

# Safety Data Sheet


Universal Oil SDS No: 16 50 01 A

Revision Issued: 05/20/2015	Supersedes: 03/01/2014	First Issued: 5/20/2015
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## Section I – Product and Company Identification

Product Name:	Universal DEF
Common Name:	Urea, Liquor 32.5%
Company Name:	Universal Oil Inc.
Address:	265 Jefferson Ave. Cleveland, OH 44113
Phone Number:	216-771-4300
Email:	sales@universaloil.com
Emergency Phone Number:	Chemtrec: (800) 424-9300
Recommended Use:	NOx Abatement Solution
Recommended Restrictions:	None Known

## Section II – Hazard Identification

Hazard Classification:	Health Category 1, Non-flammable Liquid		
Signal Word:	<b>CAUTION!</b>		
Hazard Statement:	WARNING: May cause skin irritation and eye irritation.		
Pictogram:			
Precautionary Statements:	Do not breathe vapor or mist. Do not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.		
Potential Acute Health Effects:	<b>Skin:</b> Repeated or prolonged contact may cause reddening, itching and inflammation. <b>Ingestion:</b> A single dose of 100 grams has reportedly caused mild symptoms of Central Nervous System depression e. g. drowsiness and slow reflexes.		
Eyes and Skin:	<b>Eyes:</b> Liquid contact may irritate mildly. Mist contact may also irritate mildly. Contact with heated material may cause thermal burns. <b>Skin:</b> Liquid contact may irritate mildly with repeated or prolonged exposure.		
Inhalation:	In the unlikely event that mist is formed, respiratory tract irritation may occur.		
Ingestion:	A single dose of 100 grams has reportedly caused mild symptoms of Central Nervous System depression (e.g. drowsiness, slow reflexes, and slurred speech). May cause gastrointestinal disturbances (symptoms may include irritation, nausea, vomiting and diarrhea). Call a doctor if you fell unwell. Rinse mouth.		
Potential Chronic Health Effects:	No potential chronic effects known. Urea is a naturally occurring chemical in the body. It is an end product of protein metabolism and is excreted in the urine.		
CARCINOGENICITY LISTS	IARC Monograph: No	NTP: No	OSHA: No

## Section III – Composition / Information On Ingredients

Chemical Name	CAS No.	Exposure Limits								
		OSHA PEL		TLV – TWA		STEL		IDLH		% by Weight
		mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	ppm	
Urea ( CO(NH <sub>2</sub> ) <sub>2</sub> )	57-13-6		50		25		35		300	31 - 70
Water	7732-18-5	---None established---								30 - 69
<b>Common Name:</b>		Aqueous solutions of Urea (30%-70%)								
<b>Synonym:</b>		Urea Solution								
<b>There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.</b>										

Section IV – First Aid Measures	
<b>Eyes:</b>	Check for and remove contact lenses. Promptly flush with water, continuing for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. If irritation persists, consult a physician <b>immediately</b> .
<b>Skin:</b>	Wash area of contact thoroughly with soap and water. Flush skin immediately with cold water. Take off contaminated clothing and launder clothing before reuse. Clean shoes thoroughly before use. If irritation persists, consult a physician immediately.
<b>Ingestion:</b>	Rinse mouth. Do not induce vomiting unless directed by medical personnel. Keep affected person warm and treat for shock. A single dose of 100 grams has reportedly caused mild symptoms of Central Nervous System depression (drowsiness, etc.). Consult a physician immediately if you feel unwell.
<b>Inhalation:</b>	Remove affected person from source of exposure. If not breathing, ensure open airway and initiate CPR. If breathing is difficult, administer oxygen by trained personnel; seek medical attention. Loosen tight clothing such as belts or ties.
<b>Physician:</b>	In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Section V – Fire Fighting Measures			
<b>Flash Point:</b>	Not Applicable	<b>Auto ignition Temperature:</b>	Not Applicable
<b>Lower Explosive Limit:</b>	Not Applicable	<b>Upper Explosive Limit:</b>	Not Applicable
<b>Flammability of Product:</b>	Non-Flammable, however in a fire or if heated a pressure increase will occur and the container may burst.		
<b>Special exposure hazards:</b>	See Hazardous Decomposition Products, Section X.		
<b>Extinguishing Media:</b>			
<b>Suitable:</b>	Use an extinguishing agent suitable for the surrounding fire. Water recommended. All standard agents are acceptable.		
<b>Not Suitable:</b>	None known.		
<b>Special Firefighting Procedures and Equipment:</b>	Wear sufficient self-contained breathing apparatus approved by NIOSH. Use water spray to keep containers cool.		

