

*“Save  
Your  
Breath  
With*

**INST**®  
MODERN SAFETY TECHNIQUES

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11388 Breininger Rd. \* P.O. Box 87 \* Hicksville, OH 43526

Phone: (800) 542-6646 \* (888) "MOD-SAFE" \* (419) 542-6645

Fax: (419) 542-6475 \* Email Address: [modsafe@bright.net](mailto:modsafe@bright.net)

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**SERVICE INSTRUCTIONS  
MODEL RP050BA, RP050BMST & ALL RP050B()-S1 SERIES  
RESPIRATORY PROTECTOR MODELS**

**NOTE: USE REPLACEMENT CARTRIDGE KIT NO. FX050 FOR ABOVE MODELS**

09/26/95

# SERVICE INSTRUCTIONS

\*\*\*\*\*  
**WARNING:** Always turn off air supply and bleed air pressure before disassembling unit or  
**SERIOUS INJURY COULD RESULT.**  
\*\*\*\*\*

MST, Inc. recommends replacing all three (3) filter cartridges after one (1) month of use unless conditions warrant more or less frequent replacement. To refill or replace the filter cartridges in the RESPIRATORY PROTECTOR® follow these steps:

## 1. PREFILTER FIRST/SECOND DUAL STAGE ELEMENT REPLACEMENT

- A) First unlock tube locking collar and then pull Drain Tube (1) down through case. Then unscrew Prefilter Bowl Assembly (2), clean in mild soap and water and blow dry with low pressure air.
- B) Remove Dual Stage Element (3) by unscrewing End Cap Retaining Nut (4).
- C) Inspect the Prefilter Manifold (5) for dirt/contaminates and clean as required. Inspect "O"-Ring (6) for cuts, etc. and replace if required.
- D) Install new Dual Stage Element and Tighten End Cap Retaining Nut. Be sure Element is seated squarely on Manifold boss and End Cap.
- E) Apply light film of petroleum jelly on Bowl's beveled edge to provide a good seal between Bowl and "O"-Ring. HAND TIGHTEN ONLY.
- F) Guide Drain Tube back through hole in case bottom and lock into tube locking collar.
- G) Dispose of used Dual Stage Element according to local, state and federal regulations.

## 2. THIRD/FOURTH STAGE CARTRIDGE REPLACEMENT

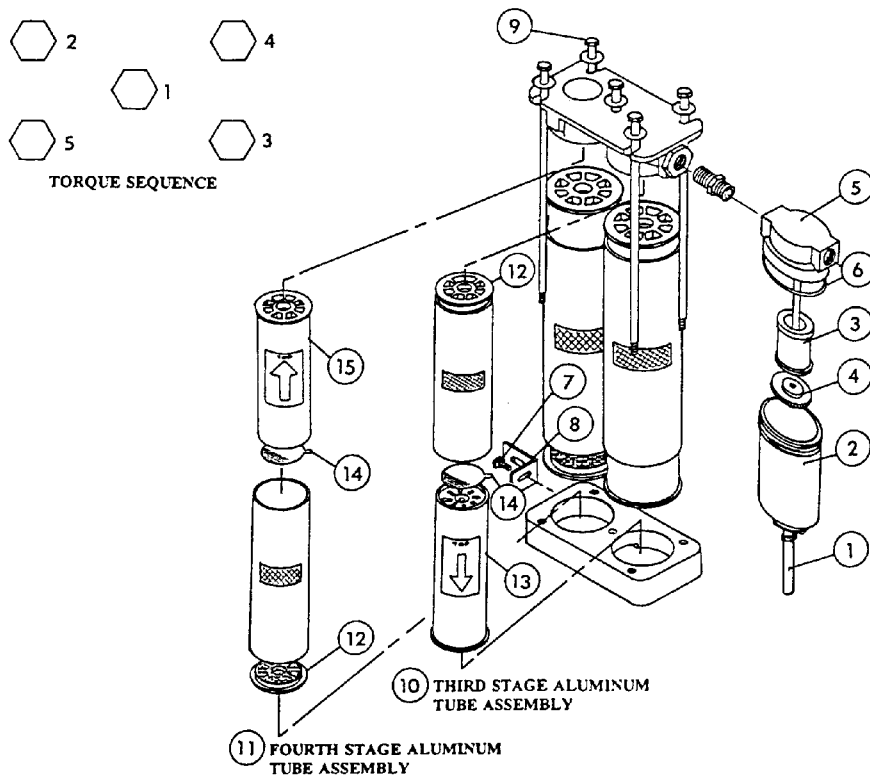
- A) Loosen Bracket Bolt (7) from Bracket (8), (do not remove).
- B) Loosen the five Manifold Bolts (9) and remove the front two Bolts. Now slide out the Third (10) and Fourth (11) Stage Aluminum Tube Assemblies.
- C) Remove the End Cap (12) from Third Stage Aluminum Tube Assembly and slide old Third Stage Filter Cartridge (13) out of aluminum tube. Clean aluminum tube in mild soap and water, dry and install new Third Stage filter cartridge. Be sure the Flow Direction Arrow on Third Stage Filter Cartridge is pointing down. Remove End Sealing Label (14) and install new End Cap.
- D) Follow same procedure for the Fourth Stage Filter Cartridge (15) replacement as in step (C). Be sure the Flow Direction Arrow on Fourth Stage Filter Cartridge is pointing up. Also be sure to remove End Sealing Label before installing new End Cap.
- E) Now slide the Third and Fourth Stage Aluminum Tube Assemblies back in place and install the front two Manifold Bolts.
- F) Tighten Manifold Bolts in sequence from center outward to 100 inch-pounds (1.15 Kg-M). Repeat sequence and re-torque bolts to 250 inch-pounds (2.88 kg-M).
- G) Tighten Bracket Bolt (7) against Bracket (8).
- H) Dispose of used cartridges according to local, state and federal regulations.

