SAFETY DATA SHEET
According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations and According to The Hazardous Products Regulation (February 11, 2015).

Section 1: IDENTIFICATION

Product Name:	Manufacturing Nitrogen Solution
Synonyms:	ANA-440 (24-0-0) Ammonia - Ammonium Nitrate, ANA-448 (25-0-0) Ammonia - Ammonium Nitrate.
Product Use:	Fertilizer.
Restrictions on Use:	Not available.
Manufacturer/Supplier:	LSB Chemical L.L.C. 3503 NW 63rd Street Suite 500 Oklahoma, OK 73116
Website:	www.lsbindustries.com
Email:	lsbproductsupport@lsbindustries.com
Phone Number:	(405) 235-4546
Emergency Phone:	24 Hour Emergency Telephone Number: 1-800424-9300 (CHEMTREC)
Date of Preparation of SDS:	October 28, 2024

Section 2: HAZARD(S) IDENTIFICATION

GHS INFORMATION

Classification:
Oxidizing Liquids, Category 3
Acute Toxicity - Oral, Category 4
Skin Corrosion, Category 1B
Eye Damage, Category 1
Health Hazards Not Otherwise Classified, Category 1

LABEL ELEMENTS

Hazard Pictogram(s):

Signal Word: Danger

Hazard Statements:
H272: May intensify fire; oxidizer.
H302: Harmful if swallowed.
H314: Causes severe skin burns and eye damage.
H335: May cause respiratory irritation

Precautionary Statements

Prevention:
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P220: Keep away from clothing and other combustible materials.
P221: Take precautions to avoid mixing with combustibles, organic material,

clothing, and incompatible materials.
P260: Do not breathe mist, vapours, or spray.
P264: Wash hands thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P280: Wear protective gloves, protective clothing, eye protection and face protection when handling material.

Response: P301+P317: IF SWALLOWED: Get medical help.
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302+P361+P354: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Immediately rinse with water for several minutes.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P354+P338: IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P363: Wash contaminated clothing before reuse.
P370+P378: In case of fire: Use water to extinguish.

Storage: P405: Store locked up.

Disposal: P501: Dispose of contents and container in accordance with applicable regional, national and local laws and regulations.

Hazards Not Otherwise Classified: Not applicable.

Ingredients with Unknown Toxicity: None.

This material is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200).

This material is considered hazardous by the Hazardous Products Regulations.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredient(s)	Common name / Synonyms	CAS No.	% wt./wt.
Nitric acid ammonium salt (1:1)	Ammonium nitrate	6484-52-2	69 - 70
Ammonia	Not available.	7664-41-7	24 - 25

Section 4: FIRST-AID MEASURES

Inhalation: If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center or doctor.

Acute and delayed symptoms and effects: Causes burns to the respiratory tract. Signs/symptoms may include burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema. Excessive inhalation may cause headache, dizziness, confusion, loss of appetite and/or loss of consciousness. Very high exposure to Ammonia may cause irritation of the nose, throat, and eyes, chemical pneumonitis, acute pulmonary edema, and sudden death (particularly in confided

spaces). Exposures to lower concentrations produce irritation of the nose, and respiratory tract, coughing, a risk of chemical bronchitis and after an apparent arrest in the symptoms the victim may have a risk of acute pulmonary edema.

Eye Contact: If in eyes: Rinse cautiously with water for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor.

Acute and delayed symptoms and effects: Causes serious eye damage. Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision. Eye exposure to Ammonia may result in temporary or permanent blindness.

Skin Contact: If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Immediately call a poison center or doctor. Wash contaminated clothing before reuse.

Acute and delayed symptoms and effects: Causes severe skin burns. Signs/symptoms may include localized redness, swelling, itching, intense pain, blistering, ulceration, and tissue destruction.

Ingestion: If swallowed: Rinse mouth. Do NOT induce vomiting. Immediately call a poison center or doctor. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Never give anything by mouth to an unconscious person.

Acute and delayed symptoms and effects: Harmful if swallowed. Causes burns to nose, mouth, throat, and digestive tract. Signs/symptoms may include severe mouth, throat and abdominal pain, nausea, vomiting, and diarrhea, blood in the feces and/or vomitus may also be seen.

General Advice: In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

Note to Physicians: Symptoms may not appear immediately.

Section 5: FIRE-FIGHTING MEASURES

FLAMMABILITY AND EXPLOSION INFORMATION

May intensify fire; oxidizer. These substances will accelerate burning when involved in a fire. Some may decompose explosively when heated or involved in a fire. May explode from heat or contamination. May ignite combustibles (wood, paper, oil, clothing, etc.). Containers may explode when heated. Runoff may create fire or explosion hazard.

If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

Fire involving Tanks or Car/Trailer Loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after

fire is out. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Sensitivity to Mechanical Impact: This material is not sensitive to mechanical impact.
Sensitivity to Static Discharge: This material is sensitive to static discharge.

MEANS OF EXTINCTION

Suitable Extinguishing Media: Small Fire: Use water.

Large Fire: Flood fire area with water from a distance. Do not move cargo or vehicle if cargo has been exposed to heat. Move containers from fire area if you can do it without risk.

