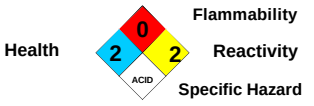
Agrium Material Safety Data Sheet

NFPA Classification	DOT / TDG Pictograms	WHMIS Classification	PROTECTIVE CLOTHING
			

Section I. Chemical Product and Company Identification

PRODUCT NAME/ TRADE NAME	**N-PHURIC® 10/55 Fertilizer**

SYNONYM	10-0-0-18S	**MSDS NUMBER:**	**14216**
CHEMICAL NAME	urea sulfate(1:1) - sulfuric acid, monocarbamide dihydrogen sulfate - sulfuric acid solution	**REVISION NUMBER**	5.2
CHEMICAL FAMILY	molecular addition compound - sulfuric acid solution	**MSDS prepared by the Environment, Health and Safety Department on:**	**April 2, 2006**
CHEMICAL FORMULA	Not applicable	**24 HR EMERGENCY TELEPHONE NUMBER:**	
MATERIAL USES	Agricultural use: Fertilizer.	**Transportation: 1-800-424-9300 (Chemtrec) Medical: 1-888-670-8123 (Foothills Poison Control Center)**	

MANUFACTURER

Agrium
North American Wholesale
13131 Lake Fraser Drive, S.E.
Calgary, Alberta, Canada, T2J 7E8

Agrium U.S. Inc.
Suite 1700, 4582 South Ulster St.
Denver, Colorado, U.S.A., 80237

SUPPLIER

Agrium
North American Wholesale
13131 Lake Fraser Drive, S.E.
Calgary, Alberta, Canada, T2J 7E8

Agrium U.S. Inc.
Suite 1700, 4582 South Ulster St.
Denver, Colorado, U.S.A., 80237

Section II. Hazardous Ingredients

		Exposure Limits (ACGIH)						
NAME	**CAS #**	**TLV-TWA mg/m³**	**TLV-TWA ppm**	**STEL mg/m³**	**STEL ppm**	**CEIL mg/m³**	**CEIL ppm**	**% by Weight**
Sulfuric acid	7664-93-9	0.2		3				20
Monocarbamide dihydrogen sulfate	21351-39-3	See Sec 8		See Sec8				57

ACGIH TLV notations:
---- No assigned TLV
(C) - Ceiling - the concentration not to be exceeded at any time
(I) - measured as the Inhalable fraction of the aerosol
(R) - measured as the Respirable fraction of the aerosol
(T) - measured as the Thoracic fraction of the aerosol

TOXICOLOGICAL DATA ON INGREDIENTS

MCDS:
Acute Oral LD50: 350 mg/kg Rat, RTECS
Acute Dermal LD50: >2000 mg/kg Rabbit, RTECS

Sulfuric Acid TFI Product Testing Program:
Acute oral LD_{50}, OECD 401 protocol: 2,140 mg/kg rat
Acute inhalation LC_{50}, 1 hr, guinea pig: 18-61mg/m³
Acute dermal toxicity, NOAEL: <5%
Ecotoxicity:
Acute toxicity to fish, zebra fish, 96hr LC_{50}, OECD 203 protocol, 500mg/L (pH 2.29)
Acute toxicity to invertibrates, Daphnia, 24hr ISO 6341 15 protocol EC_{50} = 29 mg/L (pH 3.5)

Continued on Next Page

Section III. Hazards Identification.

