SAFETY DATA SHEET
OXYGEN SCAVENGER REAGENT 2

1. Identification

Product identifier
OXYGEN SCAVENGER REAGENT 2

Other means of identification
None.

Version #
2.1

Prepared by
This SDS has been prepared by SUEZ Regulatory Department (1-215-355-3300).

L code
L2319, L690114

Revision date
Dec-24-2017

Supersedes date
Jan-18-2017

Recommended use
Field test reagent

Recommended restrictions
None known.

Company/undertaking identification
SUEZ Water Technologies & Solutions Canada
3239 Dundas Street West
Oakville, Ontario, L6M 4B2
T 905-465-3030

Emergency telephone
(800) 877-1940

2. Hazard(s) identification

Physical hazards
Corrosive to metals Category 1

Health hazards
Skin corrosion/irritation Category 1A
Serious eye damage/eye irritation Category 1

Label elements

Signal word
Danger

Hazard statement
May be corrosive to metals. Causes severe skin burns and eye damage. Causes serious eye damage.

Precautionary statement

Prevention
Keep only in original packaging. Do not breathe mist or vapor. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.

Response
If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. 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. Wash contaminated clothing before reuse. Absorb spillage to prevent material damage.

Storage
Store locked up. Store in corrosive resistant container with a resistant inner liner.

Disposal
Dispose of contents/container in accordance with local/regional/national/international regulations.
Other hazards
None known.

Supplemental information
None.

3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS #</th>
<th>Percent (wt/wt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitric acid</td>
<td>7697-37-2</td>
<td>10 - 20</td>
</tr>
<tr>
<td>Iron trinitrate</td>
<td>10421-48-4</td>
<td>2.5 - 10</td>
</tr>
</tbody>
</table>

Composition comments
Information for specific product ingredients as required by the WHMIS Regulations is listed. Refer to additional sections of this SDS for our assessment of the potential hazards of this formulation.

4. First-aid measures

Inhalation
Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact
Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.

Eye contact
Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Ingestion
Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Call a physician or poison control center immediately.

Most important symptoms/effects, acute and delayed
Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.

General information
Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media
Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media
Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical
During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters
Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire fighting equipment/instructions
In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Cool containers / tanks with water spray.

Specific methods
Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up
Prevent entry into waterways, sewer, basements or confined areas.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb spillage to prevent material damage. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Environmental precautions
Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Avoid discharge into drains, water courses or onto the ground.
7. Handling and storage

Precautions for safe handling

Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Store away from alkalies. Store away from incompatible materials (see Section 10 of the SDS). Do not freeze. If frozen, thaw completely and mix thoroughly prior to use. Store in a cool, dry place out of direct sunlight. Store in corrosive resistant container with a resistant inner liner. Keep only in the original container. Do not store near combustible materials. Keep away from strong bases.

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron trinitrate (CAS 10421-48-4)</td>
<td>TWA</td>
<td>1 mg/m3</td>
</tr>
<tr>
<td>Nitric acid (CAS 7697-37-2)</td>
<td>STEL</td>
<td>4 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>2 ppm</td>
</tr>
</tbody>
</table>

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

<table>
<thead>
<tr>
<th>Components</th>
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<td>STEL</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>4 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>5.2 mg/m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 ppm</td>
</tr>
</tbody>
</table>

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

<table>
<thead>
<tr>
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<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron trinitrate (CAS 10421-48-4)</td>
<td>STEL</td>
<td>2 mg/m3</td>
</tr>
<tr>
<td>Nitric acid (CAS 7697-37-2)</td>
<td>TWA</td>
<td>1 mg/m3</td>
</tr>
<tr>
<td></td>
<td>STEL</td>
<td>4 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>2 ppm</td>
</tr>
</tbody>
</table>

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

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<tr>
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<td>4 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>2 ppm</td>
</tr>
</tbody>
</table>

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
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<tr>
<td>Iron trinitrate (CAS 10421-48-4)</td>
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</tr>
<tr>
<td></td>
<td>TWA</td>
<td>2 ppm</td>
</tr>
</tbody>
</table>

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
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<td>STEL</td>
<td>10 mg/m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>5.2 mg/m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 ppm</td>
</tr>
</tbody>
</table>

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.
Individual protection measures, such as personal protective equipment

**Eye/face protection**
Wear safety glasses with side shields (or goggles) and a face shield.

**Skin protection**
Wear appropriate chemical resistant gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Suitable gloves can be recommended by the glove supplier. Glove selection must take into account any solvents and other hazards present.

