Material Safety Data Sheet

Revision Issued: 05/21/07	Supercedes: 12/31/07	First Issued: 5/31/1978

Section I – Product and Company Identification

Product Name: **S25® Solution**

PotashCorp MSDS No.: 41
ERG No.: N/A

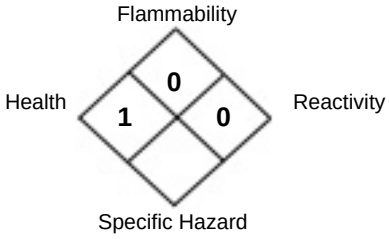
1101 Skokie Blvd., Northbrook, IL 60062
Phone (800) 241-6908 / (847) 849-4200

Suite 500, 122 – 1st Avenue South
Saskatoon, Saskatchewan Canada S7K7G3
Phone (800) 667-0403 from Canada
(800) 667-3930 from USA

Emergencies (800) 424-9300 (CHEMTREC)

Web Site www.potashcorp.com

Health Emergencies, Contact Your Local Poison Center



NFPA Code

Common Name: S25® Solution	**Formula:** NH_4NO_3, $(NH_4)_2SO_4$, $CO(NH_2)_2$, H_2O	**Synonym:** Ammonium Nitrate, Ammonium Sulfate, Urea Solution	**Uses:** Agricultural

Section II – Composition / Information On Ingredients

Chemical Name	CAS No.	Exposure Limits								% by Weight
		OSHA PEL		TLV – TWA		STEL		CEIL		
		mg/m³	ppm	mg/m³	ppm	mg/m³	ppm	mg/m³	ppm	
Ammonium Nitrate	6484-52-2									19.1 - 21.1
Ammonium Sulfate	7783-20-2									14.5
Urea	57-13-6									31.5 - 32.5
Alkalinity as Ammonia			50(1)		25(1)		35(1)			0.5
S25®(2)	15978-77-5									

None Established by OSHA. No TLV (Threshhold Limit Value) established by ACGIH for S25® Solution.
(1) Exposure Limits for Ammonia.
(2)Health & Environmental Safety Data Summary Document -Nitrogen Solutions (UAN) [CAS# 15978-77-5] Prepared For: The Fertilizer Institute, October 7, 2002

Section III – Hazard Identification

Potential Acute Health Effects:	May cause irritation		
Eyes and Skin:	Eyes: Liquid contact may irritate slightly. If mist is formed, mild irritation may result. Skin: Prolonged or repeated liquid contact may irritate slightly.		
Inhalation:	In the unlikely event that mist is formed, this would irritate respiratory tract.		
Ingestion:	Ingestion may cause blood disorders (Methemoglobinemia) in infants. (This means loss of efficiency in the red blood cells and is evidenced by blue skin.) Apart from this, symptoms may include excessive action of the kidneys		
Potential Chronic Health Effects:	See ingestion by infants, above		
CARCINOGENICITY LISTS	**IARC Monograph:** No	**NTP:** No	**OSHA:** No

Section IV – First Aid Measures	
Eyes:	Immediately flush with water, continuing for at least 15 minutes. If irritation persists, get prompt medical attention..
Skin:	Immediately flush thoroughly with water. If irritation persists, get prompt medical attention.
Ingestion:	If conscious, immediately give two (2) to four (4) glasses of water, and induce vomiting by touching finger to back of throat, get prompt medical attention.
Inhalation:	Remove to fresh air.

Section V – Fire Fighting Measures			
Flash Point:	None	**Autoignition Temperature:**	Not Applicable
Lower Explosive Limit:	Not Applicable	**Upper Explosive Limit:**	Not Applicable
Unusual Fire and Explosion Hazards:	See problem with heating in pipes and other confined spaces, Section VII, Handling.		
Extinguishing Media:	Water		
Special Firefighting Procedures and Equipment:	Wear self-contained breathing apparatus approved by NIOSH. Use Water spray to keep containers cool.		