POTENTIAL ACUTE HEALTH EFFECTS	Corrosive. May cause severe burns. May be harmful if inhaled or swallowed. Severe eye irritant. Contact may result in severe irritation or eye burns resulting in permanent damage. Contact with intact skin does not normally cause immediate irritation, but prolonged contact may result in redness, swelling, skin burns and severe damage. Overexposure by inhalation may cause irritation and burning of the nose, throat and respiratory tract. Corrosive if swallowed. May cause severe irritation or burns to the mouth, throat and digestive tract. May aggravate existing skin or respiratory disorders.
POTENTIAL CHRONIC HEALTH EFFECTS	Prolonged or repeated overexposures by inhalation or skin or eye contact may result in severe irritation or corrosive effects. The mucous membranes, the respiratory and the digestive systems are subject to irritant and corrosive effects from chronic exposures. Changes in pulmonary function may occur, along with chronic bronchitis and emphysema. Erosion of dental enamel has been reported with chronic exposure to sulfuric acid concentrations of 12 to 35 mg/m^3. Conjunctivitis is also a common finding from chronic exposures. Sulfates, particularly bisulfate, are known to be sensitizers for man, and persons previously sensitized to bisulfate may show some reactivity to sulfuric acid. Sulfuric acid has been reported to produce immunological alterations from occupational exposures. Repeated inhalation of sulfuric acid aerosols reduced the immunocompetence of pulmonary macrophages. Epidemiological studies of workers chronically exposed to sulfuric acid have suggested increased risk for upper respiratory cancers, especially laryngeal cancer. The International Agency for Research in Cancer and the NTP have concluded that occupational exposure to strong inorganic acid mists containing sulfuric acid is carcinogenic to man, however, sulfuric acid itself is not considered a confirmed human carcinogen at this time. The epidemiological studies which provided the basis for the IARC and NTP assessments were confounded by exposure to alkyl sulfates (known animal carcinogens), other chemicals, and smoking. Based on the evidence from all human and animal studies, no definative relationship has been shown between increased risk of respiratory tract cancer and sulfuric acid alone. Sulfuric acid can react with other substances to form mutagenic and possibly carcinogenic products such as alkyl sulfates. Monocarbamide dihydrogen sulfate is not known to be carcinogenic, mutagenic or teratogenic.

Section IV. First Aid Measures

EYE CONTACT	Immediately flush eyes with water for 30 minutes or longer keeping eyelids open. Obtain immediate medical attention. Continue to flush eyes, if possible, while transporting to medical care.
MINOR SKIN CONTACT	In case of skin contact, remove contaminated clothing as quickly as possible while protecting your own hands and body. Place the person under a deluge shower. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Continue to flush with water for a minimum of 30 minutes. Use warm water if available. Obtain medical attention. Continue to flush, if possible, while transporting to medical care.
EXTENSIVE SKIN CONTACT	No additional information.
MINOR INHALATION	Using appropriate respiratory protection, remove the affected individual from the area of overexposure. Loosen tight clothing. Allow the person to rest in a well ventilated area. Give artificial respiration if breathing has stopped. Obtain immediate medical attention.
SEVERE INHALATION	No additional information.
SLIGHT INGESTION	Do not induce vomiting. Careful removal of the substance from the stomach by medical personnel is required. Call a physician or poison control center immediately. Get immediate medical attention. If tolerated, give no more than 1 cup of milk or water to rinse the mouth and throat and dilute the stomach contents. No more than 8 ounces (1 cup) in adults and 4 ounces (1/2 cup) in children is recommended to minimize the risk of vomiting. If spontaneous vomiting does occur, lower the head so that the vomit will not reenter the mouth and throat. Rinse mouth with water.

Continued on Next Page

EXTENSIVE INGESTION	No additional information.

Section V. Fire and Explosion Data

THE PRODUCT IS	Not combustable.
AUTO-IGNITION TEMPERATURE	Not applicable.
FLASH POINT	Not applicable.
FLAMMABILITY LIMITS	Not applicable.
PRODUCTS OF COMBUSTION	May vigorously decompose under high temperature conditions (>230°F, >110°C) releasing carbon dioxide gas. Small quantities of carbon dioxide will be released under normal storage conditions. If material is exposed to prolonged heat in a fire, oxides of carbon, nitrogen and sulfur may be formed.
FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	Not applicable. Non-flammable. Decomposes to produce toxic and flammable gases.
EXPLOSION HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	May react with incompatable metals to generate highly flammable and explosive hydrogen gas.
FIRE FIGHTING MEDIA AND INSTRUCTIONS	Use extinguishing media suitable for surrounding materials. Fire fighters should wear self-contained breathing apparatus (SCBA) and full turnout gear. Dike and collect water used to fight fire for later treatment and disposal.
SPECIAL REMARKS ON FIRE HAZARDS	Container rupture may occur under fire conditions or when heated if not adequately vented. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Responders should consider the need for evacuation based on concentrations of emitted decomposition products. Flammable hydrogen gas may be produced on prolonged contact with metals such as aluminum, tin, lead and zinc. Contain fire water for treatment prior to disposal.
SPECIAL REMARKS ON EXPLOSION HAZARDS	No additional information.