Section VI – Accidental Release Measures	
<b>Personal Precautions:</b>	Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate P.P.E (see Section 8).
<b>Environmental Precautions:</b>	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. If spill could potentially enter any waterway, including intermittent dry creeks, contact the local authorities. If in the U.S., contact the US COAST GUARD NATIONAL RESPONSE CENTER toll free number 800-424-8802. In case of accident or road spill notify: CHEMTREC IN USA at 800-424-9300; CANUTEC in Canada at 613-996-6666 CHEMTREC in other countries at (International code) 1-703-527-3887.
<b>Small Spill:</b>	Promptly absorb with commercial or other absorbent (to include sand) and shovel into container for disposal. Dilute with water and mop up and pour into container for disposal via licensed waste contactor.
<b>Large Spill:</b>	Stop leak if without risk. Approach release from upwind. Prevent entry into sewers, water courses, basements, or confined areas. Contain and collect spillage using commercial or other absorbent (to include sand) and place in container for disposal according to local regulations. Dispose of via a licensed waste contractor.
<b>Comments:</b>	See Section XIII for disposal information and Section XV for regulatory requirements. Large and small spills may have a broad definition depending on the user's handling system. Therefore, the spill category must be defined at the point of release by technically qualified personnel.

Section VII – Handling and Storage	
<b>Handling:</b>	Avoid contact with eyes. Avoid prolonged or repeated contact with skin or clothing. Avoid breathing mist. Eating, drinking, or smoking should be prohibited in areas where this material is handled, stored, and processed. Workers should wash face and hands before eating, drinking, or smoking. Remove contaminated clothing and P.P.E. before entering eating areas. Do not ingest. Avoid contact with skin, eyes, and clothing. Avoid breathing vapor or mist. Keep in original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Do not reuse container.
<b>Storage:</b>	Protect from physical damage. This material is vented in storage. Avoid containers, piping or fittings made of iron, brass, bronze, or other copper-bearing alloys, or galvanized metal. Store original container protected from sunlight in a dry, cool, and well ventilated area away from incompatible materials and food and drink. Do not store in unlabeled containers.

Section VIII – Exposure Controls/ Personal Protection										
United States and Canada										
Chemical Name	CAS No.	Exposure Limits								% by Weight
		OSHA PEL		TLV – TWA (8 hours)		STEL		IDLH		
		mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	ppm	
Urea ( CO(NH <sub>2</sub> ) <sub>2</sub> )	57-13-6		50	10	25		35		300	31 - 70
Water	7732-18-5	---None established---								30 - 69
<b>Engineering Controls:</b>	No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.									
<b>Hygiene measures:</b>	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.									
<b>Personal Protection:</b>										
<b>Respiratory Protection:</b>	<b>Not generally required.</b> If misty condition prevails, wear a NIOSH approved mist respirator. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.									
<b>Hand Protection:</b>	<b>Impervious gloves.</b> Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is									
<b>Eye Protection:</b>	<b>Wear chemical safety goggles or face shield.</b> Do NOT wear contact lenses. Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.									
<b>Protective Clothing and Skin Protection:</b>	<b>Not generally required.</b> Personal protective equipment for the body should be selected based on the task being performed and the risks involved.									

Section IX – Physical and Chemical Properties			
<b>Appearance/Physical State/Color/Odor:</b>	This material at normal conditions is colorless liquid; mildly ammonia type odor.	<b>Boiling Point (50% urea solution):</b>	106°C
<b>Melting Point/Range:</b>	Salt Out Temperature: 50% @ 63°F 17°C 65% @ 115°F 46°C 70% @ 135°F 57°C	<b>Specific Gravity:</b>	50%: 1.14 @ 75°F 65%: 1.165 @ 135°F 70%: 1.175 @ 155°F 32.5%: 1.090 @ 68°F (20°C)
<b>Solubility in Water:</b>	100%	<b>Vapor Pressure (mmHg):</b>	220 mmHg at 20°C
<b>Boiling Point Range:</b>	Not Applicable	<b>Molecular Weight:</b>	60.07 (100% Urea)
<b>Vapor Density:</b>	1.07 g/cm <sup>3</sup>	<b>% Volatiles:</b>	Not Applicable
<b>(lb./gal): Density:</b>	9.2 - 9.7 @ 100°F (40-70%) 32.78°C 9.5 @ 75°F (Foliar 50) 23.89°C 9.7 @ 115°F (65% Agricultural) 46.12°C 9.7 @ 145°F (70% Industrial) 62.78°C 9.09 @ 68°F 20°C (32.5%)	<b>Decomposition Temperature</b>	ABOVE 266°F
<b>pH:</b>	Typically 10.0 [7.2 (100 g/L)]	<b>Freezing Point:</b>	See Melting Point
<b>Flash Point</b>	Not Applicable (Does not Sustain combustion)	<b>Partition Coefficient:</b>	Not available
<b>Flammability:</b>	Not Applicable (Does not Sustain combustion)	<b>Viscosity:</b>	Not Applicable
<b>Explosive Limits:</b>	Not Applicable	<b>Evaporation Rate:</b>	Not Applicable
<b>Auto Ignition Temperature:</b>	Not Applicable (Does not Sustain combustion)		