3. **FINAL CHECK AND CALIBRATION**

- A) Pressurize system and check for leaks.
- B) Flush system with compressed air for five (5) minutes.
- C) Calibrate Carbon Monoxide Monitor as outlined in Monitor Manual, if supplied.

MST, Inc. shall not be liable for any injury, loss, or damage, direct or consequential, arising out of the use of or the inability to use this product, beyond the replacement of defective materials or workmanship. Users of supplied air respirators should evaluate their own particular application and perform their own test for air quality to determine the suitability for use of this product.

For further information or questions about service or maintenance care of this unit, contact your local distributor or MST, Inc. (419) 542-6645.



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## MATERIAL SAFETY DATA SHEET

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Revision Date: 2/17/95

Revision No.: 2

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Nuchar WV-B Activated Carbon  
Chemical Name: Activated Carbon  
Chemical Family: Carbon  
Formula: C  
CAS Registry Number: 7440-44-0

Manufacturer: **WESTVACO CORPORATION**  
Carbon Department  
Washington Street  
Covington, VA 24426

Telephone Numbers:  
Transportation Emergencies:  
CHEMTREC (U.S.A.): (800) 424-9300 (24 hours)  
CHEMTREC (International): (202) 483-7616 (24 hours, call collect)  
Product Information: (703) 962-1121 (EST, 8:00 a.m.-5:00 p.m., M-F)

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Components</u>	<u>CAS #</u>	<u>% by Wt.</u>	<u>Hazardous*</u>
Carbon	7440-44-0	> 95	Yes
Phosphoric Acid	7664-38-2	≤ 5	Yes

\* By OSHA definition, 29 CFR 1910.1200 (See Section 3 for Hazards Identification, Section 8 for Exposure Guideline, and Section 16 for other information).

### 3. HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

This product is an odorless black granular material. Never enter a confined space containing activated carbon since it will adsorb oxygen and asphyxiation may result. Prolonged or repeated exposure to dust may cause eye and respiratory tract irritation.

## NUCHAR WV-B ACTIVATED CARBON

Page 2 of 6

Revision Date: 2/17/95  
Revision No.: 2**3. HAZARDS IDENTIFICATION (Continued)****Potential Health Effects:**

- |  |  |
|--|--|
| Routes of Entry:                           | · Inhalation, ingestion, eye and skin contact                          |
| Medical Conditions Aggravated by Exposure: | · None documented  |
| Eyes:                                      | · Irritant. Not corrosive  |
| Skin:                                      | · Is not a primary skin irritant, skin sensitizing, or corrosive agent |
| Ingestion:                                 | · LD <sub>50</sub> (rats) indicates that it is not toxic.              |
| Inhalation:                                | · Possible irritation of upper respiratory tract                       |
| Target Organ Effects:                      | · Eye irritant   |
| Chronic Effects (Cancer Information):      | · NTP: Not listed  |
|  | · IARC: Not listed   |
|  | · OSHA: Not regulated  |

