

Material Safety Data Sheet

SECTION 1 – CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Type: Activated Carbon

Product Names: AquaCarb® Series (except the NoRise family), VOCarb® Series (except the 410 family and the HgFree family), AC Series, VC Series, BevCarb® Series, and UltraCarb® Series

Manufacturer's Name: Siemens Water Technologies Corp.

Address: 14250 Gannet Street, La Mirada, CA 90638

Product/Technical Information Phone Number: (714) 228 - 8800

Medical/Handling Emergency Phone Number: CHEMTREC (800) 424-9300
24 hours / day everyday

Transportation Emergency Phone Number: CHEMTREC (800) 424-9300
24 hours / day everyday

Issue Date/Revision Number: 18 March 2010 / Rev 3

SECTION 2– COMPOSITION INFORMATION

Chemical Name	Percent by Weight	CAS#
Activated Carbon	100	7440-44-0

SECTION 3– HAZARDS IDENTIFICATION

Appearance & Odor: black particles without taste or odor

Emergency Overview:

Activated carbon particles on the floor make the floor slippery. Particles may irritate the eyes and cause mechanical injury.

Warning: Wet activated carbon depletes oxygen from the air and therefore dangerously low levels of oxygen may be encountered in enclosed spaces. Whenever workers enter a vessel containing activated carbon, the vessel's oxygen content should be determined and work procedures for potentially low oxygen areas should be followed.

Fire & Explosion Hazards: The adsorption of organic compounds onto activated carbon generates heat. In rare instances, adsorbed compounds may also react on the carbon surface to generate additional heat. If these heat sources are not properly dissipated, particularly in vapor-phase carbon applications, the carbon bed temperature may rise to the point where the carbon can ignite, leading to a fire or other hazardous condition.

Primary Route(s) of Exposure: Eye contact, skin contact, and inhalation.

Inhalation – Acute Effects: May be irritating to the respiratory tract and cause coughing or sneezing.

Skin Contact – Acute Effects: May cause slight skin irritation.

Eye Contact – Acute Effects: May irritate eyes or cause mechanical injury.

Ingestion – Acute Effects: May irritate the gastrointestinal tract.

Material Safety Data Sheet

SECTION 4– FIRST AID MEASURES

Inhalation First Aid: Remove affected person to fresh air. Give artificial respiration ONLY if breathing has stopped and give CPR ONLY if there is no breathing and no pulse. Obtain medical attention immediately.

Skin Contact First Aid: Wash skin for 5 minutes with flowing water and soap. Clothing should be washed before reuse. Obtain medical assistance if irritation develops.

Eye Contact First Aid: Immediately irrigate eyes with flowing water continuously for 15 minutes while holding eyelids open. Contacts should be removed before or during flushing. Get medical assistance if irritation develops.

Ingestion First Aid: Do not induce vomiting. Obtain medical attention immediately.

Medical Conditions Aggravated: Respiratory ailments may be aggravated by exposure to dusts of this material.

Note to Physician: No specific antidote. Treat symptomatically.

SECTION 5– FIRE FIGHTING MEASURES

Flash Point/Method: Nonflammable **Auto Ignition Temperature:** 840°C (1,710°F)

Upper/Lower Explosion Limits: Not applicable.

Extinguishing Media: Water spray, carbon dioxide, foam or dry chemical

Fire Fighting Procedures: In the event of a fire, wear full protective clothing and NIOSH approved self-contained breathing apparatus with full face piece, operated in positive pressure mode.

Unusual Fire & Explosion Hazards: Avoid producing suspensions of dust during handling and avoid exposure of suspensions to sources of ignition. Suspensions of – 40 mesh particles may explode if exposed to strong ignition sources.

Hazardous Products of Decomposition and/or Combustion: Carbon oxides.

NFPA Ratings:

HEALTH- 1

FLAMMABILITY- 0

REACTIVITY- 0

SECTION 6– ACCIDENTAL RELEASE MEASURES

Spill/Leak Procedures: Clean up spills in a manner that does not disperse dust into the air.

Cleanup: Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of a material from eyes, skin, and clothing.

