

## Material Safety Data Sheet

WHMIS (Pictograms)	WHMIS (Classification)	PROTECTIVE CLOTHING
	Not controlled under WHMIS (Canada)	

<b>Section I. Chemical Product and Company Identification</b>			
PRODUCT NAME/ TRADE NAME	20.5-0-0-24 GRANULAR AMMONIUM SULPHATE		
SYNONYM	20.5-0-0-24 Granular Ammonium Sulphate	MSDS NUMBER	14009
CHEMICAL NAME	Ammonium sulphate	REVISION NUMBER	2.0
CHEMICAL FAMILY	Ammonium salt	MSDS DATE	30/03/2006
CHEMICAL FORMULA	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	24 HR EMERGENCY TELEPHONE NUMBER <b>(780) 992-7444</b>	
MATERIAL USE	Agricultural industry: fertilizer		
MANUFACTURER	Sherritt International Corporation PO Box 3388 Fort Saskatchewan, Alberta, Canada T8L 2T3	SUPPLIER	International Raw Materials Ltd. Unit 220 9812-108 St. Fort Saskatchewan, Alberta, Canada T8L 2J2
DSL	On the DSL list		

<b>Section II. Hazardous Ingredients</b>					
NAME	CAS#	EXPOSURE LIMITS (mg/m <sup>3</sup> )			
		TLV-TWA	TLV-STEL	TLV-CEIL	% BY WEIGHT
No regulated components					
TOXICOLOGICAL DATA OF INGREDIENTS	Granular Ammonium Sulphate 20.5-0-0-24 ORAL (LD50): Acute: 3000mg/kg (rat)				

<b>Section III. Hazards Identification</b>	
POTENTIAL ACUTE HEALTH EFFECTS	This product may irritate eyes and skin upon prolonged or repeated contact. Over-exposure by inhalation may cause respiratory tract irritation. Ingestion of this substance may produce irritation of the gastro-intestinal tract, characterized by burning and diarrhea.
POTENTIAL CHRONIC HEALTH EFFECTS	<p><b>Carcinogenic Effects:</b> None by ACGIH, EPA, IARC, NTP, SOHI.</p> <p><b>Mutagenic Effects:</b> None by ACGIH, EPA, IARC, NTP, OSHA.</p> <p><b>Teratogenic Effects:</b> None by ACGIH, EPA, IARC, NTP, OSHA. There is no known effect from chronic exposure to this product.</p>

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<b>Section IV. First Aid Measures</b>	
<b>EYE CONTACT</b>	Causes eye irritation. Check for and remove any contact lenses. IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Obtain medical attention if irritation persists.
<b>SKIN CONTACT</b>	If the chemical touches exposed skin, such as the hands, gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Cover irritated skin with an emollient. If irritation persists, obtain medical attention. Wash contaminated clothing before reusing.
<b>MINOR INHALATION</b>	Repeated or prolonged inhalation of dust may produce irritation of respiratory tract. Loosen tight clothing around victim's neck and waist. Allow victim to rest in a well-ventilated area. Obtain immediate medical attention.
<b>SEVERE INHALATION</b>	Over-exposure by inhalation may cause respiratory irritation. In emergency situations use proper respiratory protection to evacuate the victim to a safe area as soon as possible. Loosen tight clothing around the victim's neck and waist. Allow the victim to rest in a well ventilated area. Oxygen may be administered if breathing is difficult. If the victim is not breathing, perform artificial respiration. Obtain immediate medical attention.
<b>INGESTION</b>	If conscious, have the person drink several glasses of water or milk and induce vomiting. Never give anything by mouth to an unconscious person. Lower the head so that the vomit will not re-enter the mouth and throat. Obtain medical attention.

<b>Section V. Fire and Explosion Data</b>	
<b>THE PRODUCT IS</b>	Non-flammable
<b>AUTO IGNITION TEMPERATURE</b>	Not applicable
<b>FLASH POINT</b>	Not applicable
<b>UPPER AND LOWER FLAMMABILITY LIMITS (% BY VOLUME)</b>	Not applicable
<b>PRODUCTS OF COMBUSTION</b>	Material will not burn. Will undergo thermal decomposition at elevated temperatures to release toxic and combustible gases: ammonia, nitrogen oxides (NO, NO <sub>2</sub> ,...), sulphur oxides (SO <sub>2</sub> , SO <sub>3</sub> ,...)
<b>FIRE HAZARD IN PRESENCE OF VARIOUS SUBSTANCES</b>	Not applicable
<b>EXPLOSION HAZARD IN PRESENCE OF VARIOUS SUBSTANCES</b>	This product is non-explosive. Sensitizer. Increases explosion hazard of ammonium nitrate when mixed together.
<b>FIRE FIGHTING MEDIA AND INSTRUCTIONS</b>	Material will not burn. Undergoes thermal decomposition at elevated temperatures to release toxic and combustible gases Use extinguishing media suitable for surrounding materials.
<b>SPECIAL REMARKS ON FIRE HAZARDS</b>	Non-combustible. Flammable/toxic gases will form at elevated temperatures (>280°C) by thermal decomposition (ammonia, sulphur oxides, nitrogen oxides). A self-contained breathing apparatus should be used to avoid inhalation of toxic fumes.
<b>SPECIAL REMARKS ON EXPLOSION HAZARDS</b>	No additional remarks

