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| MATERIAL NAME: Anhydrous Ammonia |  | SDS #: 240-001 |
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SAFETY DATA SHEET

SECTION 1 ♦ IDENTIFICATION

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| Coffeyville Resources Nitrogen Fertilizers P.O. Box 5000 Coffeyville, Kansas 67337 | FOR EMERGENCY SOURCE INFORMATION CONTACT: ➤ SDS Assistance: (620) 251-4000 ➤ Information (620) 252-4265 ➤ CHEMTREC: (800) 424-9300 (24 hour contact) ➤ CANUTEC: (613) 996-6666 ➤ SETIQ: 91-800-00214 |
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| GHS PRODUCT IDENTIFIER: Anhydrous Ammonia | CHEMICAL FAMILY: Inorganic Nitrogen Compound | PRODUCT USES: Used primarily for fertilizer production |
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SECTION 2 * HAZARDS IDENTIFICATION

GHS CLASSIFICATIONS

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|---|-------------------------------------|
| Flammable Gas - Category 2 | Gas Under Pressure - Compressed Gas |
| Acute Toxicity, Inhalation - Category 3 | Skin Corrosion - Category 1B |
| Serious Eye Damage - Category 1 | Acute Aquatic Toxicity - Category 1 |

GHS LABEL ELEMENTS

Anhydrous Ammonia

GHS PICTOGRAMS

SIGNAL WORD

| | | | | |
|--|--|--|--|---------------|
|  |  |  |  | DANGER |
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HAZARD STATEMENTS

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| Toxic if inhaled | Flammable gas |
| Causes severe burns and eye damage | Very toxic to aquatic life |
| Contains gas under pressure, may explode if heated | May cause respiratory irritation |

PRECAUTIONARY STATEMENTS

Prevention

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| Do not breathe gas/mist/vapors/spray | Avoid release into the environment |
| Wear protective gloves/protective clothing/eye and face protection and respiratory protection if needed. | |
| No smoking. Keep away from heat/sparks/open flames/hot surfaces | Wash hands thoroughly after handling |

Response

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| Eliminate all ignition sources if safe to do so | Wash thoroughly after handling |
| Eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so. Continue rinsing. | |
| Leaking gas fire: Do not extinguish, unless leak can be stopped safely | IF exposed or concerned: Call a POISON CENTER or doctor/physician |

Storage

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| Store in a well-ventilated place, Keep cool | Protect from sunlight | Control access to chemical using proper security protocols |
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Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

SUPPLIER INFORMATION

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|--|-------------|---------------------------|
| Coffeyville Resources Nitrogen Fertilizers | PO Box 5000 | Coffeyville, Kansas 67337 |
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SECTION 3 ▼ COMPOSITION/INFORMATION OF INGREDIENTS

| INGREDIENT | CAS NUMBER | PERCENTAGE (%) |
|-------------------|------------|----------------|
| Anhydrous Ammonia | 7664-41-7 | 99-100 |

SECTION 4 + FIRST AID MEASURES

EYES: Consult a physician, take victim immediately to hospital. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid.

SKIN: Consult a physician. Immediately flush with plenty of water. May cause cold burns/frostbite. Remove loose clothing, but if frozen, thaw with water first. Seek medical attention immediately.

INGESTION: Risk is low since it is a gas. Call a physician and/or transport to an emergency facility immediately. Do not induce vomiting.

INHALATION: Consult a physician, take victim immediately to hospital. Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give cardiopulmonary resuscitation. If breathing is difficult, give medical oxygen.

NOTE TO PHYSICIAN: TREAT SYMPTOMATICALLY AND SUPPORTIVELY

SECTION 5 ⌘ FIRE-FIGHTING MEASURES

Anhydrous ammonia is classified by the Department of Transportation as nonflammable. However, ammonia vapor in high concentrations will burn. It is unlikely that such concentrations will occur except in confined spaces or in the proximity of large spills. The fire hazard from ammonia is increased by the presence of oil or other combustible materials.

SUITABLE EXTINGUISHING MEDIA: Stop flow of material first if it can be done safely. Water fog, dry chemical, foam, or Carbon Dioxide. Use water spray to cool nearby containers and structure exposed to fire. Water fog or spray are of value in cooling tanks and containers but may not achieve extinguishment.

HAZARDOUS REACTIONS/DECOMPOSITION: Burning or excessive heating may produce nitrogen oxides.