**4. FIRST AID MEASURES**

- |             |  |
|-------------|--|
| Eyes:       | · Promptly flush eyes with running water for 15 minutes, including water under eyelids. Consult a physician if irritation develops.                        |
| Skin:       | · Wash affected area well with soap and water. Get medical help if irritation develops.  |
| Ingestion:  | · Give 2-3 glasses of milk or water to dilute. Contact physician or poison control center promptly for instructions. If vomiting occurs, give more fluids. |
| Inhalation: | · Remove to fresh air. Get medical help if irritation develops.  |

**5. FIRE FIGHTING MEASURES**

- |   |   |
|---|---|
| Flammable Properties:                     |   |
| Hazardous Combustion Products:            | · Material will burn in a fire, releasing combustion products of carbon monoxide, carbon dioxide, water, and phosphorus pentoxide.  |
| General Hazards:                          | · Other materials adsorbed onto the carbon may also be released.  |
| Extinguishing Media:                      | · Water fog, fire fighting foam, dry chemical, or carbon dioxide  |
| Fire Fighting Instructions:               | · Remove all carbon from the building. Fire fighters should wear full protective gear and use self-contained breathing apparatus with a full facepiece. (MSHA/NIOSH approved or equivalent) |
| Other Information:                        |   |
| Flashpoint:                               | · Not applicable  |
| ASTM Ignition Temperature, D4366:         | · 420-450°C   |
| Flammability Limits in Air (% by volume): | · LFL: Not applicable   |
|   | · UFL: Not applicable   |

**NUCHAR WV-B ACTIVATED CARBON**

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**6. ACCIDENTAL RELEASE (SPILL MEASURES)**

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- Notify safety personnel for large spills. Avoid generation of airborne dust. Scoop up solid for recovery or disposal. Those involved in clean-up need protection against skin and eye contact and inhalation of dust or mist.

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**7. HANDLING AND STORAGE**

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- Handling:
- Follow good handling and housekeeping procedures, avoiding spills, accumulation of dust, and generation of airborne dust.
  - Avoid prolonged contact with skin and eyes.
  - Avoid inhalation of dust.
  - Wear rubber gloves and safety glasses or goggles.
  - Use with adequate ventilation.
  - Wash thoroughly after handling.
- Storage:
- Store in a sealed container in a clean, dry, well-ventilated area away from strong oxidizers, ignition sources, combustible materials, and heat.

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**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

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- Engineering Controls:
- Use general and local exhaust ventilation for nuisance dust and to prevent irritating concentrations of dust or mist in the workplace. Ventilation requirements will depend on the process and should be adequate to avoid exceeding the recommended TLV's.
- Eye Protection:
- Wear safety glasses with side shields, safety goggles, or a face shield, especially in dusty conditions. Provide an eye wash station nearby.
- Skin Protection:
- Wear work or disposable gloves and long sleeve shirts to prevent long term exposure.
- Respiratory Protection:
- Wear a NIOSH approved dust mask to limit exposure. An approved self-contained breathing apparatus with full facepiece is recommended for nonroutine or emergency conditions for inhalation protection.
- Other Protective Equipment:
- Wear clothing to limit skin contact, i.e., aprons, coveralls, long sleeve shirts, etc.
- Exposure Guidelines
- OSHA and ACGIH suggest that exposure to any dust or mist be kept below the level of a nuisance particulate. For particulates not otherwise regulated, the OSHA PEL for the respirable fraction is 5 mg/m<sup>3</sup> and for total dust the OSHA PEL is 15 mg/m<sup>3</sup>. The ACGIH threshold limit value for particulates not otherwise classified (PNOC) is 10 mg/m<sup>3</sup> for an 8-hour TWA. OSHA PEL and ACGIH TLV for phosphoric acid is 1 mg/m<sup>3</sup> for an 8-hour TWA and 3 mg/m<sup>3</sup> for a 15-minute STEL.
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## NUCHAR WV-B ACTIVATED CARBON

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Revision Date: 2/17/95Revision No.: 2**9. PHYSICAL AND CHEMICAL PROPERTIES (TYPICAL)**

Boiling Point, °C:	4000	Apparent Density, lbs/ft <sup>3</sup> :	14 - 19
Melting Point, °C:	3500	Solubility in Water:	Insoluble
Freezing Point, °C:	Not applicable	Water Solubles, % max:	4.0
Vapor Pressure, mm Hg:	Not applicable	Physical State:	Solid
Surface Area (Nitrogen BET Method), m <sup>2</sup> /g:	1400 - 1600	Appearance:	Black granules
Total Pore Volume, cm <sup>3</sup> /g:	2.2 - 2.5	Odor:	Odorless

