

XII SPECIAL PRECAUTIONS

PRECAUTIONARY STATEMENTS

Personal contact with the product should be avoided. Should contact be made, remove saturated clothing and flush affected areas with water. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Do not breath mists. Wash thoroughly after handling. Wash clothing before reuse. Store closed containers in a cool, dry, well ventilated area. Protect containers against physical damage. Keep away from incompatible materials. Product degradation may occur if heated above 140°F. Never store in mile steel containers or 304 stainless steel containers.

OTHER HANDLING AND STORAGE REQUIREMENTS

For storage, use 316 stainless steel or higher rating, polypropylene, polyethylene, or fiberglass tanks.
304 stainless steel is not recommended for handling due to deterioration after substained short term contact.
This product becomes more corrosive to most metals when it is diluted.
Transfer pumps and equipment must be compatible with sulfuric acid.
Pumps should be stainless steel, polyester or PVDF. Use Viton seals. Dot not use neoprene or rubber seals.
Do not use fittings or pumps containing nylon, aluminum, brass, mild steel, natural rubber or butyl rubber.

XIII TRANSPORT INFORMATION

DOT CLASSIFICATION CLASS 8: Corrosive liquid.

Shipping Name TRANSPORT Not regulated if transported by motor vehicle or railcar in packaging that will not react dangerously or be degraded by this material. For reference, see 39 CFR 173.154(d). If this exemption is not used, shipments should be shipped: Corrosive Liquid, n.o.s., Class 8, UN1760, Packing Group III, Corrosive.

SPECIAL PROVISIONS FOR TRANSPORT Corrosive to mild steel. Do not ship in aluminum tanks.

DOT Pictogram
If exemption is not used



**FOR CHEMICAL EMERGENCY
DURING TRANSPORTATION ONLY**
Call INFOTRAC

1-800-535-5053
24 Hrs. per day, 7 days per week

XIV DOCUMENTARY INFORMATION

ISSUE DATE August 15, 1990 Revised April 1994
SUPERCEDES October 21, 1985 Revised August 2005

Compiled by Jim Gregory

DISCLAIMER OF EXPRESS AND IMPLIED WARRANTIES

The information in this document is believed to be correct as of the date issued. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY USE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. This information and the product are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of its use thereof.



MATERIAL SAFETY DATA SHEET

US-28

13555 S. 11th Ave. / Hanford, CA 93230
(559) 582-9205 email verdegaal@verdegaalbrothers.com

I PRODUCT IDENTIFICATION

MANUFACTURER'S NAME Verdegaal Brothers, Inc.	TELEPHONE NO. (559) 582-9205 / 582-8990
ADDRESS 13555 S. 11th Ave., Hanford, California 93230	WEB PAGE www.verdegaalbrothers.com
CHEMICAL NAME Urea - Sulfuric Acid - Water	
SYNONYMS AND TRADE NAMES US-28, 28-0-0-27, 28-0-0-9(S), 28/27	
CHEMICAL FAMILY Molecular Addition Compound - Organic Salt Solution	
SHIPPING NAME Urea Sulfuric Acid Fertilizer	
PRODUCT INFORMATION Fertilizer Solution, Dicarbamide Dihydrogen Sulfate, CAS #17103-31-0	

II WARNING STATEMENTS

MAY CAUSE SEVERE EYE BURN
PROLONGED CONTACT MAY CAUSE SEVERE SKIN BURNS
HARMFUL OR FATAL IF SWALLOWED
DO NOT TASTE OR SWALLOW
DO NOT GET IN EYES, ON SKIN OR ON CLOTHING
DO NOT BREATHE MIST
DO NOT HEAT ABOVE 230°F.
USE WITH ADEQUATE VENTILATION.
KEEP SYSTEM OR CONTAINER CLOSED
WASH THOROUGHLY AFTER HANDLING
WASH PERSONAL PROTECTIVE EQUIPMENT WITH WATER AFTER USE

PROTECTIVE CLOTHING

III HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	%	HAZARD DATA
Sulfuric Acid CAS # 7664-93-9	61	Corrosive
Urea CAS # 57-13-6	30	Not established
Water CAS # 7732-18-5	9	Not established

IV PHYSICAL DATA

BOILING POINT, 760 MM HG	Above 230° F	VAPOR PRESSURE	
SPECIFIC GRAVITY (H ₂ O=1)	1.42 at 68° or 11.87 lbs / gal	SOLUBILITY IN WATER	100%
VAPOR DENSITY (AIR = 1)	Heavier than air	EVAPORATION RATE	Slower than ether
APPEARANCE AND ODOR	Clear or slightly hazy, odorless liquid, may be dyed blue		
pH	1 Acidic		

Because of the sulfuric acid content, this product should be treated as an acid material.

