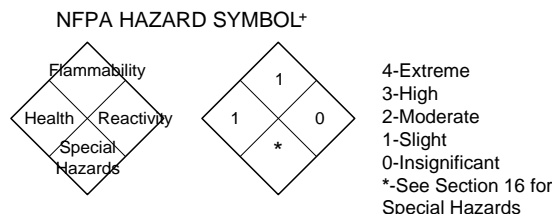


MATERIAL SAFETY DATA SHEET

Norit MSDS No. 110
Revision Date: September 25, 2007
Revision No. 03



Norit Activated Carbons

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Norit Americas Inc. **3200 West University Avenue** **Marshall, TX 75670**

Emergency Telephone Numbers:

Chem-tel (800) 255-3924 (24 hour) Sales Office (800) 641-9245 Marshall Plant (903) 923-1000

Names used on product labels:

NORIT® RBAA 1 NORIT® RBAA 3 NORIT® CI 4

NORIT® is a registered trademark of Norit Americas Inc.

- Chemical Name • Activated Carbon
Product Use • Vapor applications (purification, decolorization, separation, and deodorization)

2. COMPOSITION / INFORMATION ON INGREDIENTS

IDENTITY	CAS NO.	%
Activated Carbon	7440-44-0	> 85
Potassium hydroxide	1310-58-3	< 15

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Odorless black pellets. **Activated carbon (especially when wet) can deplete oxygen from air in enclosed spaces, and dangerously low levels of oxygen may result.** When workers enter a vessel containing activated carbon, procedures for potentially low oxygen areas should be followed. Workers should also take appropriate precautions when dealing with spent (used) activated carbons, which may exhibit properties of adsorbed materials.

This material may be self-heating under certain conditions. See Section 16.

POTENTIAL HEALTH EFFECTS:

Medical conditions aggravated by exposure: None documented

Routes of Exposure:

- Eyes: • May be corrosive, may cause physical irritation.
Skin: • May be corrosive. Irritation is possible due to corrosivity and abrasive action of dust.
Ingestion: • May cause severe damage to mouth, throat and esophagus.
Inhalation: • Possible irritation of respiratory tract due to corrosivity, drying and abrasive actions of dust.
Chronic Effects: • IARC: Not listed • NTP: Not listed • OSHA: Not regulated

For additional information, see Section 16.

4. FIRST AID MEASURES

- Skin: • Wash material off the skin with soap and water. Seek medical attention if irritation occurs.
- Eyes: • Flush with copious amounts of water. Seek medical attention if irritation occurs.
- Ingestion: • Give one or two glasses of water to drink. Seek medical attention if gastrointestinal symptoms develop.
- Inhalation: • Remove to fresh air. Seek medical attention if cough or respiratory symptoms develop..

5. FIRE FIGHTING MEASURES

- Flashpoint • Not Applicable.
- Non-flammable • OSHA Method 16CFR1500.44 (Incorporated by reference in 29CFR1910.1200).
- Self-heating substance • May self heat. UN Manual of Tests and Criteria, Test N.3.
- Flammability Limits in Air • LFL and UFL Not Applicable.

GENERAL HAZARD:

Activated carbon is difficult to ignite and tends to burn slowly (smolder) without producing smoke or flame. Toxic gas may form upon combustion. May self heat under certain conditions.

FIRE FIGHTING INSTRUCTIONS:

If possible to do safely, move smoldering activated carbon to a non-hazardous area, preferably out of doors. Extinguish fire using water fog, fine water spray, carbon dioxide or foam. Avoid stirring up dust clouds.

FIRE FIGHTING EQUIPMENT:

Fire fighting personnel should wear full protective equipment, including self-contained breathing apparatus (SCBA) for all inside fires and large outdoor fires.

HAZARDOUS COMBUSTION PRODUCTS:

Products may include smoke and oxides of carbon (for example, carbon monoxide) and potassium oxide. Materials allowed to smolder for long periods in enclosed spaces, may produce amounts of carbon monoxide, which reach the lower explosive limit (carbon monoxide LEL = 12.5% in air). Under certain conditions, any airborne dust may be an explosion hazard. Used activated carbon may produce additional combustion products.

6. ACCIDENTAL RELEASE MEASURES

IF A SPILL OR LEAK OCCURS:

Clean up spills in a manner that does not disperse dust into the air. Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure, and removal of material from eyes, skin, and clothing.

DISPOSAL METHOD:

Dispose of virgin (unused) carbon (waste or spillage) in a facility permitted for non-hazardous wastes. Spent (used) carbon should be disposed of in accordance with applicable laws.

CONTAINER DISPOSAL:

Do not reuse empty bags. Dispose of used bags in facility permitted for non-hazardous wastes.