Section VI – Accidental Release Measures	
Small Spill:	Contain and mop up or pump spilled material into metal or plastic drums as soon as possible. Material is a fertilizer.
Large Spill:	Contain and mop up or pump spilled material into metal or plastic drums as soon as possible.
Release Notes:	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.
Comments:	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	
Ventilation:	Unless heated, sprayed or agitated to produce mist, natural ventilation should be adequate.
Handling:	Avoid breathing mist. Minimize contact with eyes, skin and clothing. Do not evaporate in enclosed spaces. *Avoid welding on pipes or tanks which have contained S25® solution until they have been thoroughly washed out with water.* Residual Ammonium Nitrate may explode under conditions of confinement and high temperature. Avoid containers, piping, or fittings made of brass, bronze, or other copper containing alloys or galvanized metals. Do not run pumps with the discharge or suction valves closed; pump must be on circulation. If material is evaporated to dryness, special hazards are involved and special fire fighting precautions and methods are recommended.
Storage:	Keep away from heat.

Section VIII – Exposure Controls/ Personal Protection	
Engineering Controls:	Unless heated, sprayed or agitated to produce mist, natural ventilation should be adequate.
Personal Protection:	
Eye Protection:	Wear chemical safety goggles. Do not wear contact lenses.
Protective Clothing:	Wear rubber gloves and protective clothing if there is prolonged or repeated contact with liquid.
Respiratory Protection:	Respirators are not required for normal ventilation. If a misty condition prevails due to heat spraying or agitation, a mist respirator approved by NIOSH should be worn. If heated to decomposition or in fire situation, utilize a self-contained breathing apparatus.
Other Protective Clothing or Equipment:	Respirators are not required for normal ventilation. If misty condition prevails due to heat, spraying or agitation, a mist respirator approved by NIOSH should be worn.

Section IX – Physical and Chemical Properties

Appearance/Color/Odor:	This material at normal conditions is a light and dark brown liquid, slight ammonia odor.	**Boiling Point:**	Not Available
Melting Point/Range:	Not Available (salt out temp 20°F)	**Boiling Point Range:**	Not Available
Solubility in Water:	100%	**Vapor Pressure (mmHg):**	Not Available
Specific Gravity:	1.272 @ 60°F (H_2O=1)	**Molecular Weight:**	Ammonium Nitrate 80.06 Urea 60.07
Vapor Density:	0.597 (Ammonia)	**% Volatiles:**	Not Applicable
Bulk Density:	S25®=10.59	**Evaporation Rate:**	Not Applicable
pH:	8.3	**Freezing Point:**	Not Applicable
Viscosity:	S25® 32 5.5 Centipoise S25® 28 3.4 Centipoise	**Density:**	Not Applicable

Section X – Stability and Reactivity

Stability:	This product is stable under normal ambient conditions of temperature and pressure.
Hazardous Polymerization:	Will not occur
Conditions to Avoid:	Avoid welding on pipes or tanks which have contained S25® solution until they have been thoroughly washed out with water. Avoid containers, piping, or fittings made of brass, bronze, or other copper containing alloys or galvanized metals.
Materials to Avoid (Incompatibles):	Strong oxidants, (e.g. Chlorine, Hypochlorites). Easily oxidizable materials, including most organics. Water-reactive materials, such as Oleum.
Hazardous Decomposition Products:	Thermal decomposition, particularly of the residue from evaporation, would yield Ammonia, Hydrogen Sulfide, Oxides of Nitrogen and Sulfur.

Section XI – Toxicological Information

Significant Routes of Exposure:	Eyes, Digestive System, Respiratory System, Skin	
Toxicity to Animals:	**Acute Oral Toxicity:**	Oral, OECD Guideline 425 (rat):LD_{50}= >2000 mg/kg. Found non-lethal to rats at 20.2 Mg/L in one-hour exposure. UAN Solution is a blend of Urea, Ammonium Nitrate and water. Following is the individual toxicity information for Ammonium Nitrate and Urea: Ammonium Nitrate: (rat) LD_{50} = 2,800 – 4,500 mg/kg bw Urea: (rat) LD_{50} = 14,300—15,000 mg/kg; (mouse) LD_{50}=11,500 – 13,000 mg/kg; (cattle) LD_{50} = 510 mg/kg.
	Acute Inhalation Toxicity:	Ammonium Nitrate: 4-h: (rat) LC_{50} > 88.8 mg/L.
	Acute Toxicity: Other Routes:	Ammonium Nitrate: Minimum lethal dose (rat) 0.065mg NH_4NO_3-N.
	Acute Dermal Toxicity:	Ammonium Nitrate: (Sprague-Dawley rat, albino):LD_{50} = > 5,000 mg/kg.
	Repeated Dose Toxicity:	Ammonium Nitrate: Inhalation: 2 weeks: NOAEL (rat) 185 mg/m^3. Inhalation: 4 weeks: NOAEL = 1 mg/m^3. Urea: (rat) 12 –month carcinogenicity screening – NOAEL = 2250 mg/kg.
	Eye & Skin Irritation/Corrosion:	Ammonium Nitrate: Eye Irritation/Corrosion: No data available. Skin Irritation/Corrosion: 48 hr (rabbit) : Moderately irritating
	Developmental Toxicity/Teratogenicity:	Ammonium Nitrate: Not teratogenic to rats at 57 mg/kg bw (NOAEL > 57 mg/kg/day).
	Bacterial Genetic Toxicity In-Vitro: Gene Mutation:	Ammonium Nitrate: (*Salmonella typhimurium*:) : Bacterial reverse mutation assay: Negative Urea: (*Salmonella typhimurium*) – Bacterial reverse mutation assay- Negative; Chinese Hamster -chromosomal aberration test – Positive (very high dose); Mouse – Positive (very high dose).

