitric acid	2.5--<5%
EINECS: 231-714-2	⚠ Oxidizing Liquids 3, H272; ⚠ Acute Toxicity - Inhalation 3, H331; ⚠ Corrosive to Metals 1, H290; Skin Corrosion 1A, H314	
Index number: 007-030-00-3		

- **Additional information:** For the wording of the listed hazard phrases refer to section 16.

### 4 First-aid measures

- **Description of first aid measures**
- **General information:** Immediately remove any clothing soiled by the product.
- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:**  
Immediately rinse with plenty of water.  
If skin irritation continues, consult a doctor.
- **After eye contact:** Rinse opened eye for several minutes (at least 15 min) under running water. Then consult a doctor.
- **After swallowing:**  
Rinse out mouth and then drink 1-2 glasses of water.  
If symptoms persist consult doctor.
- **Most important symptoms and effects, both acute and delayed**  
Irritation and corrosion  
after inhalation:  
mucosal irritations, cough, breathing difficulty  
after swallowing:  
mucous membrane irritation  
vomiting  
diarrhoea  
pain  
after absorption of large amounts:  
methaemoglobinaemia
- **Danger:**  
Danger of impaired breathing.  
Danger of circulatory collapse.  
Risk of serious damage to eyes.
- **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**  
The product is not combustible.  
Formation of toxic gases is possible during heating or in case of fire.  
In case of fire, the following can be released:  
nitrous gases  
Nitrogen oxides (NOx)
- **Advice for firefighters**
- **Protective equipment:**  
Wear self-contained respiratory protective device.  
Wear fully protective suit.
- **Additional information**  
Collect contaminated fire fighting water separately. It must not enter the sewage system.  
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

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Ambient fire may liberate hazardous vapours.

### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
- **Advice for non-emergency personnel:**  
Wear protective equipment. Keep unprotected persons away.  
Ensure adequate ventilation
- **Advice for emergency responders:** Protective equipment: see section 8
- **Environmental precautions:** Do not allow product to reach sewage system or any water course.
- **Methods and material for containment and cleaning up:**  
Ensure adequate ventilation.  
Neutralize with diluted sodium hydroxide solution or by throwing on lime sand, lime or sodium carbonate.  
Absorb with liquid-binding material (sand, diatomite, universal binders).  
Dispose contaminated material as waste according to item 13.
- **Reference to other sections**  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.

### 7 Handling and storage

- **Precautions for safe handling**
- **Advice on safe handling:** Ensure good ventilation/exhaustion at the workplace.
- **Hygiene measures:**  
Avoid contact with the skin.  
Avoid contact with the eyes.  
Take off immediately all contaminated clothing.  
Wash hands before breaks and at the end of work.  
Do not eat, drink or smoke when using this product.
- **Conditions for safe storage, including any incompatibilities**
- **Requirements to be met by storerooms and receptacles:**  
Store in a cool location.  
Keep only in original container.
- **Information about storage in one common storage facility:**  
Store away from metals.  
Do not store together with alkalis (caustic solutions).
- **Further information about storage conditions:**  
Keep receptacle tightly sealed.  
Protect from heat and direct sunlight.  
Protect from exposure to the light.  
Protect from humidity and water.
- **Recommended storage temperature:** 20°C +/- 5°C (approx. 68°F)
- **Specific end use(s)** No further relevant information available.

### \* 8 Exposure controls/personal protection

- **Control parameters**

- **Components with limit values that require monitoring at the workplace:**

**CAS: 7697-37-2 nitric acid**

PEL (USA)	Long-term value: 5 mg/m <sup>3</sup> , 2 ppm
REL (USA)	Short-term value: 10 mg/m <sup>3</sup> , 4 ppm Long-term value: 5 mg/m <sup>3</sup> , 2 ppm
TLV (USA)	Short-term value: 4 ppm Long-term value: 2 ppm
EL (Canada)	Short-term value: 4 ppm Long-term value: 2 ppm
EV (Canada)	Short-term value: 10 mg/m <sup>3</sup> , 4 ppm Long-term value: 5 mg/m <sup>3</sup> , 2 ppm