7. HANDLING AND STORAGE

- Storage Temperature: • Ambient. Avoid storing at high temperatures in direct sunlight.
- Storage Pressure: • Atmospheric
- Handling: • Follow good handling and housekeeping practices to minimize spills, generation of airborne dusts, and accumulation of dusts on exposed surfaces.
- Use with adequate exhaust ventilation to draw dust away from workers' breathing zones.
- Prevent or minimize exposures to dusts by using appropriate respirators, gloves, and eye protection.
- Wash exposed skin areas thoroughly with soap and water after handling.
- Storage: • Product should be stored in a closed dry container. Maintain good housekeeping procedures. Store this product away from strong oxidizers such as ozone, liquid oxygen, chlorine, permanganate, etc. Avoid storing at high temperatures in direct sunlight.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

- Engineering Controls: • Use local exhaust ventilation to control emissions near the source. Ventilation systems should be sized and configured to prevent exceedence of recommended or regulated exposure limits (for example, OSHA PELs).
- Eye Protection: • Safety glasses with side shields are recommended for any type of handling. Where eye contact or dusty conditions may be likely, dust tight goggles are recommended. Have eye-flushing equipment available.
- Skin Protection: • Avoid skin contact with this product. Wear appropriate dust resistant clothing. Wash contaminated clothing and clean protective equipment before reuse. Wash skin thoroughly after handling.
- Respiratory Protection: • Keep dust exposure to a minimum with engineering and administrative controls. Use appropriate NIOSH/MSHA approved particulate respirators if necessary. Observe respirator use limitations specified by NIOSH/MSHA or the manufacturer.

Airborne Exposure Guidelines:	Recommended Exposure Limits	
	8 hr TWA	Ceiling
Total Dust	7.5 mg/m ³ *	13 mg/m ³ **
Respirable Fraction	2.5 mg/m ³ *	--

*OSHA and ACGIH have not established specific exposure limits for this material. These guidelines are based on a conservatively high concentration of silica quartz (2%). Actual airborne silica concentrations may be much lower. If so, the PEL or TLV would be higher.

**Ceiling limit is based on 15% KOH.

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point, C:	• NA	Freezing Point, C:	• NA
Bulk Density - Granular Grades	• 21-25 lbs/ft ³	% Volatiles	• NA
Bulk Density - Powder Grades	• 15-35 lbs/ft ³	Appearance and Odor	• Black pellets, no odor
Vapor Pressure	• NA	Solubility in Water	• KOH makes up to 15% of the product and is very soluble. The balance of the product is insoluble
Vapor Density	• NA		
Evaporation Rate	• NA		

NA - Not applicable

10. STABILITY AND REACTIVITY DATA

- Stability: • This product is stable under the specified conditions of storage, shipment and use. Avoid storing at high temperatures or in direct sunlight.
- Incompatibility: • Contact with strong oxidizers such as ozone, liquid oxygen, chlorine, permanganate, etc. may result in rapid combustion. Avoid contact with strong acids.
- Hazardous Decomposition Products: • Oxides of Carbon, K₂O
- Hazardous Polymerization: • Does not occur.

11. TOXICOLOGICAL INFORMATION

This material is non-toxic in its original state. Used activated carbon may exhibit characteristics of the adsorbed material.

12. ECOLOGICAL INFORMATION

This material, in its original state, is not harmful to the environment. Used activated carbon may exhibit characteristics of the adsorbed material.

13. DISPOSAL CONSIDERATIONS

Activated carbon, in its original state, is not a hazardous material or hazardous waste. Follow applicable governmental regulations for waste disposal.

Used activated carbon may become classified as a hazardous waste depending upon the application. Follow applicable regulations for disposal.

14. TRANSPORT INFORMATION

DOT (Department of Transportation)

Proper Shipping Name:	• Carbon, Activated
Hazard Class:	• 4.2
UN Number:	• 1362
Packing Group:	• III
Freight Classification:	• STCC Code - #4916185 NMFC 040560

15. REGULATORY INFORMATION

FEDERAL REGULATIONS:

OSHA Hazard Communication Standard, 29CFR1910.1200:	• See "Particulates not otherwise regulated," in Table Z-1, of 29CFR1910.1000, "Limits For Air Contaminates".
CERCLA/SUPERFUND, 40CFR117, 302:	• Notification of spills of this material is not required.
SARA/SUPERFUND:	• Section 302 – Extremely hazardous substances (40CFR355): This product is not listed as an extremely hazardous substance. • Section 313 – List of toxic chemicals: This product is not listed.
Toxic Substances Control Act, 40CFR710:	• This product is on the inventory list.
Resource Conservation and Recovery Act:	• This product, in its original state, does not meet the criteria of hazardous waste.

STATE REGULATIONS:

California Occupational Safety and Health	• Not listed.
Massachusetts Substance List	• Not listed.
New Jersey Right-To-Know	• Not listed.
Pennsylvania Right-To-Know	• Not listed.

16. OTHER INFORMATION

Activated carbon can be safely stored in any normal storage area, but away from sources of direct heat. **Storage at elevated temperatures or in direct sunlight may contribute to spontaneous combustion of this product.** This product is a self-heating substance (UN Manual of Tests and Criterion, Second Revised Edition. Test N.3.) Storage at high ambient temperature may exacerbate the self-heating tendency.

WARNING: Activated carbon (especially when wet) can deplete oxygen from the air, and dangerously low levels of oxygen may result. When workers enter a vessel containing activated carbon, procedures for potentially low oxygen areas should be followed.

Activated carbons are not listed as potential carcinogens by any agency. Activated carbon may contain crystalline silica, which has been listed as a potential carcinogen of the lungs by the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP). Much of the silica is inextricably bound within the particles of activated carbon, and does not present a substantial health hazard. Because Norit Americas adheres to a very conservative position regarding all health and safety matters, we recommend and follow a practice of requiring respiratory protection whenever there is any evidence of airborne dust.

REVISION SUMMARY:

REV 03: New format

REV 02: Revised Sections 3, 8, 9, 14 and 16 because products are corrosive and spontaneously combustible. The information herein is given in good faith but no warranty, expressed or implied, is made.