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**MATERIAL SAFETY DATA SHEET  
FOR ELEMENTAL SULFUR & AMMONIUM SULFATE FERTILIZER BLENDS**

**A. GENERAL INFORMATION**

April 2007

Trade Name (Common Name of Synonym) – **Granular Ammonium Sulfate 20.5-0-0-24** in Fertilizer Blends: 5-0-0-70, 9-0-0-60, 11-0-0-53 & 12-0-0-50

Formula: **KR 5-0-0-70**      25% Granular Ammonium Sulfate  
70% NutraSul 90% (see MSDS for Keg River Sulfur Fertilizer)

Formula: **KR 9-0-0-60**      44% Granular Ammonium Sulfate  
56% NutraSul 90% (see MSDS for Keg River Sulfur Fertilizer)

Formula: **KR 11-0-0-53**      54% Granular Ammonium Sulfate  
46% NutraSul 90% (see MSDS for Keg River Sulfur Fertilizer)

Formula: **KR 12-0-0-50**      59% Granular Ammonium Sulfate  
41% NutraSul 90% (see MSDS for Keg River Sulfur Fertilizer)

Formula:  $(\text{NH}_4)_2\text{SO}_4 / \text{S}$       Chemical Family: Ammonium Salt /Sulfur

**B. TRANSPORTATION REQUIREMENTS**

TDG Classification: Not controlled under TDG (Canada)

PIN: Not applicable (PIN and PG)

Special Provisions for Transport: Not applicable

**OTHER REGULATIONS:**

- o CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): This product is on the Domestic Substances List (DSL) and is acceptable for use under the provisions of CEPA.

**OTHER CLASSIFICATIONS:**

- o HCS (U.S.A) Not controlled under the HCS (United States).
- o DSCL (EEC) Not controlled under DSCL (Europe).

## C. FIRST AID MEASURES

**Eye Contact:** 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.

**Minor Skin Contact:** 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.

**Extensive Skin Contact:** No additional information.

**Minor Inhalation:** Repeated or prolonged inhalation of dust may lead to respiratory irritation. Loosen tight clothing around the individual's neck and waist. Allow the person to rest in a well-ventilated area. Obtain medical attention if irritation persists.

**Severe Inhalation:** 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.

**Slight Ingestion:** If victim is unconscious, never induce vomiting or give anything by mouth. If conscious, have person drink several glasses of water or milk and INDUCE VOMITING. Obtain medical attention.

**Extensive Ingestion:** No additional information.

## D. HAZARDS INFORMATION

**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:** There is no known effect from chronic exposure to this product.

- o Carcinogenic Effects: NONE by ACGIH, EPA, IARC, NTP, OSHA.
- o Mutagenic Effects: NONE by ACGIH, EPA, IARC, NTP, OSHA.
- o Teratogenic Effects: NONE by ACGIH, EPA, IARC, NTP, OSHA.

## E. TOXICOLOGICAL INFORMATION

**Routes of Entry:** Ingestion and inhalation.

**Toxicological Data on Ingredients:** Granular Ammonium Sulfate, 20.5-0-0-24:

o ORAL (LD50): Acute: 3000 mg/kg (Rat)

**Special Remarks on Toxicity to Animals:** 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.

**Other Effects on Humans:** No additional remarks.

**Special Remarks on Chronic Effects on Humans:** No additional remarks.

**Special Remarks on Other Effects on Humans:** ACGIH TLV is based on "Particulates Not Otherwise Classified".

## F. FIRE AND EXPLOSION DATA

**The product is:** Non-flammable.

**Auto-Ignition Temperature:** Not applicable.

**Flash Point:** Not applicable.

**Flammability Limits:** Not applicable.

**Products of Combustion:** Material will not burn. Undergoes thermal decomposition at elevated temperatures to release toxic and combustible gases: Ammonia, Nitrogen Oxides (NO, NO<sub>2</sub>) Sulfur oxides (SO<sub>2</sub>, SO<sub>3</sub>)

**Fire Hazard in Presence of Various Substances:** Not applicable.

**Explosion Hazard in Presence of Various Substances:** This product is non-explosive. Sensitizer: increases explosion hazard of ammonium nitrate when mixed together.

**Fire Fighting Media and Instructions:** Material will not burn. Undergoes thermal decomposition at elevated temperatures to release toxic and combustible gases. Use extinguishing media suitable for surrounding materials.