Section VI. Accidental Release Measures

SMALL SPILL	Corrosive liquid. Observe protective equipment requirements. Stop leak if possible to do so without risk. Warn personnel to move away. Isolate area. Keep unnecessary and unprotected personnel from entering. Contain spill with dry earth or sand. Prevented from entering sewage or drainage systems and bodies of water. Use appropriate equipment to recover as much spilled material as possible for use or disposal. Ensure that pumping equipment is of 316L stainless steel construction or other compatible metallurgy. Dilute remaining material 3 to 1 with water. Neutralize spill by slowly and carefully applying powdered limestone or sodium carbonate to spill. Allow time to neutralize. Recover and dispose of residue. Ensure disposal complies with government requirements and local regulations. Consult your environmental advisor regarding recovery and disposal alternatives.
LARGE SPILL	No additional information.

Section VII. Handling and Storage

PRECAUTIONS	Personnel handling this material should be well trained in the use of personal protective equipment, safe handling techniques, potential hazards, and first aid requirements. Do not breathe fumes or mists. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin and eyes. Keep away from incompatible materials. Wear chemical resistant gloves, a chemical resistant suit or apron, rubber boots, and chemical safety goggles plus a face shield. When using do not eat, drink or smoke. Ensure that an eyewash station and safety shower is near the place of use.

Continued on Next Page

	Small quantities of carbon dioxide may be liberated during storage. Do not enter confined spaces such as tanks or pits without following proper confined space entry procedures.
STORAGE	Will corrode incompatible metals. Polyethylene, polypropylene or 316L stainless steel are acceptable materials of construction, however, all metal components of handling systems should periodically be examined for corrosion deterioration. Storage tanks should be designed to API Standard 650. Tanks should be vented and painted white or in light heat-reflecting colors. Piping should be all welded schedule 80. Ensure that all pumps, valves, meters, gaskets, etc are of compatible material. Secondary containment is recommended where practical or required by law.

Section VIII. Exposure Controls/Personal Protection

ENGINEERING CONTROLS	Provide exhaust ventilation or other engineering controls to keep concentrations below regulated exposure limits. Ensure that an eyewash station and safety shower is near the work location.
PERSONAL PROTECTION	The selection of personal protective equipment varies, depending upon conditions of use. Appropriate protective clothing should be chosen that will prevent any possibility of body contact. Use acid resistant rubber gloves, boots, and a chemical protective suit or apron. Eye and face protection (safety goggles and face shield) should be worn. An emergency shower and eyewash should be provided. Wash off all contaminated chemical protective clothing with water. A NIOSH/MSHA approved dust and mist respirator may be used under conditions where airborne concentrations may exceed occupational exposure limits. Protection provided by air purifying respirators may be limited. A positive pressure supplied air respirator should be used if concentrations are unknown or under any other other circumstances where air purifying respirators may be inadequate. A respiratory protection program that meets OSHA 29 CFR 1910.134 requirements must be followed whenever workplace conditions warrant a respirator's use.
PERSONAL PROTECTION IN CASE OF LARGE RELEASE	No additional information.
EXPOSURE LIMITS	ACGIH TLV-TWA: 0.2 mg/m^3 (Thoracic fraction) OSHA PEL: 8 hour TWA: 1 mg/m^3 as sulfuric acid equivalent 15 minute STEL: 3 mg/m^3 as sulfuric acid equivalent Federal, State or Provincial exposure limits may vary by jurisdiction. Consult local authorities for acceptable exposure limits in your area.

Section IX. Physical and Chemical Properties

PHYSICAL STATE AND APPEARANCE	Liquid. (Clear to slightly hazy liquid.)		
MOLECULAR WEIGHT	Not available.	**COLOR**	Clear yellow.
pH (10% SOLN/WATER)	1 Acidic.	**ODOR**	Odorless.
BOILING POINT	Decomposes. (110°C or 230°F)	**ODOR THRESHOLD**	Not available
MELTING POINT	9°C (49°F) Salt out temp.	**TASTE**	Not available.
CRITICAL TEMPERATURE	Not available.	**VOLATILITY**	24 wt% (H_2O)
SPECIFIC GRAVITY g/cc	1.54 @ 20°C.	**SOLUBILITY**	Easily soluble in cold water, hot water.
BULK DENSITY kg/m³ ; lbs/ft³	1533 kg/m^3; 12.8 lbs/USG	**DISPERSION PROPERTIES**	See solubility in water.
VAPOR PRESSURE	Not available.	**WATER/OIL DIST. COEFF.**	Soluble or dispersable in water.
VAPOR DENSITY	Not available.		

