

Safety Data Sheet

Chemistry Connection

1. Product and Company Identification

Common Name:	Activated Charcoal
Product name:	Activated Charcoal Powder
Chemical Formula:	C (carbon)
Recommended Use:	Approved for use in the treatment of drinking water at water treatment facilities. Max. dosage 250 ppm. Not evaluated for point-of-use applications.
Supplier:	Chemistry Connection 253 Sturgis Rd Conway, AR 72034 501-470-9689
Emergency Telephone Number:	CHEMTREC – 800-424-9300
Revision date:	5/27/2015

2. Hazards Identification

Classification: Non-Hazardous under normal conditions of storage and use in the treatment of potable water at water treatment facilities.

Hazards not otherwise classified: Combustible dust. May form combustible dust concentrations in air. All powdered activated carbons are classified as weakly explosive (Dust explosion class St1): Given the necessary conditions of a strong ignition source, right concentrations of airborne carbon dust, adequate oxygen levels, and confinement, the potential for a deflagration event exists. A combustible dust hazard assessment and employee training should be carried out. See sections 7 and 9 for further information on combustible dust precautions.

Label: None.

Precautionary Statements: Wet activated carbon removes oxygen from air and can lower the concentration of oxygen inside vessels and other confined spaces. Workers should follow procedures for low oxygen.

Workers should also take appropriate precautions when dealing with spent (used) activated carbons which may exhibit hazardous properties associated with the adsorbed materials.

3. Composition/Information on Ingredients

Chemical Name	CAS Number	Percent of Total Weight
Activated Carbon	7440-44-0	100

Activated Charcoal Powder contains a proprietary scale inhibitor.

Activated Charcoal Powder contain trace amounts of crystalline silica.

4. First Aid Measures

Inhalation: Remove to fresh air and provide rest. Get medical attention if breathing difficulties develop or persist.

Ingestion: If fully conscious, give one or two cups of water. If large quantities were ingested, consult a physician if gastrointestinal problems develop.

Eye: Flush with excess water preferably with an eyewash. Avoid rubbing the eyes. If irritation persists, consult a physician.

Skin: Wash thoroughly with soap and water.

5. Fire Fighting Measures

Special Fire Fighting Procedures: Use a fine water spray, mist, or fog, dry chemical, or CO₂. Avoid methods that may stir up dust clouds, introduce air to a smoldering pile, or cause the burning particles of carbon to fly over the area, spreading the fire. With adequate venting, slowly soak the carbon thoroughly with water or other suppressant. Use containment berms to slow water flow and allow carbon to settle out behind barrier and separate water.

Protective Equipment for Firefighters: Use self-contained breathing apparatus and full protective gear.

Unusual Fire Hazard: Activated carbon is difficult to ignite. Carbon fires generally burn slowly with a dull glow rather than with flames or smoke, and may be difficult to detect. Smoldering piles, whether confined or not, may be cool on the edges or exterior but hot enough to ignite in the interior when disturbed and the hot spots exposed to air.

Hazardous Decomposition or By-products: During combustion, high levels of carbon monoxide can be produced. Material allowed to smolder for long periods of time in enclosed spaces may produce carbon monoxide which may reach a lower explosive limit for carbon monoxide (12.5% in air).

Combustible dust. May form combustible dust concentrations in air. All powdered activated carbons are classified as weakly explosive (Dust explosion class St1). Given the necessary conditions of a strong ignition source, right concentrations of airborne carbon dust, adequate oxygen levels, and confinement, the potential for a deflagration event exists. Keep storage vessels cool and avoid air flow through hot product and exposure to strong ignition sources where product is confined. If carbon is exposed, mist and saturate with water while avoiding airborne dust. Dilute airborne dust concentrations with water mist or ignition-proof ventilation.

NFPA Rating: Flammability Hazard: 1 Reactivity Hazard: 0 Health Hazard: 1

6. Accidental Release Measures

In all cases, first eliminate or plan to avoid strong ignition sources. (If a fire or explosion is or could be the cause of the release, call 911.) Activated carbon is a weakly explosive combustible dust. In any case, do not use compressed air or any method to disperse the spill which creates additional substantial airborne dust which may direct the dust to ignition sources.

Personal precautions: Personnel should wear NIOSH-approved dust mask, eye protection, and suitable clothing.