Unsuitable Extinguishing Media: Do not use dry chemicals or foams. CO_2 or Halon® may provide limited control.

Products of Combustion: Oxides of nitrogen. Ammonia.

Protection of Firefighters: Inhalation, ingestion or contact (skin, eyes) with vapors or substance may cause severe injury, burns or death. Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may cause pollution. Wear positive pressure self-contained breathing apparatus (SCBA). Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection. Structural firefighters' protective clothing will only provide limited protection.

Section 6: ACCIDENTAL RELEASE MEASURES

Emergency Procedures: As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Personal Precautions: Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protection recommended in Section 8.

Environmental Precautions: Prevent spills from reaching drainage leading to offsite waterways. Recover spilled material to the extent possible.

Methods for Containment: Stop leak if you can do it without risk. Do not get water inside containers.

Methods for Clean-Up: Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean non-sparking tools to collect absorbed material. Large spills should be removed with explosion proof vacuum equipment.

Other Information: See Section 13 for disposal considerations.

Section 7: HANDLING AND STORAGE

Handling:
Do not swallow. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from clothing and other combustible materials. Keep container tightly closed. Keep only in original packaging. Ground and bind container and receiving equipment. Use non-sparking tools. Take action to prevent static discharges. Do not breathe mist, vapours, or spray. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. See Section 8 for information on Personal Protective Equipment.

Storage:
Store in a well-ventilated place. Keep cool. Store locked up. Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines
Component

Ammonium nitrate [CAS No. 6484-52-2]

ACGIH: No TLV established.

OSHA: No PEL established.

Ammonia [CAS No. 7664-41-7]

ACGIH: 25 ppm (TWA); 35 ppm (STEL); (1976);
OSHA: 50 ppm (TWA), 35 mg/m³ (TWA);
35 ppm (STEL) [Vacated];

PEL: Permissible Exposure Limit
TLV: Threshold Limit Value
TWA: Time-Weighted Average
STEL: Short-Term Exposure Limit
C: Ceiling

Engineering Controls: Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, gas, etc.) below recommended exposure limits. Use explosion-proof electrical, ventilating, and lighting equipment.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Eye/Face Protection: Wear chemical safety goggles, and full face shield. Ensure that eyewash stations and safety showers are close to the

	workstation location. Use equipment for eye protection that meets the standards referenced by CSA Standard CAN/CSA-Z94.3:20 and OSHA regulations in 29 CFR 1910.133 for Personal Protective Equipment.
Hand Protection:	Wear protective gloves. Consult manufacturer specifications for further information.
Skin and Body Protection:	Wear protective clothing. Clothing with full length sleeves and pants should be worn.
Respiratory Protection:	If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then an appropriate NIOSH/MSHA approved air-purifying respirator that meets the requirements of CSA Standard CAN/CSA-Z94.4-18, with organic vapor/acid gas cartridge and particulate filter, or self-contained breathing apparatus must be used. Supplied air breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators.
General Hygiene Considerations:	Handle according to established industrial hygiene and safety practices. Consult a competent industrial hygienist to determine hazard potential and/or the PPE manufacturers to ensure adequate protection.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear liquid.
Color:	Colorless.
Odor:	Trace of ammonia odor.
Odor Threshold:	Not available.
Physical State:	Liquid.
pH:	12
Melting Point / Freezing Point:	Not available.
Initial Boiling Point:	Not available.
Boiling Range:	Not available.
Flash Point:	Not available.
Evaporation Rate:	Not available.
Flammability (solid, gas):	Not applicable.
Lower Flammability Limit:	16 % (Ammonia Vapor)

Upper Flammability Limit:	25 % (Ammonia Vapor)
Vapor Pressure:	17 psig at 40 °C (104 °F)
Relative Vapor Density:	0.6 (Air = 1)
Relative Density:	1.12 to 1.15 (Water = 1) at 15.6 °C (60.1 °F)
Solubilities:	Miscible in water.
Partition Coefficient: n-Octanol/Water:	Not available.
Auto-ignition Temperature:	Not available.
Decomposition Temperature:	301.7 °C (575.1 °F)
Kinematic Viscosity:	Not available.
Percent Volatile, wt. %:	Not available.
VOC content, wt. %:	Not available.
Density:	Not available.
Coefficient of Water/Oil Distribution:	Not available.
Particle Characteristics:	Not available.

Section 10: STABILITY AND REACTIVITY

Reactivity:	Contact with incompatible materials. Exposure to heat. Oxidizer: increases the burning rate of combustible materials.
Chemical Stability:	Stable under normal storage conditions. Oxidizer: increases the burning rate of combustible materials.
Possibility of Hazardous Reactions:	Ammonia reacts with hypochlorite or other halogen sources to form explosive compounds that are sensitive to pressure or increases in temperature. Reaction with sulfuric acid or other strong mineral acids is exothermic; mixture becomes boiling hot.
Conditions to Avoid:	Contact with incompatible materials. Sources of ignition. Exposure to heat.
Incompatible Materials:	Acids. Reducers. Powdered metals. Combustible materials. Flammable liquid. Hydrogen sulphide. Chlorates. Carbon steel. Copper. Copper alloys.