Continued on Next Page

Section X. Stability and Reactivity Data

STABILITY	The product is stable under normal conditions of handling and storage.
INSTABILITY TEMPERATURE	May vigorously decompose under high temperature conditions (>230°F, >110°C) releasing carbon dioxide gas.
CONDITIONS OF INSTABILITY	No additional information.
INCOMPATABILITY WITH VARIOUS SUBSTANCES	Reactive or incompatible with nitrates, hypochlorites, sulfides, alkaline materials and many metals. Toxic or flammable gases may be formed, or unacceptable corrosion may result. Do not mix with UAN solutions.
CORROSIVITY	Extremely corrosive to copper, aluminum, zinc. Corrosive to mild steel, especially when diluted. Corrosive to 304 stainless steel. Slightly corrosive to 316 stainless steel. Incompatible with nylon or nylon blends. Acceptable materials of construction are fiberglass, CPVC, polyethylene, polypropylene or 316L stainless steel. Consult a metallurgical specialist to ensure compatibility with handling equipment and for periodic inspection of metal components.
SPECIAL REMARKS ON REACTIVITY	Avoid excessive heat. If heated above 110ºC will decompose to produce carbon dioxide.
SPECIAL REMARKS ON CORROSIVITY	Contact your sales representative or metallurgical specialist to ensure compatability with system equipment.

Section XI. Toxicological Information

SIGNIFICANT ROUTES OF EXPOSURE	Skin contact. Inhalation.
TOXICITY TO ANIMALS	See Section II.
SPECIAL REMARKS ON TOXICITY TO ANIMALS	May be harmful to fish, livestock, and wildlife. Dissolved mineral salts may cause irritation of the digestive tract. Non-persistent. Non-cumulative when applied using normal agricultural practices. The product itself and its products of degradation are not harmful under normal conditions of careful and responsible use. Aquatic/Marine Toxicity: A toxic hazard to fish. Avoid spills or release to watercourses. Highly soluble. Will disperse with current. Release to watercourses may cause effects down stream from the point of release. U.S. D.O.T.: This material is NOT listed as a Marine pollutant.
OTHER EFFECTS ON HUMANS	No additional information.
SPECIAL REMARKS ON CHRONIC EFFECTS ON HUMANS	No additional remark.
SPECIAL REMARKS ON OTHER EFFECTS ON HUMANS	No additional information.

Section XII. Ecological Information

ECOTOXICITY	No additional information.
BOD and COD	Not available.
PRODUCTS OF DEGRADATION	Urea, sulfuric acid, ammonium, nitrate, and sulfate salts and carbon dioxide.
TOXICITY OF THE PRODUCTS OF DEGRADATION	The products of degradation are less toxic than the product itself.
SPECIAL REMARKS ON THE PRODUCTS OF DEGRADATION	No additional information.

Continued on Next Page

Section XIII. Disposal Considerations

WASTE DISPOSAL OR RECYCLING	Recover and place material in a suitable container for intended use or disposal. Ensure disposal complies with government requirements and local regulations. Container contents should be completely used and the containers rinsed prior to discard. Rinsate should be treated as a corrosive material.

Section XIV. Transport Information

DOT / TDG CLASSIFICATION	DOT / TDG CLASS 8: Corrosive liquid.
PIN and Shipping Name	UN 2796 PG II Proper shipping name: Sulfuric acid solution.
SPECIAL PROVISIONS FOR TRANSPORT	Provisions under 49 CFR 172.102: B2, B15, IB2, N34, T8, TP2, TP12 RQ: 5000 lbs (391 U.S.gal) based on the sulfuric acid content of this material. See also Section XV.
DOT (U.S.A) (Pictograms)	