SPECIAL PROTECTIVE ACTIONS FOR FIREFIGHTERS: For fires involving this material, do not enter any enclosed or confined space without proper protective equipment. This may include self-contained breathing apparatus to protect against the hazardous effects of combustion products and oxygen deficiencies. If firefighters cannot work upwind of the fire, respiratory protective equipment must be worn. Cool tanks and containers exposed to fire with water. Notify appropriate authorities if liquid enters sewer/waterways.

SEE SECTION 9 FOR FLAMMABILITY PROPERTIES

SECTION 6 ❖ ACCIDENTAL RELEASE MEASURES

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| PERSONAL PRECAUTIONS | ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Evacuate personnel to safe areas. Use personal protective equipment and respiratory protection. All equipment used when handling the product must be grounded. Ensure adequate ventilation. Take precautionary measures against static discharges. Keep people away from and upwind of spill/leak. Stop leak if you can do so without risk. Respond to emergencies only if you have been trained under OSHA's 29 CFR 1910.120 standard. |
| METHODS FOR CONTAINMENT AND CLEANING UP | Stop leak if you can without risk. Isolate area and deny entry. Allow gas to evaporate. Use water spray to reduce vapor, but do not put water on liquid pool. Collect runoff for disposal as potential hazardous waste and prevent entry into waterways, drains and sewers. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Dike far ahead of liquid spill for later disposal. |
| OTHER INFORMATION | Water spray may reduce gas but may not prevent ignition in closed spaces. |

SECTION 7 ⌘ HANDLING AND STORAGE

Prior to working with this product workers should be trained on its proper handling and storage. Reference American National Standards Institute (ANSI) K61.1 for specific procedures.

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| PRECAUTIONS FOR SAFETY HANDLING | <ul style="list-style-type: none"> ➤ Handle as a gas. ➤ Avoid inhalation of gas. ➤ Avoid contact with skin and eyes. |
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| | <ul style="list-style-type: none"> ➤ Keep away from heat, sparks, and open flame! ➤ Ensure adequate ventilation. ➤ Use properly selected piping and equipment for this material. |
| STORAGE PROCEDURES | <ul style="list-style-type: none"> ➤ Understand that contents are under pressure. ➤ Store containers upright with valve protection cap in place and firmly secured to prevent containers from falling or being knocked over. ➤ Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. ➤ Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive gas. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition. ➤ Avoid storage near incompatible materials. |
| INCOMPATIBILITIES | <ul style="list-style-type: none"> ➤ Avoid anhydrous ammonia contact with chlorine, which forms a chloramine gas, which is a primary skin irritant and sensitizer. Anhydrous ammonia is incompatible with acetaldehyde, acrolein, boron, chloric acid, chlorine monoxide, chlorites, nitrogen tetroxide, perchlorate, sulfur, tin and strong acids. ➤ Avoid contact with galvanized surfaces, copper, brass, bronze, mercury, gold and silver. A corrosive reaction will occur. |

SECTION 8 # EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

| Chemical Name | ACGIH TLV (2013) | OSHA PEL | NIOSH IDLH |
|-------------------|-----------------------------|-------------|------------|
| Anhydrous Ammonia | TWA: 25 ppm STEL: 35 ppm | TWA: 50 ppm | 300 ppm |

ENGINEERING CONTROLS: Use adequate ventilation to keep gas concentrations of this product below occupational exposure limits, particularly in confined areas.

PERSONAL PROTECTIVE EQUIPMENT

- **EYES:** ANSI Z87.1 approved eye protection (e.g., goggles, faceshield) should be worn whenever there is a likelihood of any type of exposure. Suitable eyewash station should be available. Contact lenses must not be worn when handling anhydrous ammonia.
- **SKIN/BODY:** Chemical protective clothing is recommended based on a thorough PPE hazard assessment. Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for specific information.
- **HAND PROTECTION:** Gloves constructed of nitrile or equivalent is recommended. Consult manufacturer specifications for specific information.
- **RESPIRATORY PROTECTION:** A NIOSH approved air purifying respirator (APR) with properly selected cartridges may be permissible under certain circumstances where airborne concentrations may exceed exposure limits. Protection provided by APRs is limited, calculate the maximum use concentration for the exposure situation. Use a positive pressure air supplied (Grade D) respirator if there is any potential for an uncontrolled release, exposure levels are not known or any other circumstances where APRs may not provide adequate protection.
- **OTHER HYGIENIC AND WORK PRACTICES:** In case of skin contact, flush thoroughly with water and be aware of cold burns/frostbite. Wash with mild soap and water or a waterless hand cleaner