	Non-Bacterial Genetic Toxicity In-Vitro: Chromosomal Aberration:	Urea: Mouse – Bone marrow cytogenetic test – Positive (extremely high dose) :
	Toxicity to Reproduction:	Urea: 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. Developmental Toxicity / Teratogenicity. Not teratogenic.
	Carcinogenicity:	No data available
Other Effects on Humans:	Symptoms may include excessive action of the kidneys and perhaps bowels Ammonium Nitrate: No other effects known. Urea: Despite extensive medical use, no significant side effects on humans have been noted.	
Special Remarks on Chronic Effects on Humans	Ingestion may cause blood disorders (Methemoglobinemia) in infants. (This means loss of efficiency in the red blood cells and is evidenced by blue skin). Ammonium Nitrate: Large amounts, 15 to 25 grams, may have serious or even fatal effects. Small repeated doses may lead to weakness, general depression, headache and mental impairment. Symptoms of over exposure, acute cyanosis, nausea, vertigo, collapse, vomiting/abdominal pain, and tachycardia (rapid heartbeat), coma, convulsion and death can occur. Urea: No other effects known.	
Special Remarks on Other Effects on Humans:	Ammonium Nitrate: Nitrate formation in intestine may cause methemoglobinemia. Urea: May be irritating at > 10% concentration; not a skin sensitizer.	

Section XII – Ecological Information

Ecotoxicity	**EPA Ecological Toxicity rating :**	Aquatic toxicity considerations indicate S25® solution is of a low order of toxicity to the species tested. Since S25® solution is a fertilizer, it may promote eutrophication in waterways. Urea: Non-toxic to aquatic organisms as defined by USEPA.
	Acute Toxicity to Fish:	Ammonium Nitrate: (*Cyprinus carpio L*): 48-h: LC_{50}= 1.15 – 1.72 mg NH_3/L; (Chinook Salmon, rainbow trout, bluegill) 96-h: LC_{50}= 420 – 1360 mg NO_3/L Urea: Acute Toxicity to Fish: 96 -h LC_{50} > 9,100 mg/L
	Chronic Toxicity to Fish:	No data available.
	Acute Toxicity to Aquatic Invertebrates:	Ammonium Nitrate: (*Daphnia magna*) EC_{50} = 555 mg/L. Chronic Toxicity to Aquatic Invertebrates: (*Bullia digitalis*) Up to 7 days: NOEC = 300 mg/L. Urea: (*Daphnia magna*) 24 - h EC_{50} > 10,000 mg/L
	Toxicity to Aquatic Plants:	Urea: (*Scenedesmus quadricauda*) 192 hr cell multiplication inhibition test – TT> 10,000 mg/L.
	Toxicity to Bacteria: (activated sludge):	No data available
	Toxicity to Other Non-Mammalian Terrestrial Species:	Urea: (Pigeon) – Subcutaneous – LDLO = 16,000 mg/kg.
	Toxicity to Terrestrial Plants:	No data available
Environmental Fate:	**Stability in Water:**	Ammonium Nitrate: Stability in water: Stable to hydrolytic degradation. Urea: Stability in water: $T_{1/2}$> 1 year.
	Stability in Soil:	Ammonium Nitrate: Ammonium ions bind to clay particles and leach slowly or not at all to ground water, whereas the nitrate can leach significantly. Monitoring Data: NH_4 background: 0.01 - 10mg N/L. NO_3 background: 0.3 - 100 mg N/L.
	Transport and Distribution:	Ammonium Nitrate: Transport: Worldwide loss after application 0.004 - 1.2 Tg/yr. Distribution: 0.251% to air; 45.4% to water; 54.2% to soil; 0.0757% to sediment. Urea: Transport: 0.16% in air; 99.84% in water
Toxicity:	No known toxicity.	
Degradation Products:	**Biodegradation:**	No degradation products known.
	Photodegradation:	No data available