<b>Section VI. Accidental Release Measures</b>	
<b>SMALL SPILL</b>	Use appropriate tools to put the spilled solid in a suitable container for intended use or disposal.
<b>LARGE SPILL</b>	Prevent additional discharge of material if possible to do so without hazard. Prevent spills from entering sewers, watercourses, wells, etc. Product will promote algae growth and may degrade water quality and taste. Notify downstream water users. Sulphate in potable drinking water should be maintained below 500mg/L. Will dissolve and disperse in water. Reclaiming material may not be viable. Recover and place material in suitable containers for recycle, reuse, or disposal. Ensure disposal is in compliance with government requirements and local regulations.

<b>Section VII. Handling and Storage</b>	
<b>PRECAUTIONS</b>	Avoid contact with skin and eyes. After handling, always wash hands thoroughly with soap and water. Do not breathe dust. Keep away from food, drink and animal feed. Avoid contact with incompatible substances. Keep out of reach of children.
<b>STORAGE</b>	Store in a dry, cool and well ventilated area.

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<b>Section VIII. Exposure Controls/Personal Protection</b>	
<b>ENGINEERING CONTROLS</b>	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, use ventilation to keep exposure to airborne contaminants below the exposure limit.
<b>PERSONAL PROTECTION</b>	The selection of personal protective equipment varies, depending upon conditions of use. Where skin and eye contact may occur as a result of brief periodic exposures, wear long sleeved clothing, coveralls, chemical resistant gloves, and safety glasses with side shields.
<b>PERSONAL PROTECTION IN CASE OF LARGE RELEASE</b>	Wear a NIOSH approved dust respirator if engineering, work practice or other control measures are not adequate to prevent over-exposure. Where skin and eye contact may occur as a result of prolonged or repeated exposures, wear long sleeved clothing, coveralls, chemical resistant gloves, and safety glasses with side shields.
<b>EXPOSURE LIMITS</b>	There is no established TLV, however the ACGIH recommends that airborne concentrations be kept below 3mg/m3 (respirable particulate) and below 10mg/m3 (inhalable particulate) until such time as a TLV is set. Reference ACGIH 2005 – Particulates Not Otherwise Classified. Consult authorities for local acceptable exposure limits.

<b>Section IX. Physical and Chemical Properties</b>			
<b>PHYSICAL STATE AND APPEARANCE</b>	Solid (crystalline granules)		
<b>COLOR</b>	Off-white	<b>TASTE</b>	Acrid (slight)
<b>IONICITY (IN WATER)</b>	Not available	<b>SOLUBILITY</b>	Easily soluble in hot water, soluble in cold water
<b>MOLECULAR WEIGHT</b>	132.14	<b>CRITICAL TEMPERATURE</b>	Not available
<b>ODOUR</b>	Odourless	<b>BOILING POINT</b>	Decomposes
<b>ODOUR THRESHOLD</b>	17 ppm (ammonia)	<b>MELTING POINT</b>	235°C (445°F)
<b>VAPOUR PRESSURE</b>	Not applicable	<b>PH (10% SOLUTION/WATER)</b>	4
<b>VAPOUR DENSITY</b>	Not applicable	<b>SPECIFIC GRAVITY (g/cc)</b>	1.769 (water=1)
<b>DISPERSION PROPERTIES</b>	See solubility in water	<b>WATER/OIL DIST. COEFFICIENT</b>	Not available
<b>BULK DENSITY (KG/M3)</b>		<b>VOLATILITY</b>	Not applicable

<b>Section X. Stability and Reactivity Data</b>	
<b>STABILITY</b>	Product is stable.
<b>INSTABILITY TEMPERATURE</b>	Not applicable
<b>CONDITIONS OF INSTABILITY</b>	No additional remark
<b>INCOMPATIBILITY WITH VARIOUS SUBSTANCES</b>	Slightly reactive to reactive with oxidizing agents. Very slightly to slightly reactive with metals, alkalis, moisture. Non-reactive with reducing agents, combustible materials, organic materials, acids.
<b>CORROSIVITY</b>	Highly corrosive to aluminum, zinc, copper. Slightly corrosive to steel and 304 stainless steel. Non-corrosive to 316 stainless steel.
<b>SPECIAL REMARKS ON REACTIVITY</b>	Avoid contact with moisture. Slow hydrolysis will produce corrosive acids.
<b>SPECIAL REMARKS ON CORROSIVITY</b>	Incompatible with copper alloys. Corrosive to brass. Corrosive to ferrous metals and alloys.