Material Safety Data Sheet

Regulatory Requirements: Spent (used) carbon should be disposed of in accordance with applicable laws. All disposal methods must be in compliance with all Federal, State, Local and Provincial laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.

Disposal: 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. Do not reuse empty bags. Dispose of in facility permitted for non-hazardous wastes. DO NOT DUMP INTO ANY SEWERS, ON THE GROUND OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State, Local and Provincial laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.

SECTION 7– HANDLING AND STORAGE

Handling: Avoid dispersion into air. Keep containers dry and closed. 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. Use caution when pouring, using pneumatic transport, swirling, etc. as this material can become electrostatically charged and present a dust explosion hazard.

Storage: Avoid spilling material so as to avoid creating a dust suspension. Store at ambient atmospheric conditions. Product should be stored in a closed dry container. Maintain good housekeeping procedures. Store away from strong oxidizers such as ozone, liquid oxygen, chlorine, permanganate, etc.

Empty Containers: Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

SECTION 8–PERSONAL PROTECTION/ EXPOSURE CONTROL

Respiratory Protection: If use conditions generate dust levels above the TLV / PEL, wear a NIOSH-approved particulate respirator or a NIOSH-approved cartridge respirator fitted with dust filters.

Skin Protection: Wear appropriate dust resistant clothing and gloves.

Eye Protection: Safety glasses with side shields. If eye contact or dusty conditions are likely, wear dust tight goggles.

Ventilation Protection: Provide ventilation if necessary to minimize exposure. General ventilation is usually acceptable, but local mechanical exhaust ventilation is preferred at sources of air contamination such as open process equipment.

Other Protection: Safety showers, with quick opening valves which stay open, and eye wash fountains, or other means of washing the eyes with a gentle flow of cool to tepid tap water,

Material Safety Data Sheet

should be readily available in all areas where this material is handled or stored. Water should be supplied through insulated and heat-traced lines to prevent freeze-ups in cold weather.

Exposure Limits:

Exposure limits have not been established for this material. However, the following are widely accepted limits for exposure to otherwise nontoxic particulates:

	OSHA PEL, 8 hr TWA mg/m ³	ACGIH TLV, 8 hr TWA mg/m ³
Particulates Not Otherwise Regulated (PNOR)	15 (total) 5 (respirable)	- - - - - -
Particulates Not Otherwise Classified (PNOC)	- - - - - -	10 (inhalable) 3 (respirable)

SECTION 9- PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point: Not applicable **Melting Point:** Not applicable

Specific Gravity: 1.8 – 2.1 **Solubility in Water:** Insoluble

Volatile Percentage: Nil **pH:** Not determined

SECTION 10- STABILITY AND REACTIVITY

Stability: This product is considered stable under the specified conditions of storage, shipment and use.

Incompatibilities: Contact with strong oxidizers such as ozone, liquid oxygen, chlorine, permanganate, etc. may result in rapid combustion. Avoid contact with strong acids.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition Products: Hazardous decomposition will produce carbon oxides.

Conditions to Avoid: Store away from strong oxidizers such as ozone, liquid oxygen, chlorine, permanganate, etc. Moist air will reduce the operating life.

SECTION 11 – TOXICOLOGICAL INFORMATION

Inhalation – Acute: Inhalation of carbon dust is mildly irritating to the lungs and can immediately give rise to an increased mucociliary transport and airway resistance mediated by the vagus.

Inhalation LC50 (Rat) > 64.4 mg / l.

Inhalation – Chronic: There are no known chronic inhalation effects.

Skin Contact – Acute: Skin contact is expected to be slightly irritating. The primary skin irritation index (rabbit) is 0.

Material Safety Data Sheet

Skin Contact – Chronic: There are no known chronic dermal effects.

Eye Contact – Acute: Eye contact can cause conjunctivitis, epithelial hyperplasia of the cornea, as well as eczematous inflammation of the eyelids.

Ingestion – Acute: Activated carbon is practically nontoxic. The probable oral lethal dose (human) is greater than 1 5g/kg; more than one quart (2.2 lbs) for a 150 lb person.

Ingestion – Chronic: There are no known chronic ingestion effects.