V FIRE AND EXPLOSION DATA

FLASH POINT (TEST METHOD)	None to boiling	AUTOIGNITION TEMPERATURE	
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 incompatible 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 of 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.		
EXTINGUISHING MEDIA	Material does not burn. Use that which is appropriate for surrounding fire.	DOT FLAMMABILITY CLASSIFICATION	Not Combustable Nonflammable liquid
SPECIAL FIRE FIGHTING PROCEDURES	The use of self-contained breathing apparatus (SCBA) and full protective clothing is recommended for firefighters. Water spray may be useful in minimizing vapors and cooling containers exposed to heat and flame.		
UNUSUAL FIRE AND EXPLOSION HAZARD	This material will vigorously decompose if heated above 230°-300°F. The potential for tank rupture exists if heated to decomposition. Contact of the diluted material with common metals may generate hydrogen gas which can form flammable mixtures with air.		

VI HEALTH HAZARD INFORMATION

EYE EFFECTS	This material is a severe eye irritant. Direct contact with liquid or exposure to mists may cause burning, tearing, redness, swelling, corneal damage, and irreversible eye damage.
SKIN EFFECTS	This material is a severe skin irritant. Prolonged or repeated contact with this material may cause redness, swelling, burns and severe skin damage. Persons with pre-existing skin disorders may be more susceptible to the effects of this material
INHALATION	Breathing mists of this material may cause severe irritation and burns of the nose, throat and respiratory tract. Respiratory symptoms associated with pre-existing lung disorders. (E.G. Asthma - like conditions) may be aggravated by exposure to this material.
INGESTION	This material is toxic and may be harmful or fatal if swallowed. Ingestion may result in severe irritation and burns of the mouth, throat and digestive tract.
COMMENTS	This product is not known to be carcinogenic, mutagenic or teratogenic.

VII EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT	Immediately move victim away from exposure to mists and into fresh air. If irritation or redness develops, flush eyes with clean water and seek immediate medical attention. Check for and remove any contact lenses. For direct contact, immediately flush the affected eye(s) with clean water for 15 to 30 minutes. Seek immediate medical attention.
SKIN CONTACT	Immediately flush affected area(s) with large amounts of water while removing contaminated clothing. If skin surface is damaged, apply a clean dressing and seek immediate medical attention. If skin surface is not damaged, cleanse the affected area(s) thoroughly by washing with milk soap and water. If irritation or redness develops, seek immediate medical attention.
INHALATION	Immediately move victim away from exposure and into fresh air. If symptoms of exposure develop, seek immediate medical attention. If victim is not breathing, artificial respiration should be administered. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.
INGESTION	DO NOT INDUCE VOMITING, CORROSIVE MATERIAL. ACID BURNS 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.

VIII REACTIVITY DATA

STABILITY	This product is stable under normal conditions of handling and storage.
CONDITIONS TO AVOID	This material will vigorously decompose, releasing carbon dioxide gas if heated above 230°-300°F. Do not heat above 170°F
INCOMPATIBILITY (MATERIALS TO AVOID)	Avoid contact with oxidizers. This material may be extremely hazardous in contact with chlorates or nitrates. This material is acidic in nature. The diluted material is corrosive to metal. Contact with hypochlorites (e.g., chlorine bleach), sulfides, or cyanides will liberate toxic gases. Contact with alkaline materials (e.g., aqua ammonia) will generate heat.
HAZARDOUS DECOMPOSITION PRODUCTS	Combustion may yield oxides of carbon, nitrogen and sulfur. Exposure to heat may liberate carbon dioxide and ammonia.
HAZARDOUS POLYMERIZATION	Will not occur.

IX SPILL OR LEAK PROCEDURES

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 materials as possible for use of disposal. Ensure that pumping equipment is of 316L stainless steel construction or other compatible metallurgy. 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 all regulations. Consult your environmental advisor regarding recovery and disposal alternatives.
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.

PERSONNEL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION	No respiratory protection is expected to be needed in normal use. If airborne concentrations exceed, established exposure limits, use a powered air purifying respirator with HEPA filter or supplied air respirator. Depending on the nature and concentration of the airborne material, use a respirator or gas mask if determined necessary with appropriate cartridges and canisters (NIOSH approved, if available) or supplied air equipment.
VENTILATION	If current ventilation practices are not adequate to maintain airborne concentrations below established exposure limits additional ventilation or exhaust systems may be required.
PROTECTIVE GLOVES	The use of gloves impermeable to the specific material handled is advised to prevent skin contact, possible irritation and skin damage.
EYE PROTECTION	Approved eye protection such as chemical goggles or face shields to safeguard against potential eye contact irritation and skin damage.
OTHER PROTECTIVE EQUIPMENT	Impervious clothing should be worn as needed. Eye wash and quick drench shower facilities should be available in the work area. Thoroughly clean shoes and wash contaminated clothing before reuse. This product will cause deterioration of cotton, leather and nylon.

XI HANDLING AND STORAGE

PRECAUTIONS	Personnel handling this material should be 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 face shield. When using do not eat, drink or smoke. Ensure that an eyewash station and safety shower is near the place of use. 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.
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