SECTION 9 ↵ PHYSICAL AND CHEMICAL PROPERTIES

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| BOILING POINT: -28 °F/ -33.3 °C | PERCENT VOLATILE BY VOLUME: 100% |
| SPECIFIC GRAVITY (H₂O = 1): Soluble in water | VISCOSITY UNITS, TEMP: Not Applicable |
| EVAPORATION RATE (BuAc = 1): Unavailable | GAS DENSITY (AIR =1): 0.6 |
| VAPOR PRESSURE AT 25°C: 8.43 Atmospheres | SOLUBILITY IN WATER: Soluble |
| APPEARANCE AND ODOR: Colorless alkaline gas, with a pungent penetrating odor. | |
| FLASH POINT: (Method Used) Not Applicable (Gas) | FLAMMABLE LIMITS: LEL: 16% UEL: 25% |

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| AUTOIGNITION TEMPERATURE: 1,204 °F / 651 °C | VOC CONTENT: Not Applicable |
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SECTION 10 ☒ STABILITY AND REACTIVITY

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| CHEMICAL STABILITY: Stable under normal temperatures and pressures |
| HAZARDOUS REACTION POTENTIAL: Will not occur |
| CONDITIONS TO AVOID: Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources. |
| INCOMPATIBLE PRODUCTS: Keep away from strong oxidizers. |
| MATERIALS TO AVOID: Keep away from strong oxidizers. Ammonia reacts with chlorine, bromine, mercury, silver, silver solder and hypochlorite to form explosive compounds. Avoid use with non-ferrous metals. |
| HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen is released on heating above 850 °F. Decomposition temperatures may be lowered by contact with certain metals. Decomposition product may include nitric oxide and nitrogen dioxide |
| HAZARDOUS POLYMERIZATION: Has not been reported |

SECTION 11 ☠ TOXICOLOGICAL INFORMATION

Anhydrous Ammonia is extremely irritating and damaging to the eyes, nose, mucous membranes and respiratory system.

| Toxicity | | | | | | | | |
|---|--------|---------------|------------------------|-----------------|---|------------------------|---------------|-----------|
| Type Of Dose | Specie | Result | Type Of Dose | Specie | Result | Type Of Dose | Specie | Result |
| LD ₅₀ (oral) | Rat | Not Available | LC ₅₀ (inh) | Rat (15 minute) | 17,401 ppm | LC ₅₀ (inh) | Rat (4 hours) | 2,000 ppm |
| Specific organ toxicity, single exposure: No data available | | | | | Specific organ toxicity, repeated exposure: No data available | | | |

CARCINOGENICITY

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| IARC | Not Listed |
| NTP | Not Listed |
| California (Prop 65): Not Listed | NIOSH: Not Listed |
| | ACGIH: Not Listed |
| | OSHA: Not Listed |

MUTAGENICITY, TERATOGENICITY AND REPRODUCTIVE EFFECTS

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| Respiratory or Skin sensitization: No data available | Germ cell mutagenicity: No data available |
| Reproductive toxicity: No data available | Teratogenicity: No data available |
| Skin Corrosion/irritation: Gas is highly irritating and damaging to the skin. | Serious eye damage: Gas is highly irritating and damaging to the eyes. |
| Synergistic effects: No data available | Aspiration hazard: No data available |
| RTECS #: BO0875000 | |

SECTION 12 ☼ ECOLOGICAL INFORMATION

| TOXICITY | | | | | |
|---|----------------------|-----------------|------------------|----------------|------------------|
| Type Of Dose | Specie | Result | Type Of Dose | Specie | Result |
| LC ₅₀ | <i>Daphnia magna</i> | 24 mg/L 24 hour | LC ₅₀ | Fathead Minnow | 24 mg/L 96 hours |
| PERSISTENCE AND DEGRADABILITY/BIOACCUMULATIVE POTENTIAL/ MOBILITY IN SOIL | | | | | |
| No data available | | | | | |



SECTION 13 ★ DISPOSAL CONSIDERATIONS

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| Dispose of in accordance with local regulations. |
| Waste Disposal Method: Should not be released into the environment. |
| Contaminated Packaging: Dispose of in accordance with local regulations. |

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SECTION 14 ☐ TRANSPORTATION INFORMATION

Not Meant To Be All Inclusive - Check Local, State, And Federal Laws And Regulations

| Element | U.S. DOT | IMDG | IATA |
|-----------------------------------|---|--------------------|----------------------------------|
| UN Number | UN 1005 | UN 1005 | UN 1005 |
| UN Proper Shipping Name | Ammonia, Anhydrous | Ammonia, Anhydrous | Ammonia, Anhydrous |
| Hazard Class | Domestic: 2.2 International: 2.3 | 2.3 | 2.3 |
| Placard/Label |   | | |
| Environmental Hazard | No | No | No |
| Packing Group | Not applicable | Not applicable | Not applicable |
| 2012 Emergency Response Guidebook | Guidebook Number: 125 | | Inhalation Hazard: Hazard Zone D |

