TRADEMARK NITROGEN

SAFETY DATA SHEET

# 45% FERRIC NITRATE SOLUTION

## Section 1 – Identification

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| Product | 45% Ferric Nitrate Solution |
| Manufacturer | TradeMark Nitrogen Corp. |
| Address | 1216 Old Hopewell Road, Tampa, FL 33619 |
| Phone | (813) 626-1181 (800) 452-3107 |
| **24 Hour Emergency Contact** | Chemtrec (800) 424-9300 |

Recommended Use:
As a component in the manufacturing of various industrial products.

## Section 2 – Hazard Identification

GHS03

**Warning:** May intensify fire; oxidizer
Store away from organics or other oxidizable materials
In case of fire: Use water to put out fire.

GHS05

**Danger:** Causes severe skin burns and eye damage
Wear protective gloves, protective clothing, eye & face protection, respiritory protection

## Section 3 – Composition

| Ingredients | Component | CAS. No. | Percent by Weight | Percent as Metal |
|---|---|---|---|---|
| | Ferric (III) Nitrate ($Fe(NO_3)_3$) | 10421-48-4 | 45% | 10.5% |
| | Nitric Acid ($HNO_3$) | 7697-37-2 | 0-5% | |
| | Water ($H_20$) | 7732-18-5 | Balance | |

## Section 4 – First Aid Measures

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| Inhalation | If inhaled: Remove person to fresh air and keep comfortable for breathing. Provide artificial respiration if necessary. Seek medical |
| Skin Contact | If on skin (or hair): Take off all contaminated clothing. Rinse skin with soap and water for at least 15 minutes. |
| Eye Contact | If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing for at least 15 minutes. Seek medical attention if irritation persists. |
| Ingestion | If swallowed: **Do NOT induce vomiting**. Drink large amounts of water. Never give anything by mouth to an unconscious person. Seek medical attention. |
| Acute Health Hazards | Harmful if swallowed or inhaled. Destructive to muccous membranes and upper respiratory tract, eyes and skin. Redness and irritation of tissue may occur. |
| Chronic Health Hazards | Excess iron intake can lead to cell damage, lipid peroxidation and DNA mutagenesis. In severe cases it can lead to hemochromatosis. Other chronic effects can include metabolic syndrome, type 2 diabetes, sarcopenia, non-alcoholic fatty liver disease and Alzhimer's and other neurodegenerative diseases. |

## Section 5 – Fire Fighting Measures

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| Suitable Extinguishing Techniques & Equipment | Non-combustible, but can contribute to the intensity of the fire. Wear self-contained breathing apparatus and full protective gear. Use water spray - not water jet |
| Chemical Hazards From Fire | Under fire conditions, this product behaves as an oxidizer. Contact with oxidizable substances may result in ignition. Violent combustion or explosion when involved in fire can occur. This material may decompose and produce acrid vapors and oxides of nitrogen and carbon. |
| Special Fire Fighting Procedures | Use water spray. CO2 or halon may provide limited control. |
| NFPA Rating | Health - 1 (Slight)<br>Fire - 0 (Least)<br>Reactivity - 1 (Slight)<br>OXY - Oxidizer |
| Other | Do not allow run-off from fire fighting to enter drains or water courses. |

## Section 6 – Accidental Release Measure

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| Personal Precautions | Avoid splashing. Prevent exposure to spilled material with the use of proper PPE. |
| Protective Equipment | PPE should include gloves, goggles, face shield and level C protective suit. |
| Containment | Control the flow of product using dikes of soil, sand bags or other commercially available inert sorbent socks or booms. |
| In Case of Spill | Absorb product with inert absorbent. Avoid splashing or spraying. Contain and pick up spill in diked area. Prevent discharge to sewers or water ways. If uncontaminated, recover and re-use. |

## Section 7 – Safe Handling & Storage

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| Precautions for Safe Handling & Storage | Recommended storage above 50°F. Store in a well ventilated cool, dry place out of direct sunlight. Prevent from freezing. Containers should be kept closed and labeled properly. Liquid is an oxidizer and may cause fire with combustibles. |
| Incompatibility | Avoid contamination with combustible materials. Keep away from fire. Extreme heat may cause decomposing to toxic fumes of nitrogen oxides. |

## Section 8 – Exposure Controls / Personal Protection

Exposure Limits

| Component | Permissible Exposure Limit | Threshold Limit Value | Short Term Exposure Limit | Immediately Dangerous to Life or Health |
|---|---|---|---|---|
| Ferric (III) Nitrate ($Fe(NO_3)_3$) | Not Established | Not Established | Not Established | Not Established |
| Nitric Acid ($HNO_3$) | 2 ppm | 2 ppm (TWA) | 4 ppm | 25 ppm |
| Water ($H_2O$) | Not Established | Not Established | Not Established | Not Established |

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| Engineering Controls | Provide ventilation sufficient to maintain exposure below PEL/TWA/TLV. Washing facilities should be available. |
| Personal Protective Equipment | Eyes: Chemical safety goggles and full face shield<br>Hands: Chemical resistant gloves with gaunlet.<br>Respiratory: None required under normal conditions. Self contained respiratory equipment should be used under spill s<br>Protective Clothi: Chemical resistant protective clothing. |