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- **Additional information:** The lists that were valid during the creation were used as basis.
- **Engineering measures:**  
Technical measures and appropriate working operations should be given priority over the use of personal protective equipment. See item 7.
- **Personal protective equipment:**  
Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled.
- **Breathing equipment:** Use respiratory protective device against the effects of fume/dust/aerosol.
- **Recommended filter device for short term use:** Combination filter E-P2
- **Protection of hands:**  
Protective gloves  
Preventive skin protection by use of skin-protecting agents is recommended.  
After use of gloves apply skin-cleaning agents and skin cosmetics.
- **Material of gloves**  
Nitrile rubber, NBR  
Recommended thickness of the material:  $\geq 0.11$  mm
- **Penetration time of glove material**  
Value for the permeation: Level  $\leq 1$  (10 min)  
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  
Use protective goggles that have been tested and approved in accordance with government standards (like NIOSH).
- **Body protection:** Protective work clothing
- **Limitation and supervision of exposure into the environment:**  
Do not allow product to reach sewage system or any water course.

## \* 9 Physical and chemical properties

- **Information on basic physical and chemical properties**
- **Appearance:**
- **Form / Physical state:** Solution
- **Color:** Yellowish
- **Odor:** Odorless
- **Odor threshold:** Not determined.
- **pH-value at 20°C (68°F):** < 1  
Strongly acidic
- **Melting point/freezing point:** Not determined.
- **Initial boiling point and boiling range:** Not determined.
- **Flash point:** Not applicable.
- **Flammability (solid, gas):** The product is not combustible.
- **Ignition temperature:** Not applicable.
- **Decomposition temperature:** Not determined.
- **Auto-ignition temperature:** Product is not self-igniting.
- **Danger of explosion:** Product does not present an explosion hazard.
- **Flammability or explosive limits:**
- **Lower:** Not applicable.
- **Upper:** Not applicable.
- **Oxidizing properties:** none
- **Vapor Pressure:** Not determined.
- **Density at 20°C (68°F):** 1.04 g/cm<sup>3</sup> (8.68 lbs/gal)
- **Relative density:** Not determined.
- **Vapor density:** Not determined.
- **Evaporation rate:** Not determined.
- **Solubility(ies)**
- **Water:** Fully miscible.
- **Partition coefficient (n-octanol/water):** Not applicable (mixture).
- **Viscosity:**
- **Kinematic:** Not determined.
- **Other information**
- **Solids content:** < 2 %

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- **Solvent content:**
- **Organic solvents:** 0 %
- **Water:** > 90 %
- **Information with regard to physical hazard classes** May be corrosive to metals.

### 10 Stability and reactivity

- **Reactivity** see section "Possibility of hazardous reactions"
- **Chemical stability** Stable at ambient temperature (room temperature).
- **Possibility of hazardous reactions**  
 Reacts with metals forming hydrogen (Danger of explosion!)  
 Corrosive action on metals.  
 Reacts with reducing agents.  
 Reacts with acids and alkali (lyes).  
 Reacts with ammonia (NH<sub>3</sub>).
- **Conditions to avoid** To avoid thermal decomposition do not overheat.
- **Incompatible materials:**  
 metals  
 alkali metals  
 organic solvents  
 organic substances
- **Hazardous decomposition products:** see section 5

### \*11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:** Based on available data, the classification criteria are not met.

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

CAS: 7697-37-2 nitric acid

Oral	LDLo	430 mg/kg (human) (IUCLID)
Inhalative	LC50/4h	2.65 mg/l (ATE) Registrant, ECHA: Under the conditions of the study (OECD 403) the LC50 for male and female rats after inhalation exposure to vapor atmosphere of nitric acid containing 0.8 % aerosol fraction is > 2.65 mg/L (referring to pure nitric acid).

- **Primary irritant effect:**
- **on the skin:** Causes skin irritation.
- **on the eye:**  
 Causes serious eye damage.  
 Risk of corneal clouding.
- **Information on components:** CAS 7697-37-2: chronic: dermatitis
- **Sensitization:** No sensitizing effects known.
- **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.

- **Other information:** see section 8 / 15

- **Synergistic Products:** None

- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction):** The following statements refer to the mixture:

- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity** Based on available data, the classification criteria are not met.