**10. STABILITY AND REACTIVITY**

Chemical Stability:	• Stable
Conditions to Avoid:	• Heat and ignition sources, strong oxidizers, and combustible materials
Hazardous Decomposition Products:	• CO, CO <sub>2</sub> , P <sub>2</sub> O <sub>5</sub>
Hazardous Polymerization:	• None

**11. TOXICOLOGICAL INFORMATION**

Eyes:	• Irritant
Skin:	• Not a primary skin irritant, sensitizing, or corrosive agent
Inhalation:	• Not established
Ingestion:	• Oral LD <sub>50</sub> > 5g/kg (rats)
Subchronic Effects:	• Not established
Teratology (Birth Defects):	• Not established
Mutagenicity (Genetic Effects):	• Not established

**12. ECOLOGICAL INFORMATION**

Ecotoxicological Information:	
• LC <sub>50</sub> (minnows):	Not established
• Effect of low concentrations on aquatic life is unknown.	
Chemical Fate Information:	Not established

## NUCHAR WV-B ACTIVATED CARBON

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Revision Date: 2/17/95Revision No.: 2**13. DISPOSAL CONSIDERATIONS**

Activated Carbon is not classified as a hazardous waste. Follow federal, state, and local regulations for industrial waste disposal. Incineration or landfilling in permitted facilities is recommended.

**14. TRANSPORT INFORMATION**

<p>DOT Description:          Proper Shipping Name:          Hazard Class:</p>	<ul style="list-style-type: none"> <li>• Carbon, activated</li> <li>• Nuchar Activated Carbon was tested according to the IMDG Code "Self-Heating Test for Carbon" and is not considered spontaneously combustible. Therefore, Nuchar Activated Carbon is not subject to the provisions contained in the IMDG Code for "Carbon, activated."</li> </ul>
<p>UN/NA Number:</p>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>

**15. REGULATORY INFORMATION**

<p>U.S. Federal Regulations:          OSHA (29 CFR 1910.1200):          CERCLA (40 CFR 302.4):</p> <p>RCRA (40 CFR 261.33, 261.20-24):</p> <p>SARA Section 312 (40 CFR 355)          Hazard Category:</p> <p>SARA Section 313:</p> <p>Toxic Substance Control Act:</p> <p>State Right to Know Acts (MA, NJ, PA):</p> <p>California Proposition 65:</p>	<ul style="list-style-type: none"> <li>• Air contaminate, Table Z-1-A</li> <li>• Phosphoric acid is listed as a CERCLA hazardous substance, RQ=5000 lbs</li> <li>• Listed Hazardous Waste: No</li> <li>• Exhibits characteristics of hazardous waste: No</li> </ul>
<p>International Regulations:          Canada (DSL):          Canada (NPRI):</p> <p>Canada (WHMIS):          Europe (EINECS):          Japan (MITI):          Australia (AICS):</p>	<ul style="list-style-type: none"> <li>• Physical Hazards: None known</li> <li>• Health Hazards: Eye irritant</li> <li>• This product contains phosphoric acid which is subject to the reporting requirements of SARA Title III, Section 313.</li> <li>• Listed in the TSCA inventory of chemicals, 7440-44-0.</li> </ul>
<p>FCC:</p>	<ul style="list-style-type: none"> <li>• Component subject to reporting is:              Phosphoric acid ≤ 10%</li> <li>• The required chemical analyses and risks assessments were performed on this product. Results indicate that there are no significant risks (or observable effects) as defined by this statute, associated with this product under conditions of normal use.</li> <li>• Listed in inventory: 7440-44-0</li> <li>• This product contains phosphoric acid which is subject to the reporting requirements of NPRI.</li> <li>• Activated carbon is regulated under WHMIS</li> <li>• Listed in inventory: 2311533</li> <li>• Not applicable</li> <li>• Listed in inventory: 7440-44-0</li> </ul>
	<ul style="list-style-type: none"> <li>• Nuchar activated carbon meets all specifications set forth in the 1981 edition and later supplements of the Food Chemicals Codex.</li> </ul>

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## NUCHAR WV-B ACTIVATED CARBON

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Revision Date: 2/17/95

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### 16. OTHER INFORMATION

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Hazard Rating:

HMIS:

- Health - 1
- Flammability - 1
- Reactivity - 0
- Protective Equipment - To be set by user

Revision Summary:

- Add FCC statement and correct composition

Supersedes:

- 5/18/94
- 

#### ABBREVIATIONS

- |     |                  |  |
|-----|------------------|--|
| 1.  | ACGIH            | American Conference of Governmental Industrial Hygienists  |
| 2.  | BOD <sub>x</sub> | Biochemical Oxygen Demand (After x Days)   |
| 3.  | CERCLA           | Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)                   |
| 4.  | CFR              | Code of Federal Regulations  |
| 5.  | COD              | Chemical Oxygen Demand   |
| 6.  | cps              | Centipoise   |
| 7.  | DOT              | Department of Transportation   |
| 8.  | EPA              | Environmental Protection Agency  |
| 9.  | HMIS             | Hazardous Material Information System  |
| 10. | IARC             | International Agency for Research on Cancer  |
| 11. | LC <sub>50</sub> | A single calculated concentration in air or water resulting in 50% mortality of a group of test animals. |
| 12. | LD <sub>50</sub> | A single calculated dose of a material expected to kill 50% of a group of test animals.                  |
| 13. | LEL              | Lower Explosive Limit in air   |
| 14. | MSHA             | Mine Safety and Health Administration  |
| 15. | NIOSH            | National Institute for Occupational Safety and Health  |
| 16. | NTP              | National Toxicology Programs   |
| 17. | OSHA             | Occupational Safety and Health Administration  |
| 18. | PEL              | Permissible Exposure Limit established by OSHA   |
| 19. | SARA             | Superfund Amendments and Reauthorization Act   |
| 20. | TLV              | Threshold Limit Value  |
| 21. | TSCA             | Toxic Substances Control Act   |
| 22. | TOC              | Total Organic Carbon   |
| 23. | UEL              | Upper Explosive Limit in air   |

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FAX: (419) 542-6475

**MATERIAL  
SAFETY  
DATA  
SHEET**

PRODUCT: 80033-B Catalyst  
DATE: July 10, 1996

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**EMERGENCY CONTACT:**

C.E. Martin, President Telephone No.(Home)419-542-8266 (Office)800-542-6646 or  
888-MOD-SAFE

The following information includes safety data required by OSHA. The recipient of this safety data is responsible for passing the safety information on so that it reaches the ultimate user who may come in contact with the material.

**TRADE NAME:** 987 LTC Catalyst

**CHEMICAL NAME  
& FAMILY:** Alumina base catalyst with heavy metals.

**SYNONYMS:** Alumina base catalyst with heavy metals.

**CHEMICAL NOTATION  
OR STRUCTURE:** Al<sub>2</sub>O<sub>3</sub> + heavy metals.  
Proprietary mixture.

**INGREDIENTS:** Alumina impregnated with heavy metals.  
Proprietary mixture. Includes Nickel compounds.

**CAS REGISTRY NO:** Al<sub>2</sub>O<sub>3</sub> - 1344-28-1  
**RTECS NO:** Al<sub>2</sub>O<sub>3</sub>: BK 1200000

The information contained herein is based upon data considered true and accurate. However, MST, Inc. Makes no warranties, express or implied, as to the accuracy or adequacy of the information contained herein or the results to be obtained from the use thereof. This information is offered solely for the user's consideration, investigation and verification. Since the use and conditions of use of this information and the material described herein are not within the control of MST, Inc. MST, Inc. Assumes no responsibility for injury to the user or third persons. The material described herein is sold only pursuant to MST, Inc.'s Terms and Conditions of Sale, including those limiting warranties and remedies contained therein. It is the responsibility of the user to determine whether any use of this data and information is in accordance with applicable federal, state or local laws and regulations.

## HEALTH INFORMATION

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### PRECAUTIONS IN USE:

Because of the presence of a suspected carcinogen, avoid inhalation, ingestion or skin contact with the catalyst in either the product form or an altered form resulting from its use (dust, leachate, or waste). To avoid inhalation, use a properly fitted NIOSH-approved respirator fitted with a filter for highly toxic particulates. Ventilate the work area to keep dust levels below the PEL's shown on p. 3. Avoid skin contact by using rubber gloves, head coverings, goggles, and impervious clothing that is changed once a day. To prevent ingestion, do not allow eating, drinking or smoking in the work area. Hands and face must be washed before eating, drinking or smoking. Employees should shower after working with this material. SEE SPECIAL INFORMATION, p.4.

### FIRST AID:

**EYES:** Immediately wash from eyes with large amounts of water, occasionally lifting upper & lower eye lids. If irritation occurs and persists, seek medical attention.