Section X – Stability and Reactivity	
<b>Reactivity:</b>	Materials to avoid: SODIUM NITRITE, PHOSPHORUS PENTACHLORIDE, and NITROSYLPERCHLORATE. May react with NITRATES, ALKALIES, OXIDIZING AGENTS, HYPOCHLORITE, ALDEHYDES, INORGANIC ACIDS, ALEFINS, and POLYMERIZABLE ESTERS. CORROSIVE TO COPPER and COPPER ALLOYS.
<b>Chemical Stability:</b>	This product is stable under normal ambient conditions of temperature and pressure.
<b>Hazardous Polymerization:</b>	Will not occur
<b>Conditions to Avoid:</b>	The evaporation residue should not be heated above its melting point, 133°C: Decomposes to hazardous products.
<b>Materials to Avoid (Incompatibles):</b>	Avoid contact with strong oxidizers (e.g. chlorine, peroxide, chromates, nitric acid, perchlorates, concentrated oxygen, and permanganates) which can generate heat, fire or explosions or release toxic fumes.
<b>Hazardous Decomposition Products:</b>	If the evaporation residue is heated to the melting point or above, Ammonia and Carbon Dioxide are formed. Some Ammonia and CO <sub>2</sub> are given off on heating the aqueous product. Under some conditions of pressure and temperature, some Ammonium Cyanate has also been reported.

Section XI – Toxicological Information		
<b>Significant Routes of Exposure:</b>	Eyes, Digestive Tract, Respiratory Tract, Skin	
<b>Toxicity to Animals:</b>	<b>Acute Oral Toxicity:</b>	(rat): LD <sub>50</sub> = 14,300 – 15,000 mg/kg; (mouse) 11,500 – 13,000 mg/kg.; (cattle): LD <sub>50</sub> = 510 mg/kg
	<b>Acute Inhalation Toxicity:</b>	No data available.
	<b>Acute Toxicity: Other Routes:</b>	No data available
	<b>Acute Dermal Toxicity:</b>	No data available
	<b>Repeated Dose Toxicity:</b>	(rat) 24 weeks; dermal - NOAEL = 40% in ointment
	<b>Eye &amp; Skin Irritation/Corrosion:</b>	Skin Irritation/Corrosion: Mouse – Not irritating (10% solution) Eye Irritation/Corrosion: Rabbit – Not irritating (50% solution)
<b>Special Remarks on Toxicity to Animals:</b>	Not found to be toxic by oral exposure as defined by OSHA. Based on toxicity data for another compound (i.e., ammonium nitrate), not expected to be toxic by dermal and inhalation exposure as defined by OSHA.	
	<b>Developmental Toxicity/Teratogenicity:</b>	Not teratogenic.
	<b>Bacterial Genetic Toxicity In-Vitro: Gene Mutation:</b>	( <i>Salmonella typhimurium</i> ) – Bacterial reverse mutation assay-Negative; Chinese Hamster -- Chromosomal aberration test – Positive (very high dose); Mouse – Mouse lymphoma TK locus assay - Positive (very high dose).
	<b>Non-Bacterial Genetic Toxicity In-Vitro: Chromosomal Aberration:</b>	Mouse – Bone marrow cytogenetic test – Positive (extremely high dose).
	<b>Toxicity to Reproduction:</b>	No toxic effects on mouse gonads up to 6,750-mg/kg day. No toxic effects on rat gonads up to 2,250-mg/kg day.
<b>Carcinogenicity:</b>	No data available	
<b>Other Effects on Humans:</b>	May cause gastrointestinal disturbances (symptoms may include irritation, nausea, vomiting and diarrhea).	
<b>Special Remarks on Chronic Effects on Humans:</b>	No chronic effects known.	
<b>Special Remarks on Other Effects on Humans:</b>	May be irritating at > 10% concentration; not a skin sensitizer. Despite extensive medical use, no significant side effects on humans have been noted.	