**Hand protection**
Wear appropriate chemical resistant gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Suitable gloves can be recommended by the glove supplier. Glove selection must take into account any solvents and other hazards present.

**Other**
Wear appropriate chemical resistant clothing.

**Respiratory protection**
If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

**Thermal hazards**
Wear appropriate thermal protective clothing, when necessary.

**General hygiene considerations**
Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

### 9. Physical and chemical properties

**Appearance**
Liquid

**Color**
Colorless

**Odor**
None

**Odor threshold**
Not available.

**pH (concentrated product)**
< 0.5

**Melting point/freezing point**
15.8 °F (-9 °C)

**Initial boiling point and boiling range**
217 °F (103 °C)

**Flash point**
> 200 °F (> 93 °C) P-M(CC)

**Evaporation rate**
0.9 (water=1)

**Flammability (solid, gas)**
Not applicable.

**Upper/lower flammability or explosive limits**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability limit - lower (%)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flammability limit - upper (%)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Explosive limit - lower (%)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Explosive limit - upper (%)</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

**Vapor pressure**
17 mm Hg at 20C

**Vapor density**
0.67 (Air = 1)

**Relative density**
1.03

**Relative density temperature**
70 °F (21 °C)

**Solubility(ies)**

| Solubility (water) | Not available. |

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

**Auto-ignition temperature**
Not available.

**Decomposition temperature**
Not available.

**Viscosity**
Not available.

**Viscosity temperature**
70 °F (21 °C)

**Other information**

<table>
<thead>
<tr>
<th>Properties</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explosive properties</td>
<td>Not explosive.</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>Not oxidizing.</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.026</td>
</tr>
</tbody>
</table>

### 10. Stability and reactivity

**Reactivity**
May be corrosive to metals.
Chemical stability
Material is stable under normal conditions.

Possibility of hazardous reactions
Contact with strong bases may cause a violent reaction releasing heat.

Conditions to avoid
Avoid temperatures exceeding the flash point. Contact with incompatible materials.

Incompatible materials

Hazardous decomposition products
Nitrogen oxides (NOx).

11. Toxicological information

Information on likely routes of exposure

Inhalation
May cause irritation to the respiratory system. Prolonged inhalation may be harmful.

Skin contact
Causes severe skin burns.

Eye contact
Causes serious eye damage.

Ingestion
Causes digestive tract burns. May cause slight gastrointestinal irritation with possible nausea, vomiting, abdominal discomfort and diarrhea. Iron poisoning is indicated by pink urine discoloration. Very large doses may cause abdominal cramps and black stool.

Symptoms related to the physical, chemical and toxicological characteristics
Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>OXYGEN SCAVenger REAGENT 2 (CAS Mixture)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rabbit</td>
<td>&gt; 5000 mg/kg, (Calculated according to GHS additivity formula)</td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>0.96 mg/L, 4 Hours, (Calculated according to GHS additivity formula)</td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>&gt; 5000 mg/kg, (Calculated according to GHS additivity formula)</td>
</tr>
<tr>
<td>Components</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron trinitrate (CAS 10421-48-4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>&gt; 2000 mg/kg</td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>&gt; 2000 mg/kg</td>
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<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>0.13 mg/L, 4 Hour</td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation
Causes severe skin burns and eye damage.

Serious eye damage/eye irritation
Causes serious eye damage.