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- **Reproductive toxicity** Based on available data, the classification criteria are not met.
- **STOT (specific target organ toxicity) -single exposure** Based on available data, the classification criteria are not met.
- **STOT (specific target organ toxicity) -repeated exposure** Based on available data, the classification criteria are not met.
- **Aspiration hazard** Based on available data, the classification criteria are not met.
- **Additional toxicological information:**  
The following applies to soluble iron compounds: nausea and vomiting after swallowing. The absorption of large quantities is followed by cardiovascular disorders. Toxic effect on liver and kidneys.

**CAS: 7697-37-2 nitric acid**

(source: GESTIS)

Main toxic effects

Acute: Irritation and corrosion to the eyes, airways and skin, danger of severe damage to the eyes and lungs, after swallowing life threatening chemical burns in the gastrointestinal tract

Chronic: Diseases of the airways, damage to the teeth

**12 Ecological information**· **Toxicity**· **Aquatic toxicity:****CAS: 7697-37-2 nitric acid**LC50 72 mg/l/96h (mosquitofish)  
(IUCLID)· **Persistence and degradability .**· **Other information:**

Mixture of inorganic compounds.

Methods for the determination of biodegradability are not applicable to inorganic substances.

· **Bioaccumulative potential**

Pow = n-octanol/wasser partition coefficient

log Pow &lt; 1 = Does not accumulate in organisms.

**CAS: 7697-37-2 nitric acid**

log Pow -2.3 (.)

· **Mobility in soil** No further relevant information available.· **Other adverse effects**

Depending on the concentration, phosphorus and/or nitrogen compounds may contribute to the eutrophication of water supplies.

Harmful effect due to pH shift.

Avoid transfer into the environment.

**13 Disposal considerations**· **Waste treatment methods**· **Recommendation:**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Hand over to hazardous waste disposers.

· **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, IMDG, IATA**

UN3264

· **UN proper shipping name**· **DOT**· **IMDG, IATA**Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, red fuming)  
CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC  
ACID, RED FUMING)

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<ul style="list-style-type: none"> <li>· Transport hazard class(es)</li> <li>· DOT</li> </ul>	
	
<ul style="list-style-type: none"> <li>· Class</li> <li>· Label</li> </ul>	8 Corrosive substances 8
<ul style="list-style-type: none"> <li>· IMDG, IATA</li> </ul>	
	
<ul style="list-style-type: none"> <li>· Class</li> <li>· Label</li> </ul>	8 Corrosive substances 8
<ul style="list-style-type: none"> <li>· Packing group</li> <li>· DOT, IMDG, IATA</li> </ul>	III
<ul style="list-style-type: none"> <li>· Environmental hazards:</li> <li>· Marine pollutant:</li> </ul>	No
<ul style="list-style-type: none"> <li>· Special precautions for user</li> <li>· Hazard identification number (Kemler code):</li> <li>· EMS Number:</li> <li>· Segregation groups</li> <li>· Stowage Category</li> <li>· Stowage Code</li> </ul>	Warning: Corrosive substances 80 F-A,S-B Acids A SW2 Clear of living quarters.
<ul style="list-style-type: none"> <li>· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</li> </ul>	Not applicable.
<ul style="list-style-type: none"> <li>· Transport/Additional information:</li> <li>· DOT</li> <li>· Quantity limitations</li> </ul>	On passenger aircraft/rail: 5 L On cargo aircraft only: 60 L
<ul style="list-style-type: none"> <li>· IMDG</li> <li>· Limited quantities (LQ)</li> <li>· Excepted quantities (EQ)</li> </ul>	5L Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml

## \*15 Regulatory information

<ul style="list-style-type: none"> <li>· Safety, health and environmental regulations/legislation specific for the substance or mixture</li> <li>· Sara</li> </ul>
<ul style="list-style-type: none"> <li>· Section 355 (Extremely hazardous substances):</li> </ul>
CAS: 7697-37-2   nitric acid
<ul style="list-style-type: none"> <li>· Section 313 (Specific toxic chemical listings):</li> </ul>
CAS: 7697-37-2   nitric acid
<ul style="list-style-type: none"> <li>· TSCA (Toxic Substances Control Act):</li> </ul>
All components have the value ACTIVE.
<ul style="list-style-type: none"> <li>· Hazardous Air Pollutants</li> </ul>
None of the ingredients is listed.
<ul style="list-style-type: none"> <li>· Proposition 65</li> </ul>
<ul style="list-style-type: none"> <li>· Chemicals known to cause cancer:</li> </ul>
None of the ingredients is listed.