<b>Section XI. Toxicological Information</b>	
<b>ROUTES OF ENTRY</b>	Ingestion, inhalation
<b>TOXICITY TO ANIMALS</b>	Acute oral toxicity (LD50): 3000mg/kg (rat)
<b>SPECIAL REMARKS ON TOXICITY</b>	Very low toxicity for humans or animals. The product itself and its products of degradation are not toxic under normal conditions of use. Will release ammonium ions. Ammonia is a toxic hazard to fish.
<b>OTHER EFFECTS ON HUMANS</b>	No additional remarks
<b>SPECIAL REMARKS ON CHRONIC EFFECTS ON HUMANS</b>	No additional remarks.
<b>SPECIAL REMARKS ON OTHER EFFECTS ON HUMANS</b>	ACGIH TLV is based on "Particulates Not Otherwise Classified".

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<b>Section XII. Ecological Information</b>	
<b>ECOTOXICITY</b>	Very low toxicity for humans or animals. The product itself and its products of degradation are not toxic under normal conditions of use. Will release ammonium ions. Ammonia is a toxic hazard to fish.
<b>BOD AND COD</b>	Not available
<b>PRODUCTS OF BIODEGRADATION</b>	Nitrogen oxides (NO, NO2...), sulphur oxides (SO2, SO3,...)
<b>TOXICITY OF PRODUCTS OF BIODEGRADATION</b>	The product itself and its products of degradation are not harmful under normal conditions of use. Avoid spills or release to watercourses
<b>SPECIAL REMARKS ON PRODUCTS OF BIODEGRADATION</b>	Product will promote algae growth and may degrade water quality and taste. Notify downstream water users. Sulphate in potable drinking water should be maintained below 500mg/L. Will disperse in water. Reclaiming material may not be viable.

<b>Section XIII. Disposal Considerations</b>	
<b>WASTE DISPOSAL OR RECYCLING</b>	Recycle to process, if possible. Ensure disposal is in compliance with government requirements and local regulations. Consult your local or regional authorities.

<b>Section XIV. Transport Information</b>	
<b>TDG CLASSIFICATION</b>	Not controlled under TDG (Canada)
<b>PIN</b>	Not applicable
<b>SPECIAL PROVISIONS FOR TRANSPORT</b>	Not applicable
<b>TDG (PICTOGRAMS)</b>	

<b>Section XV. Other Regulatory Information and Pictograms</b>	
<b>OTHER REGULATIONS</b>	CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): This product is on the Domestic Substances List, and is acceptable for use under the provisions of CEPA
<b>OTHER CLASSIFICATIONS</b>	HCS (USA): not controlled under the HCS DSCL (EEC): not controlled under the DSCL
<b>NATIONAL FIRE PROTECTION ASSOC. (USA)</b>	Not rated by NFPA
<b>DOT (USA)</b>	
<b>DSCL (EUROPE)</b>	
<b>ADR (EUROPE)</b>	

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<b>Section XVI. Other Information</b>	
<b>REFERENCES</b>	<ul style="list-style-type: none"> <li>• 29 CFR Part 1910, rev. July 1, 1993</li> <li>• 40 CFR Parts 300-399, rev. July 1, 1993</li> <li>• 49 CFR Parts 1-199, rev. October 1, 1993</li> <li>• American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Chemical Substances and Physical Agents, 2005</li> <li>• Corrosion Data Survey, 6<sup>th</sup> Ed., 1985, National Association of Corrosive Engineers</li> <li>• Fire Protection Guide to Hazardous Materials, (NFPA49, 325M, 491M, and 704), National Fire Protection Association, 10<sup>th</sup> Ed. 1991</li> <li>• TOMES Plus®, Vol. 21, Micromedex Inc.</li> <li>• Canadian Centre for Occupational Health and Safety CC: Info Disk</li> </ul>
<b>OTHER SPECIAL CONSIDERATIONS</b>	<p>CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): This product is on the Domestic Substances List, and acceptable for use under the provisions of CEPA.</p> <p>TSCA (Toxic Substance Control Act): This product is listed on the TSCA inventory.</p> <p>CERCLA/SUPERFIND, 40 CFR 117, 302: This product contains no Reportable Quantity (RQ) Substances.</p> <p>This product is not considered as a priority pollutant as regulated under the Clean Water Act.</p>
<p><b>VALIDATED BY ENVIRONMENT, HEALTH &amp; SAFETY DEPARTMENT ON 30/03/2006</b>      PRINTED 30/03/2006</p>	
<p><b>FOR FURTHER SAFETY, HEALTH, OR ENVIRONMENTAL INFORMATION ON THIS PRODUCT, CONTACT:</b></p>	<p>Sherritt International Corp. Environmental, Health and Safety Department Telephone (780) 992-7016 or fax (780) 992-7514</p>
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