Clean-up and containment:

For small spills: Retrieve as much material as possible by pushing gently with soft-bristle brushes and brooms, squeegees or dust mops, or by scooping with buckets or shoveling into containers or back into the original packaging. A final clean-up with a damp cloth or mop should suffice. Do not use compressed air or vigorous sweeping, as this may scatter dust into hidden or difficult-to-clean areas. Inspect hidden areas where dust may have settled.

During a major spill or release, a fine mist spray directed high at/on top of the cloud will lessen airborne dust. Airborne black powder will appear to be more material than it is and the majority of the spill will remain or settle quickly at ground-level and on horizontal surfaces. Once started, powder will flow like water. Barriers and berms can contain or direct the spill. Do not attempt to enter the spill to stop it as engulfment can occur. Once the flow stops, retrieve as much material as possible by pushing gently with soft-bristle brushes and brooms, squeegees or dust mops, or by scooping with buckets or shoveling into containers. Ignition-proof vacuums and vacuum trucks can aid in removing large spills. For final cleanup, wet area with a light water spray and squeegee surfaces.

If material collects on vehicles, remove the excess with soft-bristle brushes, then wash off the carbon with water-carbon powder will scratch the paint if wiped off.

Wetting the material with a light mist and slowly saturating it with water can aid in clean-up. Spill containment berms/straw bales which allow water to pass can effectively filter out the insoluble carbon and slow the water flow to allow the carbon to settle where excess water is used. If material enters or is washed down drains, continue to flush with water until clear. Carbon is insoluble and will settle out when the flow stops, potentially clogging pipes or drains, and can be difficult to re-suspend.

Waste Disposal Method: Dispose unused carbon as non-hazardous waste in refuse containers in accordance with local, state, and federal regulations.

7. Handling and Storage

Storage: Store packaged material as received in a dry, well-ventilated facility at ambient temperatures until ready to use. Store away from strong oxidizers, strong acids, ignition sources, combustible materials, and heat. An adequate air gap between packages is recommended to reduce propagation in the case of fire.

Bulk dry storage silos and containers should be designed to avoid strong ignition sources and uncontrolled ingress of air which could cause low velocity air flows in the carbon bed. Air flow can lead to localized heating due to the exothermic reaction of carbon with oxygen. It is recommended that bulk storage silos and dust collectors have relief venting or explosion doors in case of a fire event which could create the conditions necessary for deflagration. Refer to NFPA Standard 68 for guidance.

Handling: A hazard assessment should be carried out. As with all finely divided materials, ground all transfer, blending, and dust collecting equipment to prevent static discharge. Remove all strong ignition sources from material handling, transfer, and processing areas where dust may be present or accumulate. Practice good housekeeping. Excessive accumulations of dust or dusty conditions can create the potential of secondary explosions. Inspection of hidden surfaces for dust accumulation should be made routinely. If possible, eliminate the pathways for dust to accumulate in hidden areas. Fine carbon dust may penetrate electrical equipment and cause electrical shorts. Where dusting is unavoidable, dust-proof boxes and regular electrical line maintenance are recommended. Refer to NFPA standards 654 for guidance.

Caution employees-no smoking in carbon storage and handling areas. Carbon is difficult to ignite, however, cutting and welding operations should be carried out using hot work permit systems where precautions are taken not to ignite carbon, which may smolder undetected.

8. Exposure Controls/Personal Protection

Carbon dust is considered a nuisance dust.

OSHA Permissible Exposure Limits-Time Weighted Average

15 mg/m³, Total dust

5 mg/m³, Respirable

ACGIH **Threshold Limit:** 10 mg/ m³, Treated as nuisance dust

Silica, crystalline (Quartz) CAS RN 14808-60-7 may be present in small quantities:

OSHA Permissible Exposure Limits-Time Weighted Average

30 mg/m³ /(%SiO₂ +2) Total

10 mg/m³ /(%SiO₂ +2) Respirable

ACGIH **Threshold Limit:** 0.025mg/ m³

Engineering Controls: Ventilation should prevent airborne accumulation of dust and comply with maximum exposure limits. Equipment, if present, should be grounded.

Respirator Protection: NIOSH-approved dust mask recommended if excess carbon dust is generated.

