SAFETY DATA SHEET

SECTION 1 ◆ IDENTIFICATION

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)

GHS PRODUCT IDENTIFIER: Anhydrous Ammonia	**CHEMICAL FAMILY:** Inorganic Nitrogen Compound	**PRODUCT USES:** Used primarily for fertilizer production

SECTION 2 ✳ HAZARDS IDENTIFICATION

GHS CLASSIFICATIONS

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**

HAZARD STATEMENTS

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

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

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

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

Disposal

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

SUPPLIER INFORMATION

Coffeyville Resources Nitrogen Fertilizers	PO Box 5000	Coffeyville, Kansas 67337

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

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.

PRECAUTIONS FOR SAFETY HANDLING	➢ Handle as a gas. ➢ Avoid inhalation of gas. ➢ Avoid contact with skin and eyes. ➢ Keep away from heat, sparks, and open flame! ➢ Ensure adequate ventilation.

	➢ Use properly selected piping and equipment for this material.
STORAGE PROCEDURES	➢ 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	➢ 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

BOILING POINT: -28 °F/ -33.3 °C	**PERCENT VOLATILE BY VOLUME:** 100%
SPECIFIC GRAVITY (H_2O = 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%
AUTOIGNITION TEMPERATURE: 1,204 °F / 651 °C	**VOC CONTENT:** Not Applicable

SECTION 10 ¤ STABILITY AND REACTIVITY

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

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

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}	*Daphnia magna*	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

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.

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 Guidance only, consult specific regulations
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

NFPA LABEL

HMIS III LABEL

Personal Protection Index

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.

Acronym List		
°F=degrees Fahrenheit	°C=degrees Celsius	ACGIH= American Conference of Industrial Hygienists
APR=Air Purifying Respirator	BCF= Bioconcentration Factor	BuAc=Butyl Acetate
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_2O=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	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

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SDS DEVELOPER: Cass Willard

Cass Willard, CIH

DATE: 11/01/13