**Special Remarks on Fire Hazards:** Non-combustible. Flammable/toxic gases will form at elevated temperatures (>280 °C) by thermal decomposition (Ammonia, Sulfur Oxides, Nitrogen Oxides). A self-contained breathing apparatus should be used to avoid inhalation of toxic fumes.

**Special Remarks on Explosion Hazards:** No additional remarks.

## G. PRECAUTIONS/PROCEDURES

### Accidental Release Measures:

- o **Small Spill:** Use appropriate tools to put the spilled solid in a suitable container for intended use or disposal.
- o **Large Spill:** 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. Sulfate 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.

### Handling and Storage

- o **Precautions:** 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.
- o **Storage:** Store in a dry, cool and well-ventilated area.

### Exposure Controls/Personal Protection

- o **Engineering Controls:** 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.
- o **Personal Protection:** 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, leather gloves, and safety glasses with side shields.
- o **Personal Protection in case of Large Release:** Wear a NIOSH approved dust respirator if engineering, work practice or other control measures are not adequate to prevent overexposure. Where skin and eye contact may occur as a result of prolonged or repeated exposures, wear long sleeved clothing, coveralls, leather gloves, and safety glasses with side shields.

**Exposure Limits:** TLV-TWA 10 mg/m<sup>3</sup> as inhaled dust Ref: ACGIH 1994 Particulates Not Otherwise Classified (nuisance dust). Consult authorities for local acceptable exposure limits.

## H. PERSONAL PROTECTIVE EQUIPMENT

**Respiratory Protection:** Dust-type respirators shall be provided for dusty conditions. Breathing apparatus must be available for emergency use in case of fire.

**Eyes and Face:** Dust-tight goggles with plastic or rubber frames may be helpful in dusty conditions.

**Hands, Arms and Body:** Workers whose skin may be sensitive to Sulfur dust should button collars, roll sleeves down, and gather trousers at the ankle. Gloves may be helpful.

**Other Clothing and Equipment:** Hardhat and safety shoes. Fire-retardant fabric is recommended. Sulfur impregnated clothing should not be worn.

## **I. PHYSICAL AND CHEMICAL PROPERTIES**

**Physical State and Appearance:** Solid (Crystalline granules)

**Molecular Weight:** 132.14

**Color:** Off-white

**pH** (10% Soln./water): 4

**Odor:** Odorless

**Boiling Point:** Decomposes

**Odor Threshold:** 17 PPM (Ammonia)

**Melting Point:** 235 °C (455 °F)

**Taste:** Acrid (Slight)

**Critical Temperature:** Not available.

**Ionicity in water:** Not available

**Specific Gravity g/cc:** 0.89 (Water = 1)

**Solubility:** Easily soluble in hot water. Soluble in cold water.

**Vapor Pressure:** Not applicable.

**Water/Oil Distribution Coefficient:** Not available.

**Vapor Density:** Not applicable.

## **J. STABILITY AND REACTIVITY DATA**

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Condition of Instability:** No additional remark.

**Incompatibility with Various Substances:** 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.

**Corrosivity:** Highly corrosive in presence of aluminum, zinc, and copper. Slightly corrosive to steel and 304 stainless steel. Non-corrosive to 316 stainless steel.

**Special Remarks on Reactivity:** Avoid contact with moisture. Slow hydrolysis will produce corrosive acids.

**Special Remarks on Corrosiveness:** Incompatible with copper alloys. Corrosive to brass. Corrosive to ferrous metals and alloys.

## K. ECOLOGICAL INFORMATION

**Ecotoxicity:** Very low toxicity for humans or animals. This 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.

**BOD and COD:** Not available.

**Products of Biodegradation:** Nitrogen oxides (NO, NO<sub>2</sub>). Sulfur oxides (SO<sub>2</sub>, SO<sub>3</sub>).

**Toxicity of the Products of Biodegradation:** The product itself and its products of degradation are not harmful under normal conditions of use. Avoid spills or releases to watercourses.

**Special Remarks on the Products of Biodegradation:** Product will promote algae growth and may degrade water quality and taste. Notify downstream water users. Sulfate in potable drinking water should be maintained below 500mg/L. Will dissolve and disperse in water. Reclaiming material may not be viable.

## NOTICE:

The data and information presented herein are based upon tests, research and reports, which are considered by us to be reliable, and believed to be accurate. The data and information are presented without warranty, guarantee or liability on our part, and are presented to the customer for his own consideration, investigation and verification.