Eye Protection: Safety goggles with side shield recommended. Provide eyewash stations nearby.

Skin: Wear suitable gloves, long sleeves, and pants. Wash thoroughly with soap and water after handling. Change into clean apparel before leaving the workplace. Wash apparel daily.

RCRA Status: If discarded in its purchased form, this product is not a hazardous waste, either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a hazardous waste (40 CFR 261.10).

9. Physical and Chemical Properties

Appearance – Black powder solid, fine dust, 90% or more passing 325 mesh, free-flowing.

Upper/lower explosive limits No information available

Odor – Odorless, or slight sulfur smell.

Combustible dust- Activated Charcoal Powder is a combustible dust. May form combustible dust concentrations in air. All powdered activated carbons are weakly explosive. No specific information on Activated Charcoal Powder is available.

Typical combustible dust data for a variety of activated carbons:

K_{st} values reported between 43-113 (various sources).

Dust explosion class St1 (K_{st} values < 200 are Class St1-weakly explosive).

MEC (minimum explosible concentration) in air 50 and 60 g/m³ (two reports)

Volatile content (by weight): No information available.

MIT (minimum ignition temperature) values reported between 400-680°C (752-1256°F) (four reports)

Maximum Absolute Explosion pressure values reported between 6.0-8.6 bar (four reports)

Vapor pressure Not applicable

Odor threshold Not applicable

Vapor density Not applicable

pH No information available.

Relative density Not applicable

Apparent Density – 0.5 to 0.65 g/cc, typically 0.6 g/cc
Melting point/freezing point Not applicable
Solubility – insoluble in water. Scale inhibitor, if present, is soluble.
Initial boiling point and boiling range Not applicable
Flash point Not applicable
Evaporation rate Not applicable
Flammability Non-flammable
Partition coefficient: Not applicable
Auto-ignition temperature No information available
Decomposition temperature No information available
Viscosity Not applicable

10. Stability and Reactivity

Stability: Stable. Not self-heating.

Reactivity: May react exothermically with a potential for fire upon contact with strong oxidizers, including low-velocity air flows through carbon beds.

Incompatibility and Conditions to Avoid: Strong oxidizers such as ozone, liquid oxygen, chlorine, permanganate, etc. Do not store near combustible materials.

Hazardous Decomposition or By-product: Carbon monoxide may be generated in the event of fire.

Hazardous polymerization will not occur.

11. Toxicological Information

Information given is based on data obtained for this substance or from similar substances (activated carbons).

Likely routes of exposure: inhalation, ingestion. Skin absorption highly unlikely, no health effects known.

Effects: See Section 4-First Aid measures. No known long-term effects. Scale inhibitor, if present, is very mildly toxic if ingested.

Toxicological Data

Carbon, activated

LC50/inhalation/1 hr/rat = > 8.5 mg/L

LC50/oral/rat = > 2000 mg/kg

Carcinogenicity: Activated carbon is not listed as a potential carcinogen by National Toxicology Program, the International Agency for Research on Cancer, OSHA, or ACGIH. May contain trace concentrations of bound silica. Respirable crystalline silica is listed as a potential carcinogen of the lungs by the IARC and NTP. Much of the silica is inextricably bound within the particles of the activated carbon, and so does not present a substantial health hazard. Substantial protection is provided by adherence to the dust control measures recommended.

12. Ecological Information

Information given is based on data obtained for this substance or from similar substances (activated carbons).

Aquatic Toxicity: Non-toxic. No adverse ecological effects are known.

Terrestrial toxicity: Non-toxic in the soil.

13. Disposal Considerations

RCRA- Unused product is not hazardous waste under U.S. R.C.R.A.
Spent (used) product may be hazardous based on the substance adsorbed.
See also Section 8.

14. Transport Information

Shipping Name: Activated Charcoal Powder
LTL Freight Class: 70
NMFC Number: 40560
Hazard Class: None – Product is not spontaneously combustible or self-heating.

15. Regulatory Information

Certified under ANSI/NSF Standard 61 for use in the treatment of potable water. Maximum dosage 250 ppm. Not evaluated for point-of-use applications.

16. Other Information

Revised 5.27.15

NFPA 654 Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids
NFPA 68 Guidelines for Deflagration Venting
The information herein was compiled and is presented in good faith but no warranty, expressed or implied, is made.