



Graver Technologies

MATERIAL SAFETY DATA SHEET

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| HAZARD RATING | | |
|---------------|-----|-----------------------------|
| Toxicity | 1 | 4=EXTREME |
| Fire | 1 | 3=HIGH |
| Reactivity | 0 | 2=MODERATE |
| Special | N/A | 1=SLIGHT 0=INSIGNIFICANT |

PRODUCT IDENTIFICATION

Product Name: GRAVEX® GR 3-15
Ionic Form: Cation/Anion exchange resins (Hydrogen/Hydroxide forms)
MSDS Code: MS-GR315
Effective Date: 3/6/03

1. COMPONENT INFORMATION

| <u>No.</u> | <u>CAS No.</u> | <u>AMT.(%)</u> |
|--|----------------|----------------|
| 1) Sulfonated copolymer of styrene and divinylbenzene in the hydrogen form. | 069011-20-7 | 25-40 |
| 2) Trimethylamine functionalized, chlormethylated copolymer of styrene and divinylbenzene in the hydroxide form. | 069011-18-3 | 10-15 |
| 3) Water | 007732-18-5 | 50-65 |

2. PHYSICAL DATA

MELTING POINT: Not applicable
BOILING POINT: Not applicable
VAPOR PRESSURE (mm Hg): 17mm Hg @20°C/68°F
VAPOR DENSITY (Air=1): Not applicable
SOLUBILITY IN WATER: Insoluble

2. PHYSICAL DATA (continued)

SPECIFIC GRAVITY (water=1): 1.1 - 1.4
EVAPORATION RATE (Butyl acetate=1): < 1 Water
PERCENT VOLATILITY: 50-65% Water
APPEARANCE: White to dark amber solid (beads).
ODOR: Slight amine odor

3. EXPOSURE LIMIT INFORMATION

| <u>COMPONENT NO.</u> | <u>OSHA</u> | | <u>ACGIH</u> | |
|----------------------|-------------|-------------|--------------|-------------|
| | <u>TWA</u> | <u>STEL</u> | <u>TLV</u> | <u>STEL</u> |
| 1 | None | None | None | None |
| 2 | None | None | None | None |
| 3 | None | None | None | None |

4. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: Not Applicable

METHOD USED: Not Applicable

AUTO-IGNITION TEMPERATURE: 500°C/932°F. Product is not combustible until moisture is removed, then resin starts to burn in flame at 230°C/446°F.

LOWER EXPLOSIVE LIMIT: Not Applicable

UPPER EXPLOSIVE LIMIT: Not Applicable

FIRE FIGHTING EQUIPMENT: Wear positive pressure self-contained breathing apparatus.

EXTINGUISHING AGENTS: Use the following extinguishing media when fighting fires involving this material: 1) carbon dioxide 2) dry chemical 3) water spray

5. REACTIVITY DATA

STABILITY: Stable under normal handling and storage conditions.
(see incompatibility statement).

5. REACTIVITY DATA (continued)

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) WARNING:

Oxidizing agents such as nitric acid attack organic ion exchange resin under certain conditions and could result in a slightly degraded resin up to an explosive reaction. Before using strong oxidizing agents, consult sources knowledgeable in handling such materials.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may yield the following: Alkylbenzenes, vinylbenzenes, naphthalene, benzaldehydes, phenol, sulfur oxides, organic sulfates, organic amines, carbon dioxide, hydrochloric acid, carbon monoxide, nitrogen oxides, ammonia, chlorine, methyl chloride, water

HAZARDOUS POLYMERIZATION: Product will not undergo polymerization.

6. ENVIRONMENTAL AND DISPOSAL INFORMATION

ACTION TO TAKE FOR SPILLS/LEAKS: Sweep up. Caution: May be slippery.

DISPOSAL METHOD: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND OR INTO ANY BODY OF WATER. Bury resin in licensed landfill, or burn in approved incinerator according to local, state, and federal regulations. For resin contaminated with hazardous material, dispose of mixture as hazardous material according to local, state, and federal regulations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. GRAVER TECHNOLOGIES, INC. HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL.

7. HEALTH HAZARD DATA

EYE: May cause severe eye irritation. May cause moderate corneal injury. Effects are likely to heal. Flush with water for a minimum of 15 minutes. Consult a physician if irritation persists.

SKIN CONTACT: Prolonged or repeated exposure may cause skin irritation. If irritation occurs, wash affected area with water. Consult a physician if irritation persists.