Hazardous Decomposition Products: Not available.

Section 11: TOXICOLOGICAL INFORMATION

EFFECTS OF ACUTE EXPOSURE

Product Toxicity

Oral: Not available.

Dermal: Not available.

Inhalation: Not available.

Component Toxicity

Component	CAS No.	LD_{50} oral	LD_{50} dermal	LC_{50}
Ammonium nitrate	6484-52-2	2217 mg/kg (rat)	Not available.	Not available.
Ammonia	7664-41-7	Not available.	7000 mg/kg (rabbit)	2000 ppm (rat); 4H

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion. Skin absorption.

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Blood.

Symptoms (including delayed and immediate effects)

Inhalation: Causes burns to the respiratory tract. Signs/symptoms may include burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema. Excessive inhalation may cause headache, dizziness, confusion, loss of appetite and/or loss of consciousness. Very high exposure to Ammonia may cause irritation of the nose, throat, and eyes, chemical pneumonitis, acute pulmonary edema, and sudden death (particularly in confided spaces). Exposures to lower concentrations produce irritation of the nose, and respiratory tract, coughing, a risk of chemical bronchitis and after an apparent arrest in the symptoms the victim may have a risk of acute pulmonary edema.

Eye: Causes serious eye damage. Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision. Eye exposure to Ammonia may result in temporary or permanent blindness.

Skin: Causes severe skin burns. Signs/symptoms may include localized redness, swelling, itching, intense pain, blistering, ulceration, and tissue destruction.

Ingestion: Harmful if swallowed. Causes burns to nose, mouth, throat, and digestive tract. Signs/symptoms may include severe mouth, throat and abdominal pain, nausea, vomiting, and diarrhea, blood in the feces and/or vomitus may also be seen.

Skin Sensitization: Not available.

Respiratory Sensitization: Not available.

Medical Conditions Aggravated By Exposure: Not available.

EFFECTS OF CHRONIC EXPOSURE (from short and long-term exposure)

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Blood.

Chronic Effects: Prolonged or repeated contact may dry skin and cause irritation. Prolonged or repeated exposure to Ammonia may cause eye, liver, kidney, or lung damage.

Carcinogenicity: This product does not contain any carcinogens or potential carcinogens above reportable thresholds as listed by ACGIH, IARC, OSHA, or NTP.

Mutagenicity: Not available.

Reproductive Effects: Not available.

Developmental Effects
Teratogenicity: Not available.

Embryotoxicity: Not available.

Toxicologically Synergistic Materials: Not available.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Not available.

Persistence / Degradability: Not available.

Bioaccumulation / Accumulation: Not available.

Mobility in Environment: Not available.

Other Adverse Effects: Not available.

Section 13: DISPOSAL CONSIDERATIONS

Disposal Instructions: Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

Section 14: TRANSPORT INFORMATION

U.S. Department of Transportation (DOT)

Proper Shipping Name: UN3098, OXIDIZING LIQUID, CORROSIVE, N.O.S. (Ammonium nitrate. Ammonia), 5.1 (8), PG III

Class: 5.1 (8)

UN Number: UN3098

Packing Group: III

Placard(s):

ERG Guide: 140

Canada Transportation of Dangerous Goods (TDG)

Proper Shipping Name:	UN3098, OXIDIZING LIQUID, CORROSIVE, N.O.S. (Ammonium nitrate. Ammonia), 5.1 (8), PG III
Class:	5.1 (8)
UN Number:	UN3098
Packing Group:	III
Placard(s):	
ERG Guide:	140

Section 15: REGULATORY INFORMATION

Chemical Inventories

US (TSCA)
The components of this product are in compliance with the chemical notification requirements of TSCA.

Canada (DSL)
The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.

Federal Regulations

United States
This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III

Component	Section 302 (EHS) TPQ (lbs.)	Section 304 EHS RQ (lbs.)	CERCLA RQ (lbs.)	Section 313	RCRA CODE	CAA 112(r) TQ (lbs.)
Ammonia	500	100	100	313	Not listed.	Not listed.

State Regulations
Massachusetts
US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Component	CAS No.	RTK List
Ammonium nitrate	6484-52-2	Listed.

Ammonia	7664-41-7	E

Note: E = Extraordinarily Hazardous Substance

New Jersey
US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Component	CAS No.	RTK List
Ammonium nitrate	6484-52-2	SHHS
Ammonia	7664-41-7	SHHS

Note: SHHS = Special Health Hazard Substance

Pennsylvania
US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Component	CAS No.	RTK List
Ammonium nitrate	6484-52-2	E
Ammonia	7664-41-7	E

Note: E = Environmental Hazard

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

Section 16: OTHER INFORMATION

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. Any party handling, transferring, transporting, storing, applying or otherwise using this product should review thoroughly all applicable laws, rules, regulations, standards and good engineering practices. Such thorough review should occur before the party handles, transfers, transports, stores, applies or otherwise uses this product.

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Version: 1.0

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