**SKIN:** Wash with soap & water. Remove contaminated clothing.

**INGESTION:** Drink 2 glasses of milk or water & induce vomiting by having patient touch the back of his throat with his finger. Never make an unconscious person vomit. Get medical attention immediately.

**INHALATION:** Remove to fresh air.

## TOXICOLOGY

This product and its components are not listed on the IARC, NTP or OSHA Carcinogens Lists:

### ANIMAL TOXICOLOGY

#### TESTS FOR DOT HAZARD CLASSIFICATION:

Not tested. Not classified as hazardous. Hazardous shipping label not required.

#### TESTS FOR FDA APPROVAL FOR USE IN FOODS:

Not a food-grade product. Must not be used in food or food contact.

### HUMAN TOXICOLOGY:

Alumina is not known to cause any occupational disease. A mild desiccation of the skin may result from frequent contact. Nickel compounds are listed on the NTP and IARC lists as suspected carcinogens which have been known to cause cancer in laboratory animal tests. MST, Inc. knows of no medical conditions abnormally aggravated by exposure to this product. The primary route of entry is inhalation.

# MATERIAL SAFETY DATA SHEET

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## ENVIRONMENTAL DATA

Waste streams that contain this product must be treated to meet standards for toxic discharges.

## TYPICAL CHEMICAL & PHYSICAL INFORMATION

**APPEARANCE:** Bluish green beads

**pH IN 5% SLURRY:** Approximately 5-9

**ODOR:** None

**SPECIFIC GRAVITY:** Approximately ~2.4

**BULK DENSITY:** 25-30 lbs/ft<sup>3</sup>

## SOLUBILITY

**IN WATER:** Base-Insoluble. Heavy metals will leach.

## APPROXIMATE

### ANALYSIS:

	Wt. %	OSHA PEL mg/M <sup>3</sup>	ACGIH mg/M <sup>3</sup>
STC Ni (as NiCl <sub>2</sub> )	0.15-0.19	1	1 (proposed =.05, eff. 1991)
Al <sub>2</sub> O <sub>3</sub>	30-40	n.1.	n.1.

n.1. - Not listed.

STC - SARA Toxic Chemical

**STABILITY:** Stable

**REACTIVITY:** Non-reactive

## FIRE & EXPLOSION

**DATA:** Will not burn or explode

## REGULATORY STATUS

Page 4 of 4

- OSHA-** See Approximate Analysis, p. 3.
- NIOSH-** Catalyst not evaluated.
- EPA-** Contains chemical (s) listed on the SARA 313 Toxic Chemical List. Toxic Chemical (s) shown in Approximate Analysis, p. 3 and by attachment if MSDS describes different product grades.
- ACGIH-** See Approximate Analysis, p. 3.
- USDA-** Not applicable. Not a food-grade product.
- FDA-** Not applicable. Not a food-grade product.
- DOT-** Not classified.

## HANDLING INFORMATION

### STORAGE AND

### TRANSPORTATION:

Keep containers tightly sealed and dry.

### DISPOSAL:

Dispose in a secure type landfill, suitable for toxic chemicals, according to state, local and federal regulations. See SPECIAL INFORMATION.

### SPILLAGE AND CLEANUP:

Vacuum up. Return to container for re-use or disposal. Use protective measures specified in PRECAUTIONS IN USE section page 2.

### CONTAINERS:

Steel drums, fiber drums or bins depending on the customer's requirements.

## SPECIAL INFORMATION

Following contact with other chemicals or gases, the catalyst must be handled with special precautions. The combination of catalyst and retained material can be flammable and acutely toxic. Extra protection should be used besides that described in PRECAUTIONS IN USE. Avoid sources of ignition. Use NIOSH-approved organic vapor gas mask. Determine RCRA Hazardous Waste classification before disposal.

The information contained herein is based upon data considered true and accurate. However, MST, Inc. Makes no warranties, express or implied, as to the accuracy or adequacy of the information contained herein or the results to be obtained from the use thereof. This information is offered solely for the user's consideration, investigation and verification. Since the use and conditions of use of this information and the material described herein are not within the control of MST, Inc. MST, Inc. Assumes no responsibility for injury to the user or third persons. The material described herein is sold only pursuant to MST, Inc.'s Terms and Conditions of Sale, including those limiting warranties and remedies contained therein. It is the responsibility of the user to determine whether any use of this data and information is in accordance with applicable federal, state or local laws and regulations.