

## 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 mild 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. Do 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

<b>DOT/CLASSIFICATION</b>	CLASS 8: Corrosive liquid.
<b>Shipping Name</b>	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.
<b>SPECIAL PROVISIONS FOR TRANSPORT</b>	Corrosive to mild steel. Do not ship in aluminum tanks. should be shipped: Corrosive Liquid, n.o.s., Class 8, UN1760, Packing Group III, Corrosive.

**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

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## MATERIAL SAFETY DATA SHEET

# US-15

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-15, 15-0-0-49, 15-0-0-16(S), 15-49	
CHEMICAL FAMILY Molecular Addition Compound - Organic Salt Solution	
SHIPPING NAME Urea Sulfuric Acid Fertilizer	
PRODUCT INFORMATION Fertilizer Solution, Monocarbamide Dihydrogen Sulfate, CAS #21341-39-3	

## II WARNING STATEMENTS

	<p>MAY CAUSE SEVERE EYE BURN PROLONGED CONTACT MAY CAUSE SEVERE SKIN BURNS <b>HARMFUL OR FATAL IF SWALLOWED</b> <b>DO NOT TASTE OR SWALLOW</b> 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</p>	<table border="1"> <tr> <td><b>PROTECTIVE CLOTHING</b></td> </tr> <tr> <td></td> </tr> </table>	<b>PROTECTIVE CLOTHING</b>	
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## III HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	%	HAZARD DATA
Sulfuric Acid CAS # 7664-93-9	33	Corrosive
Urea CAS # 57-13-6	49	Not established
Water CAS # 7732-18-5	18	Not established

## IV PHYSICAL DATA

BOILING POINT, 760 MM HG	230° - 300° F	VAPOR PRESSURE	
SPECIFIC GRAVITY (H <sub>2</sub> O=1)	1.51 at 68°F or 12.65 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 pink		
pH	1 Acidic		

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

## V FIRE AND EXPLOSION DATA

<b>FLASH POINT (TEST METHOD)</b>	None to boiling	<b>AUTOIGNITION TEMPERATURE</b>	
<b>PRODUCTS OF COMBUSTION</b>	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.		
<b>FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES</b>	Not applicable. Non-flammable. Decomposes to produce toxic and flammable gases.		
<b>EXPLOSION HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES</b>	May react with incompatible metals to generate highly flammable and explosive hydrogen gas.		
<b>FIRE FIGHTING MEDIA AND INSTRUCTIONS</b>	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.		
<b>SPECIAL REMARKS ON FIRE HAZARDS</b>	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.		
<b>EXTINGUISHING MEDIA</b>	Material does not burn. Use that which is appropriate for surrounding fire.	<b>DOT FLAMMABILITY CLASSIFICATION</b>	Not Combustable Nonflammable liquid
<b>SPECIAL FIRE FIGHTING PROCEDURES</b>	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.		
<b>UNUSUAL FIRE AND EXPLOSION HAZARD</b>	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

<b>EYE EFFECTS</b>	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.
<b>SKIN EFFECTS</b>	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
<b>INHALATION</b>	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.
<b>INGESTION</b>	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.
<b>COMMENTS</b>	This product is not known to be carcinogenic, mutagenic or teratogenic.

## VII EMERGENCY AND FIRST AID PROCEDURES

<b>EYE CONTACT</b>	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.
<b>SKIN CONTACT</b>	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.
<b>INHALATION</b>	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.
<b>INGESTION</b>	<b>DO NOT INDUCE VOMITING, CORROSIVE MATERIAL. ACID BURNS</b> 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

<b>STABILITY</b>	This product is stable under normal conditions of handling and storage.
<b>CONDITIONS TO AVOID</b>	This material will vigorously decompose, releasing carbon dioxide gas if heated above 230°-300°F. Do not heat above 170°F
<b>INCOMPATIBILITY (MATERIALS TO AVOID)</b>	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.
<b>HAZARDOUS DECOMPOSITION PRODUCTS</b>	Combustion may yield oxides of carbon, nitrogen and sulfur. Exposure to heat may liberate carbon dioxide and ammonia.
<b>HAZARDOUS POLYMERIZATION</b>	Will not occur.

## IX SPILL OR LEAK PROCEDURES

<b>SMALL SPILL</b>	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.
<b>WASTE DISPOSAL OR RECYCLING</b>	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

<b>RESPIRATORY PROTECTION</b>	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.
<b>VENTILATION</b>	If current ventilation practices are not adequate to maintain airborne concentrations below established exposure limits additional ventilation or exhaust systems may be required.
<b>PROTECTIVE GLOVES</b>	The use of gloves impermeable to the specific material handled is advised to prevent skin contact, possible irritation and skin damage.
<b>EYE PROTECTION</b>	Approved eye protection such as chemical goggles or face shields to safeguard against potential eye contact irritation and skin damage.
<b>OTHER PROTECTIVE EQUIPMENT</b>	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

<b>PRECAUTIONS</b>	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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