**1. PRODUCT AND COMPANY IDENTIFICATION**

- **Product name**: Iron(II,III) oxide, magnetic nanoparticles solution
- **Product Number**: 725331
- **Brand**: Aldrich
- **Supplier**: Sigma-Aldrich
  - 3050 Spruce Street
  - SAINT LOUIS MO 63113
  - USA
- **Telephone**: +1 800-325-5832
- **Fax**: +1 800-326-5652
- **Emergency Phone # (For both supplier and manufacturer)**: (314) 776-6255
- **Preparation Information**: Sigma-Aldrich Corporation
  - Product Safety - Americas Region
  - 1-800-521-8936

**2. HAZARDS IDENTIFICATION**

**Emergency Overview**

**OSHA Hazards**
- Irritant, Target Organ Effect

**Target Organs**
- Kidney, Liver

**GHS Classification**
- Skin Irritation (Category 2)
- Eye Irritation (Category 2A)
- Specific target organ toxicity - single exposure (Category 3)

**GHS Label elements, including precautionary statements**

**Signal word**: Warning

**Hazard statement(s)**
- H315: Causes skin irritation.
- H319: Causes serious eye irritation.
- H36: May cause respiratory irritation.

**Precautionary statement(s)**
- P281: Avoid breathing dust/ fume/ gas/ mist/ vapour/ spray.
- P264: Wash skin thoroughly after handling.
- P271: Use protective gloves/ eye protection/ face protection.
- P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
- P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triton X-100</td>
<td></td>
<td></td>
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</tbody>
</table>

**Synonyms**: Magnetic iron oxide nanocrystals

**Formula**: Fe3O4

**Molecular Weight**: 231.55 g/mol

**For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16**

**4. FIRST AID MEASURES**

**General advice**
- Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

**If Inhaled**
- If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**In case of skin contact**
- Wash off with soap and plenty of water. Consult a physician.

**In case of eye contact**
- Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**If swallowed**
- Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

**5. FIREFIGHTING MEASURES**

**Conditions of flammability**
- Not flammable or combustible.

**Suitable extinguishing media**
- Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

Environmental precautions
Do not let product enter drains.

Methods and materials for containment and cleanup
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handles with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection
Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Hand in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Form: liquid
Colour: no data available

Safety data
pH: no data available

MELTING POINT/FOSSILIZATION POINT
Boiling point: no data available
Flash point: not applicable
Ignition temperature: no data available
Autoignition temperature: no data available
Lower explosion limit: no data available
Upper explosion limit: no data available
Vapour pressure: no data available
Density: no data available
Water solubility: no data available
Partition coefficient: n-octanol/water: no data available
Relative vapour density: no data available
Odour: no data available
Odour Threshold: no data available
Evaporation rate: no data available

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
no data available

Conditions to avoid
no data available

Materials to avoid
Acids and bases, Oxidizing agents, Reducing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Iron oxides
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity
Oral LD50: no data available
Inhalation LC50: no data available
Dermal LD50: no data available

Other information on acute toxicity
no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Eyes: no data available
Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
no data available

Teratogenicity
no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
Inhalation - May cause respiratory irritation.

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation: May be harmful if inhaled. Causes respiratory tract irritation.

Ingestion: May be harmful if swallowed.

Skin: May be harmful if absorbed through skin. Causes skin irritation.

Eyes: Causes eye irritation.

Synergistic effects
no data available

Additional Information

ITECS: Not available

12. ECOLOGICAL INFORMATION

Toxicity
no data available

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
no data available

13. DISPOSAL CONSIDERATIONS

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

15. REGULATORY INFORMATION

OSHA Hazards
Irritant, Target Organ Effect

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components
Water: 7732-18-5
Trifon tetroxide: 1317-61-9

New Jersey Right To Know Components
Water: 7732-18-5
Trifon tetroxide: 1317-61-9
Polyethylene oxide (PEG) ligands:

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Text of H-code(s) and R-phrase(s) mentioned in Section 3

Eye Irrit.: Eye irritation
HS15: Causes skin irritation.
HS19: Causes serious eye irritation.
HS335: May cause respiratory irritation.
Skin Irrit.  
Skin Irritation  
STOT GE  
Specific target organ toxicity - single exposure

Further Information
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