Respiratory or skin sensitization

Canada - Alberta OELs: Irritant
Iron trinitrate (CAS 10421-48-4) Irritant

Respiratory sensitization
This product is not expected to cause respiratory sensitization.

Skin sensitization
This product is not expected to cause skin sensitization.
Germ cell mutagenicity
No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity
Not classified.

Reproductive toxicity
This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure
Not classified.

Specific target organ toxicity - repeated exposure
Not classified.

Aspiration hazard
Based on available data, the classification criteria are not met. Aspiration of this product may cause the same corrosiveness/irritation impacts as if it were ingested.

Chronic effects
Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity
No ecotoxicity data noted for the ingredient(s).

Bioaccumulative potential
No data available.

Mobility in soil
No data available.

Other adverse effects
Not available.

Persistence and degradability
No data is available on the degradability of this product.

13. Disposal considerations

Disposal instructions
Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations
Dispose in accordance with all applicable regulations.

Waste from residues / unused products
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging
Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

TDG

UN number
UN3264

UN proper shipping name
CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID, FERRIC NITRATE)

Transport hazard class(es)

Class 8

Subsidiary risk -

Packing group II

Environmental hazards
Not available.

The goods described above have been classified using a combination of testing, technical data, calculations and manufacturer knowledge in accordance with Part 2, Classification. TDG Classification is valid for road or rail transport only. For shipment by air or water, refer to IATA or IMDG regulations.

DOT

UN number
UN3264

UN proper shipping name
Corrosive liquid, acidic, inorganic, n.o.s. (NITRIC ACID, FERRIC NITRATE), RQ(NITRIC ACID, FERRIC NITRATE)

Transport hazard class(es)

Class 8

Packing group II

Special precautions for user
Read safety instructions, SDS and emergency procedures before handling.

ERG number
154

Some containers may be exempt from Dangerous Goods/Hazmat Transport Regulations, please check BOL for exact container classification.

IMDG

UN number
UN3264

UN proper shipping name
CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID, FERRIC NITRATE), RQ(NITRIC ACID, FERRIC NITRATE)

Transport hazard class(es)

Class 8
Subsidiary risk: II
Environmental hazards: No.
Marine pollutant: F-A, S-B
Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.

IATA
UN number: UN3264
UN proper shipping name: Corrosive liquid, acidic, inorganic, n.o.s. (NITRIC ACID, FERRIC NITRATE)
Transport hazard class(es):
  Class: 8
  Subsidiary risk: -
  Packing group: II
  Environmental hazards: No.
  ERG Code: 154
Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.

DOT

IATA; IMDG; TDG

15. Regulatory information

Canadian regulations
  Controlled Drugs and Substances Act
    Not regulated.
  Export Control List (CEPA 1999, Schedule 3)
    Not listed.
  Greenhouse Gases
    Not listed.
  Precursor Control Regulations
    Not regulated.

Inventory status

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*“Yes” indicates that all components of this product comply with the inventory requirements administered by the governing country(s).
A “No” indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).
16. Other information

Issue date: Mar-23-2016
Revision date: Dec-24-2017
Version #: 2.1

List of abbreviations:
- CAS: Chemical Abstract Service Registration Number
- ACGIH: American Conference of Governmental Industrial Hygienists
- NOEL: No Observed Effect Level
- STEL: Short Term Exposure Limit
- LC50: Lethal Concentration, 50%
- TWA: Time Weighted Average
- BOD: Biochemical Oxygen Demand
- COD: Chemical Oxygen Demand
- TOC: Total Organic Carbon
- IATA: International Air Transport Association
- IMDG: International Maritime Dangerous Goods Code
- LD50: Lethal Dose, 50%
- TSRN: Trade Secret Registry Number

TSRN indicates a Trade Secret Registry Number is used in place of the CAS number.

TLV: Threshold Limit Value

References:
No data available

Disclaimer:
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Revision information:
Physical & Chemical Properties: Multiple Properties
Transport Information: Material Transportation Information

Material name: OXYGEN SCAVENGER REAGENT 2
Version number: 2.1