Section XIII – Disposal Considerations

Product Disposal:	Disposal of S25® fertilizer may be subject to federal, state and local laws and regulations.
General Comments:	Users of this product should review their operations in terms of applicable federal, state and local laws and regulations, then consult with appropriate regulatory agencies before discharging or disposing of waste material.

Section XIV – Transportation Information

	USDOT	**TDG - Canada**
Proper Shipping Name:		
Hazard Class:		
Identification Number:		
Packing Group (Technical Name):		
Labeling / Placarding:		
Authorized Packaging:		
Notes:	S25® (Nitrogen Fertilizer Solution) is classified by the USCG as an NLS under 33 CFR 154 per reference 46 CFR 153 (and Marpol)	
European Transportation:		

Section XV – Regulatory Information

UNITED STATES: SARA Hazard Category:

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:

Fire:	No	**Pressure Generating:**	No	**Reactivity:**	No	**Acute:**	Yes	**Chronic:**	No

40 CFR Part 355 - Extremely Hazardous Substances:	None
40 CFR Part 370 - Hazardous Chemical Reporting:	Applicable
All intentional ingredients listed on the TSCA inventory.	

SARA Title III Information: 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:

Chemical	**CAS NO.**	**Percent by Weight**	**CERCLA RQ (lbs)***	**SARA (1986) Reporting**		
				311	**312**	**313**
S25®			See Note (1)	Yes	Yes	See Note (2)
Aqueous Ammonia	1336-21-6	7.87 - 10.1	NA	NA	NA	Yes
Nitrate Compounds	N/A	28.7 - 36.8	NA	NA	NA	Yes
Total S25®	15978-77-5		NA	NA	NA	Yes

(1) There is no RQ reporting requirements for S25® but local and state requirements may apply. Check local and state laws. S25® solutions contain alkallinity as ammonia as high as .05% by weight (as ammonia). Any spill that exceeds 1,000,000 lbs may exceed the 1000 lb. RQ for Ammonium Hydroxide.
(2) S25® contains ammonium nitarte which is a source of aqueous ammonia and water dissociable nitrate.

CERCLA/Superfund, 40 CFR Parts 117, 302:	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.	
CANADA:	**WHMIS Hazard Symbol and Classification:**	This product is not WHMIS controlled.
	Ingredient Disclosure List:	This product does contain ingredient(s) on this list.
	Environmental Protection:	All intentional ingredients are listed on the DSL (Domestic Substance List).
EINECS#:	(Ammonium Nitrate) 229-347-8 (Urea) 200-315-5	
California: Prop 65:	This is not a chemical known to cause cancer, nor is it listed.	

Section XVI – Other Information

NFPA Hazard Ratings:	**Health:** 1	**Fire:** 0	**Reactivity:** 3	**Special Hazards:** OX
	0 = Insignificant	**1 = Slight**	**2 = Moderate**	**3 = High**	**4 = Extreme**
COMMENTS:	S25® is a registered trademark of PCS Nitrogen, Inc., Northbrook, IL 60062			
Section(s) changed since last revision:	II, XV			

Although the information contained is offered in good faith, SUCH INFORMATION IS EXPRESSLY GIVEN WITHOUT ANY WARRANTY (EXPRESS OR IMPLIED) OR ANY GUARANTEE OF ITS ACCURACY OR SUFFICIENCY and is taken at the user's sole risk. User is solely responsible for determining the suitability of use in each particular situation. PCS Sales specifically DISCLAIMS ANY LIABILITY WHATSOEVER FOR THE USE OF SUCH INFORMATION, including without limitation any recommendation which user may construe and attempt to apply which may infringe or violate valid patents, licenses, and/or copyright.