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<b>Chemicals known to cause reproductive toxicity for females:</b>	
None of the ingredients is listed.	
<b>Chemicals known to cause reproductive toxicity for males:</b>	
None of the ingredients is listed.	
<b>Chemicals known to cause developmental toxicity:</b>	
None of the ingredients is listed.	
<b>New Jersey Right-to-Know List:</b>	
CAS: 7697-37-2	nitric acid
<b>New Jersey Special Hazardous Substance List:</b>	
CAS: 7697-37-2	nitric acid
	CO, R2
<b>Pennsylvania Right-to-Know List:</b>	
CAS: 7697-37-2	nitric acid
<b>Pennsylvania Special Hazardous Substance List:</b>	
CAS: 7697-37-2	nitric acid
	E
<b>EPA (Environmental Protection Agency)</b>	
None of the ingredients is listed.	
<b>NIOSH-Ca (National Institute for Occupational Safety and Health)</b>	
None of the ingredients is listed.	
<b>Information about limitation of use:</b> Not required.	
<b>Chemical safety assessment:</b> 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.

### Relevant phrases

H272 May intensify fire; oxidizer.  
H290 May be corrosive to metals.  
H314 Causes severe skin burns and eye damage.  
H331 Toxic if inhaled.

**Date of preparation / last revision** 03/10/2022 / 74

### Abbreviations and acronyms:

ICAO: International Civil Aviation Organisation  
EC50: effective concentration, 50 percent (in vivo)  
OECD: Organisation for Economic Co-operation and Development  
STOT: specific target organ toxicity  
SE: single exposure  
RE: repeated exposure  
EC50: half maximal effective concentration  
IC50: half maximal inhibitory concentration  
NOEL or NOEC: No Observed Effect Level or Concentration  
ACGIH® - American Conference of Governmental Industrial Hygienists  
•A1 - Confirmed human carcinogen  
•A2 - Suspected human carcinogen  
•A3 - Confirmed animal carcinogen with unknown relevance to humans  
•A4 - Not classifiable as a human carcinogen  
•A5 - Not suspected as a human carcinogen  
IARC - International Agency for Research on Cancer  
•Group 1 - Carcinogenic to humans  
•Group 2A - Probably carcinogenic to humans  
•Group 2B - Possibly carcinogenic to humans  
•Group 3 - Not classifiable as to carcinogenicity to humans  
•Group 4 - Probably not carcinogenic to humans  
NTP - National Toxicology Program, U.S. Department of Health and Human Services  
•Group K - Known to be Human Carcinogens  
•Group R - Reasonably Anticipated to be Human Carcinogens  
IMDG: International Maritime Code for Dangerous Goods  
DOT: US Department of Transportation  
IATA: International Air Transport Association  
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)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
NIOSH: National Institute for Occupational Safety  
OSHA: Occupational Safety & Health

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TLV: Threshold Limit Value  
PEL: Permissible Exposure Limit  
REL: Recommended Exposure Limit  
Oxidizing Liquids 3: Oxidizing liquids – Category 3  
Corrosive to Metals 1: Corrosive to metals – Category 1  
Acute Toxicity - Inhalation 3: Acute toxicity – Category 3  
Skin Corrosion 1A: Skin corrosion/irritation – Category 1A  
Skin Irritation 2: Skin corrosion/irritation – Category 2  
Eye Damage 1: Serious eye damage/eye irritation – Category 1

**Sources**

Data arise from safety data sheets, reference works and literature.

ECHA: European Chemicals Agency <http://echa.europa.eu>

IUCLID (International Uniform Chemical Information Database)

GESTIS- Stoffdatenbank (Substance Database, Germany)

\* Data compared to the previous version altered.

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