SKIN ABSORPTION: Skin absorption is unlikely due to physical properties.

INGESTION: Single dose oral LD50 has not been determined. Single dose oral toxicity is believed to be low. No hazards anticipated from ingestion incidental to industrial exposure. If swallowed, call a physician.

7. HEALTH HAZARD DATA (continued)

INHALATION: Vapors are unlikely due to physical properties.

SYSTEM & OTHER EFFECTS: No specific data available, however, repeated exposures are not anticipated to cause any significant adverse effects.

8. PERSONAL PROTECTION MEASURES

EXPOSURE GUIDELINES: None established.

VENTILATION: Good general ventilation should be sufficient.

RESPIRATORY PROTECTION: A respiratory protection program meeting **OSHA 1910.134** and **ANSI Z88.2** requirements must be followed whenever workplace conditions warrant a respirator's use. None required under normal operating conditions.

EYE PROTECTION: Use safety glasses **ANSI Z87.1** or approved equivalent.

SKIN & HAND PROTECTION: Avoid skin contact. When using this substance, use skin protection (clean body-covering clothing). Cotton, latex, rubber or canvas gloves for the hands.

OTHER PROTECTIVE EQUIPMENT: Facilities storing or utilizing this material should be equipped with an eyewash facility.

9. STORAGE AND HANDLING INFORMATION

STORAGE CONDITIONS: The minimum recommended storage temperature for this material is 3°C/38°F. The maximum recommended storage temperature for this material is 60°C/140°F. Avoid repeated freezing; beads may fracture.

9. STORAGE AND HANDLING INFORMATION (continued)

HANDLING PROCEDURES: The maximum recommended operating temperature for this material is 60°C/140°F. **NOTE:** This product as supplied is a whole bead ion exchange resin and may produce slight eye irritation. However, the ground form of this resin should be treated as a severe eye irritant. Worker exposure to ground resins can be controlled with local exhaust ventilation at the point of dust generation, or the use of suitable personal protective equipment (dust/mist air-purifying respirator and safety goggles). Properly designed equipment is vital if these ion exchange resins are to be used in conjunction with strong oxidizing agents such as nitric acid to prevent a rapid build up of pressure and possible explosion. Consult a source knowledgeable in the handling of these materials before proceeding. **Do not pack column with dry ion exchange resins.** Dry beads expand when wetted; this expansion can cause glass columns to shatter.

10. REGULATORY INFORMATION

WORKPLACE CLASSIFICATIONS: This product is considered non-hazardous under OSHA Hazard Communication Standard (29CFR 1910.1200).

This product is not a 'Controlled Product' under the Canadian Workplace Hazardous Materials Information System (WHMIS).

TRANSPORTATION CLASSIFICATIONS: US DOT Hazard Class - Non-regulated

EMERGENCY PLANNING & COMMUNITY RIGHT-TO-KNOW (SARA TITLE 3):

Section 311/312 Categorizations (40CFR 370) This product is not a hazardous chemical under 29CFR 1910.1200, and therefore is not covered by Title III of SARA.

Section 313 Information (40CFR 372) This product does not contain a chemical which is listed in Section 313 above de minimis concentrations.

EMERGENCY PLANNING & COMMUNITY RIGHT-TO-KNOW (SARA TITLE 3):

CERCLA Information (40CFR 302.4) Releases of this material to air, land, or water are not reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to state and local emergency planning committee under the Superfund Amendments and Reauthorization Act (SARA Title III Section 304).

RCRA Information When a decision is made to discard this material as supplied, it does not meet RCRA's characteristic definition of ignitability, corrosivity, or reactivity, and is not listed in 40CFR 261.33. The toxicity characteristic (TC), however, has not been evaluated by the Toxicity Characteristic Leaching Procedure (TCLP).

Chemical Control Law Status All components of this product are listed or are excluded from listing on the U.S. Toxic Substance Control Act (TSCA) Chemical Substance Inventory.

GRAVEX® is a trademark of Graver Technologies

Abbreviations:

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

TLV - Threshold limit Value

TWA - Time Weighted Average

STEL - Short Term Exposure Limit

The above information contained herein relates to the specific material identified. Graver Technologies believes that such information is accurate and reliable as of the date of this material safety data sheet, but no representation, guarantee or warranty, express or implied, is made as to the accuracy, reliability, or completeness of the information. Graver Technologies urges persons receiving this information to make their own determination as to the information's suitability and completeness for their particular application. Consult Graver Technologies for further information.