Section XV. Other Regulatory Information and Pictograms

OTHER REGULATIONS		OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). CERCLA/SUPERFUND, 40 CFR 117,302: RQ of 5000 lbs (391 U.S.gal) based on the sulfuric acid content of this material. However, since spilled material may react with water to release additional sulfuric acid, an effective RQ of 1818 lbs (142 U. S.gal) should be applied in the event of a spill to water. TSCA (Toxic Substance Control Act): This product is listed on the TSCA Inventory. CALIFORNIA PROPOSITION 65: The following statement is made in order to comply with the California Safe Drinking Water and Toxic Enforcement Act of 1986 (CA Health and Safety Code Sec 25249.6): This product contains the following chemical known to the State of California to cause cancer: Strong inorganic acid mists containing sulfuric acid, CAS # not applicable, Date Listed: March 14, 2003. This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations. WHMIS CLASS D-2A: Material causing other toxic effects (VERY TOXIC). WHMIS CLASS E: Corrosive liquid.
OTHER CLASSIFICATIONS	**HCS (U.S.A.)**	HCS CLASS: Corrosive liquid.
	DSCL (EEC)	R35- Causes severe burns. Corrosive.

National Fire Protection Association (U.S.A.)

Hazards presented under acute emergency conditions only:

Health

Fire Hazard

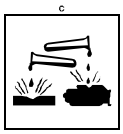
Reactivity

Specific Hazard

TDG (Pictograms - Canada)

Continued on Next Page

DSCL (Europe) (Pictograms)



ADR (Europe) (Pictograms)

Section XVI. Other Information

REFERENCES

-Transportation of Dangerous Goods Act and Clear Language Regulations, current revision.
-Canada Gazette Part II, Vol. 122, No. 2 Registration SOR/88-64 31 December, 1987 Hazardous Products Act "Ingredient Disclosure List".
-Domestic Substances List, Canadian Environmental Protection Act.
-29 CFR Part 1910
-33 CFR Parts 151, 153, 154, 156
-40 CFR Parts 1-799
-46 CFR Part 153
-49 CFR Parts 1-199
-American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Chemical Substances, 2005.
-NFPA 704, National Fire Codes Online, National Fire Protection Association, current edition at time of MSDS preparation.
-Corrosion Data Survey, Sixth Edition, 1985, National Association of Corrosion Engineers
-TOMES® System: Heitland G & Hurlbut KM (Eds) (electronic version): MICROMEDEX, Greenwood Village, Colorado, USA. Available at: http://csi.micromedex.com (2006). The TOMES® System includes MEDITEXT® Medical Management; HAZARDTEXT® Hazard Management; INFOTEXT® Documents; ERG2000 Emergency Response Guidebook Documents; REPROTEXT®: Heitland G & Hurlbut KM (Eds); CHRIS Hazardous Chemical Data: U.S. Department of Transportation, U.S. Coast Guard, Washington, D.C. (2006); HSDB: Hazardous Substances Data Bank. National Library of Medicine, Bethesda, Maryland (2006); IRIS: Integrated Risk Information System. U.S. Environmental Protection Agency, Washington, D.C. (2006); NIOSH: Pocket Guide to Chemical Hazards. National Institute for Occupational Safety and Health, Cincinnati, Ohio (2006); OHM/TADS: Oil and Hazardous Materials Technical Assistance Data System. U.S. Environmental Protection Agency, Washington, D.C. (2006); REPROTOX®: Scialli A.R. Georgetown University Medical Center and Reproductive Toxicology Center, Columbia Hospital for Women Medical Center, Washington, D.C. (2006); RTECS®: Registry of Toxic Effects of Chemical Substances. National Institute for Occupational Safety and Health, Cincinnati, Ohio (2006); and SHEPARDS: Shepard T.H.: Shepard's Catalog of Teratogenic Agents (2006).

OTHER SPECIAL CONSIDERATIONS

No additional information.

FOR FURTHER SAFETY, HEALTH, OR ENVIRONMENTAL INFORMATION ON THIS PRODUCT, CONTACT

AGRIUM
Wholesale Environment, Health and Safety
Telephone (780) 998-6906 or Fax (780) 998-6677

NOTICE TO READER

The buyer assumes all risk in connection with the use of this material. The buyer assumes all responsibility for ensuring this material is used in a safe manner in compliance with applicable environmental, health and safety laws, policies and guidelines. Agrium Inc. assumes no responsibility or liability for the information supplied on this sheet, including any damages or injury caused thereby. Agrium Inc. does not warrant the fitness of this material for any particular use and assumes no responsibility for injury or damage caused directly or indirectly by or related to the use of the material. The information contained in this sheet is developed from what Agrium Inc. believes to be accurate and reliable sources, and is based on the opinions and facts available on the date of preparation.