Gloves


Goggles


Face Shield


Protective Clothing

## Section 9 – Physical & Chemical Properties

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| Appearance and Odor | A reddish to brown liquid. Slight nitric acid odor. | Specific Gravity | 1.387 at 72°F (22.2°C) |
| Boiling Point | > 212°F (>100°C) at 1 atmosphere | Molecular Weight | 241.86 |
| Freezing Point | No Data Available | Solubility in Water | No Data Available |
| Vapor Pressure | No Data Available | Evaporative Rate | No Data Available |
| Weight per Gallon | 11.57 lbs/gal | pH | < 2.0 |
| Flash Point | No Data Available | Salt-Out Temp | < 50°F (10.0°C) |
| Flammability Limits | No Data Available | Auto Ignition Temp | Not Flammable |
| UEL | No Data Available | LEL | N/A |

## Section 10 – Stability & Reactivity

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| Reactivity | Product may act as an oxidizer |
| Stability | Product is stable under normal conditions. |
| Hazardous Reactions | Hazardous polymerization will not occur. |
| Conditions to Avoid | Elevated temperatures may cause container to rupture. Avoid evaporation to dryness. |
| Incompatible Materials | Avoid contact with organic or other oxidizable materials. Avoid contact with cyanides, sulfides, sulfites, chlorine or chlorine bleaches, strong alkalis, mild steel, strong reducting agents and finely powdered metals. |
| Hazardous Decomposition Products | Extreme heat may cause decomposing to toxic fumes of nitrogen oxides. |

## Section 11 – Toxicology Information

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| Routes of Exposure | Inhalation, ingestion or skin/eye absorption | |
| Symptoms and Signs of Exposure | Eyes | Mild irritant. |
| | Skin | Mild irritant. |
| | Inhalation | of gases or mist causes irritation to the upper respiratory system, including the mucous membranes of the nose, mouth and throat. Coughing, fever, nausea, irritability, spasms, possible pneumonia, apathy, headaches, weakness and chemical burns if inhaled. |
| | Ingestion | may cause upset stomach. |
| Long Term Effects | Excess iron intake can lead to cell damage, lipid peroxidation and DNA mutagenesis. In severe cases it can lead to hemochromatosis. Other chronic effects can include metabolic syndrome, type 2 diabetes, sarcopenia, nonalcoholic fatty liver disease and Alzheimer's and other neurodegenerative diseases. | |
| Carcinogen | The International Agency for Research on Cancer has not classified ferric nitrate for its carcinogenic potential (IARC 1987). | |

## Section 12 – Ecological Information

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| Water | No Data Available |

## Section 13 – Disposal Considerations

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| Waste | Disposal must be done in accordance with local, state and federal environmental regulations. Place waste in an appropriate container with correct labeling. |

## Section 14 – Transport Information

This material is hazardous as defined by 49 CFR 172.101 by the US Department of Transportation

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|---|---|
| UN ID Number | UN3093 |
| Proper Shipping Name | UN3093, Corrosive Liquid, Oxidizing, N.O.S. (Ferric Nitrate Solution), 8, II |
| Hazard Class | 8 (5.1) |
| Packing Group | PG II |
| US DOT Label | Corrosive |
| Marine Pollutant | No |
| Emergency Response Guide Number | 154 |


This material is regulated as a Dangerous Good per the IMDG Code

| | |
|---|---|
| UN ID Number | 3093 |
| Proper Shipping Name | Corrosive Liquid, Oxidizing, N.O.S. (Ferric Nitrate Solution) |
| Hazard Class | 8 (5.1) |
| Packing Group | PG II |
| Label | Corrosive |


## Section 15 – Regulatory Information

United States - SARA Hazard Category: This product has been reviewed according to the EPA Hazard Categories promulgated under Sections 311 and 312 of Title III of the Superfund Amendments and Reauthorization Act (SARA) and is considered, under applicable definitions, to meet the following

Fire - No | Pressure - No | Reactive - Yes | Acute - Yes | Chronic - No

SARA Title III Information: This product contains the following substances subject to the reporting requirements of Title III (EPCRA) of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

| Chemical | CAS No. | CERCLA RQ (lbs.) | SARA Reporting | | |
|---|---|---|---|---|---|
| | | | 302 | 304 | 313 |
| Ferric Nitrate | 10421-48-4 | N/A | No | No | Yes |
| Nitric Acid | 7697-37-2 | 1,000 lbs (453.6 Kg) | Yes | No | Yes |

CERCLA / Superfund, 40 CFR Part 117, 302: If this product contains components subject to substances designated as CERCLA reportable Quantity (RQ) Substances, it will be designated in the above table with the RQ value in pounds. If there is a release of RQ Substance to the environment, notification to the National Response Center, Washington DC (800-424-8802) is required.

TSCA: Nitric acid, iron(3+) salt (3:1) is on the TSCA inventory list.

## Section 16 – Other Information

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| Date of Revision | January 2018 SDS converted to new format and reviewed. October 2017 SDS update to meet GHS Standards. August 2014 TSCA statement revised. February 2013 revision prepared in accordance with 29 CFR 1910.1200 Appendix D to meet Global Harmonization |
| Disclaimer | The information contained in this SDS refers only to the specific material designated and does not relate to any process or use with any other materials. This information is furnished free of charge and is based on data believed to be accurate and reliable as of the date hereof. It is intended for use by persons possessing technical knowledge at their own discretion and risk. Since actual use is beyond our control, no warranty, expressed or implied, and no liability is assumed by TradeMark Nitrogen Corp. in conjunction with the use of this information. Nothing herein is to be construed as a recommendation to infringe any patents. TradeMark Nitrogen Corp. assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material. |