SECTION 15) REGULATORY INFORMATION

| Agency | Listing |
|--|--|
| OSHA | All ingredients are listed as hazardous under 29 CFR 1910.1200 |
| 40 CFR Part 355 (EPCRA) | 100 pounds RQ /500 pounds TPQ |
| 40 CFR Part 302 (CERCLA) Reportable Quantity | Listed 100 Pounds |
| 40 CFR Part 370 (Hazardous Chemical Reporting: Community Right to Know SARA 304/311/312: Extremely hazardous substance | Listed |
| 40 CFR Part 372 (Toxic Chemical Release Reporting: Community Right to Know) SARA 313 | Listed |
| TSCA 8(b) | Listed |
| State Regulations: Mass., N.J., Penn, R.I., Cal., Ill, La., N.Y. and Wis. | Listed |
| Clean Water Act | Listed RQ 100 Pounds |
| Clean Air Act 112 (r) | 10,000 pounds TQ |

SECTION 16 ⌘ OTHER INFORMATION

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|  <p>NFPA LABEL</p> |  <p>HMIS III LABEL</p> <p><u>Personal Protection Index</u> NPCA recommends that PPE codes be determined by the employer, who is familiar with the actual conditions under which chemicals in the facility are used.</p> |
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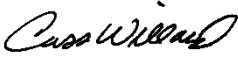
| Acronym List | | |
|--|--|---|
| °F=degrees Fahrenheit | °C=degrees Celsius | ACGIH= American Conference of Industrial Hygienists |
| APR=Air Purifying Respirator | BCF= Bioconcentration Factor | BuAc=Butyl Acetate |
| CANUTEC= Canadian Transport Emergency Centre | CAS=Chemical Abstract Service | CERCLA= Comprehensive Environmental Response, Compensation, and Liability Act |
| CHEMTREC= Chemical Transportation Emergency Center | CNS=Central Nervous System | CWA=Clean Water Act |
| DOT=Department of Transportation | EC50= Effective Concentration Fifty | EPA=Environmental Protection Agency |
| g/Kg=Grams per Kilogram | g/M ³ =Grams per Cubic Meter | GHS=Global Harmonization System |
| H ₂ O=Water | HAP=Hazardous Air Pollutants | HMIS= Hazardous Materials Identification System |
| IARC= International Agency for Research on Cancer | IATA= International Air Transport Association | IMDG= International Maritime Dangerous Goods |
| LC ₅₀ =Lethal Concentration Fifty | LD ₅₀ =Lethal Dose Fifty | LEL=Lower Explosive Limit |
| Log P _{ow} =Octanol/water partition coefficient | mg/Kg=Milligrams per Kilogram | mg/L=Milligrams per Liter |
| mL/Kg=Milliliters per Kilogram | mm HG=millimeters of mercury | NFPA=National Fire Protection Association |
| NIOSH= National Institute for Occupational Safety and Health | NTP=National Toxicology Program | OSHA=Occupational Safety and Health Administration |
| PEL=Permissible Exposure Limit | ppm=Parts per Million | RCRA=Resource Conservation and Recovery Act |
| RQ=Reportable Quantities | RTECS=Registry of Toxic Effects of Chemical Substances | SARA= Superfund Amendments and Reauthorization Act |
| SDS=Safety Data Sheet | SETIQ= Emergency Transportation System for the Chemical Industry; Mexico | STEL=Short Term Exposure Limit |
| TLV=Threshold Limit Value | TPQ=Threshold Planning Quantity | TSCA=Toxic Substance and Control Act |
| TWA=Time Weighted Average | UEL=Upper Explosive Limit | VOC=Volatile Organic Compounds |

SDS REVISIONS: Reformatted to meet GHS Requirements

SDS CREATION DATE: 11/01/13 **REVISION #0:** 11/11/13

DISCLAIMER

The information in this SDS was obtained from sources which we believe are reliable. **HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESSED OR IMPLIED, REGARDING ITS ACCURACY.** Some conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. **FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.** All product measurements such as flash point, *etc.* are considered approximate values. All data provided by Coffeyville Resources Nitrogen Fertilizers. This SDS was prepared and is to be used only for this product.

SDS DEVELOPER:  DATE: 11/01/13
Cass Willard, CIH