Section XII – Ecological Information		
Eco toxicity	EPA Ecological Toxicity rating :	
	Acute Toxicity to Fish:	96 -h: ( <i>Barillius barna</i> ) LC <sub>50</sub> (96 hr.)> 9,100 mg/L.
	Chronic Toxicity to Fish:	No data available
	Acute Toxicity to Aquatic Invertebrates:	( <i>Daphnia magna</i> ): 24 - h EC <sub>50</sub> = > 10,000 mg/L. [DIN 38412 Part II modified]
	Chronic Toxicity to Aquatic Invertebrates:	No data available
	Acute Toxicity to Aquatic Plants:	( <i>Scenedesmus quadricauda</i> ) 192-hr cell multiplication inhibition test-TT>10,000 mg/L. [Call multiplication inhibitor test]
	Toxicity to Other Non-Mammalian Terrestrial Species:	(Pigeon)-Subcutaneous-LDLO=16,000 mg/kg.
	Toxicity to Terrestrial Plants:	No data available
Environmental Fate:	Stability in Water:	T <sub>1/2</sub> > 1 year. Since Urea is a fertilizer, it may promote eutrophication in waterways. Non-toxic to aquatic organisms as defined by USEPA.
	Stability in Soil:	(Glycine max (L.) Merr.: Leaf tip necrosis [7 day exposure to 9 mg urea/leaf]
	Transport and Distribution:	Transport: 0.16% in air; 99.84% in water [Calculated fugacity Level 1 type]
Toxicity:	No known toxicity	
Degradation Products:	Biodegradation:	Ultimately biodegradable. [OECD Guideline 302B]
	Photo degradation:	No data available


Section XIII – Disposal Considerations	
Product Disposal:	Disposal of Urea may be subject to federal, state or local regulations. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.
General Comments:	Users of this product should review their operations in terms of applicable federal, state and local laws and regulations. Consult with appropriate regulatory agencies before discharging or disposing of waste material. The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. Empty containers or liners may retain some product residues.
Sewer Statement:	Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section XIV – Transportation Information		
	USDOT	TDG - Canada
Proper Shipping Name:	Not regulated	Not regulated
Hazard Class:		
Identification Number:		
Packing Group (Technical Name):		
Labeling / Placarding:		
Authorized Packaging:		
Notes:		
European Transportation:		

## Section XV – Regulatory Information

<b>UNITED STATES: SARA Hazard Category:</b>	This product has been reviewed according to the EPA Hazard Categories promulgated under Section 311 and 312 of the Superfund Amendment and reauthorization Act of 1986 (SARA title III) and is considered, under applicable definitions, to meet the following categories:									
	<b>Fire:</b>	No	<b>Pressure Generating:</b>	No	<b>Reactivity:</b>	No	<b>Acute:</b>	Yes	<b>Chronic:</b>	No
	<b>40 CFR Part 355 - Extremely Hazardous Substances:</b>						None Applicable			
	<b>40 CFR Part 370 - Hazardous Chemical Reporting:</b>						None Applicable			
	<b>All intentional ingredients listed on the TSCA inventory.</b>									
<b>SARA Title III Information:</b>	This product contains the following substances subject of the reporting requirements of Title III (EPCRA) of the Superfund amendments and Reauthorization Act of 1986 and 40 CFR Part 372:									
<b>Chemical</b>	<b>CAS NO.</b>	<b>Percent by Weight</b>	<b>CERCLA RQ (lbs.)*</b>	<b>SARA (1986) Reporting</b>						
				<b>311</b>	<b>312</b>	<b>313</b>				
Urea	57-13-6	97.5 - 99.7	NA	Yes	Yes	NA				
<b>CERCLA/Superfund, 40 CFR Parts 117, 302:</b>	If this product contains components subject to substances designated as CERCLA reportable Quantity (RQ) Substances, it will be designated in the above table with the RQ value in pounds. If there is a release of RQ Substance to the environment, notification to the National Response Center, Washington D.C. (1-800-424-8802) is required.									
<b>CANADA:</b>	<b>WHMIS Hazard Symbol and Classification:</b>				This product is not WHMIS controlled					
	<b>Ingredient Disclosure List:</b>				This product does contain ingredient(s) on this list.					
	<b>Environmental Protection:</b>				All intentional ingredients are listed on the DSL (Domestic Substance List).					
<b>EINECS#:</b>	(Urea) 200-315-5									
<b>California: Prop 65:</b>	This is not a chemical known to cause cancer, nor is it listed.									

## Section XVI – Other Information

<b>NFPA Hazard Ratings:</b>	0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme	Health: 1 Flammability: 0 Instability: 0 Special Hazards: 0	
<b>COMMENTS:</b>	This product is TSE/BSE (Transmissible Spongiform Encephalopathy/Bovine Spongiform Encephalopathy) free. There are no animal constituents used in the manufacture of Urea, liquor for Victory Blue LLC. Our product is created through a chemical process.		
<b>Section(s) changed since last revision:</b>	Changed format to comply with OSHA GHS requirements. Now named Safety Data Sheet (SDS) formerly named Material Safety Data Sheet (MSDS). Changed Date: 20 MAY 2015		
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