Carcinogen icity/Mutagenicity: There are no known carcinogenic/mutagenic effects.

Reproductive Effects: There are no known reproductive effects.

Neurotoxicity: There are no known neurotoxic effects.

Other Effects: No other effects of carbon are known.

Target Organs: Target organs include the respiratory system and the cardiovascular system.

SECTION 12– ECOLOGICAL INFORMATION

The material, in its original state, is not harmful to the environment.

SECTION 13– DISPOSAL CONSIDERATIONS

Spill/Leak Procedures: Clean spills in a manner that does not disperse dust into the air, preferably a wet-down procedure or vacuum.

Cleanup: If material is not contaminated, spilled media can be re-bagged. Material that cannot be used or chemically reprocessed and empty containers should be disposed of in accordance with all applicable regulations. Product containers should be thoroughly emptied before disposal.

Regulatory Requirements: Generators of waste material are required to evaluate all waste for compliance with RCRA and any local disposal procedures and regulations. NOTE: State and local regulations may be more stringent than federal regulations.

Disposal: Material that cannot be used or chemically reprocessed and empty containers should be disposed of in accordance with all applicable regulations. Product containers should be thoroughly emptied before disposal. Warning: Wet activated carbon depletes oxygen from the air and therefore dangerously low levels of oxygen may be encountered. Whenever workers enter a vessel containing activated carbon, the vessel's oxygen content should be determined and work procedures for potentially low oxygen areas should be followed.

SECTION 14– TRANSPORTATION INFORMATION

Domestic Transportation: This material is not a hazardous material for domestic transportation purposes.

International Transportation: This material is not a dangerous good for international transportation purposes.

Material Safety Data Sheet

SECTION 15- REGULATORY INFORMATION

OSHA Hazard Communication Standard: Irritant

CERCLA Section 103: No RQ: None

SARA Section 302: No SARA Section 304:

No SARA Section 313: No SARA Hazard

Categories, Sections 311/312:

Acute: Yes

Chronic: No

Fire: No

Reactive: No

Sudden Pressure Release: No

OSHA Process Safety Standard: No

California Proposition 65: Not listed

TSCA: The ingredients of this product are on the TSCA Inventory List.

SECTION 16-OTHER INFORMATION

Disclaimer: The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the user thereof. It is the buyer's responsibility to ensure that its activities comply with federal, state, provincial and local laws.

Revision Indicator: 18 March 2010, Revised Section 15

Material Safety Data Sheet

SECTION 1 – CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Type: Mixed Exchange Resins, Strong Acid Resin in Hydrogen Form and Strong Base Resin in Hydroxide Form

Product Names: NR-6 family, including NR-6, NR-6SG, and NR-6LC.

Chemical Family: Mixture of strong acid cation exchange resin in the hydrogen form and Type I strong base anion resin in the hydroxide form.

Manufacturer's Name: Siemens Industry, Inc. - Water Technologies Business Unit

Address: 4669 Shepherd Trail, Rockford, IL 61103

Product/Technical Information Phone Number: (815) 877-3041

Medical/Handling Emergency Phone Number: Call CHEMTREC at (800) 424-9300
24 hours a day

Transportation Emergency Phone Number: Call CHEMTREC at (800) 424-9300
24 hours a day

Issue Date: July 2007

Revision Date/Revision Number: April 2011/ Rev 2

SECTION 2 – COMPOSITION INFORMATION

<u>Chemical Name</u>	<u>Percent by Weight</u>	<u>CAS#</u>
Sulfonated copolymer of styrene and divinylbenzene in the hydrogen form	20 – 30	69011-20-7
Trimethylamine functionalized, chloromethylated copolymer of divinylbenzene and styrene in the hydroxide form	15 – 30	69011-18-3
Water	balance	7732-18-5

SECTION 3 – HAZARDS IDENTIFICATION

Appearance & Odor: Spherical beads/Odorless to slight amine odor

Emergency Overview:

- ♦ Corrosive to the eyes (may cause severe eye burns)
- ♦ Spills make the floor slippery

Fire & Explosion Hazards: This material will not burn until moisture is removed, then resin starts to burn in flame at 230°C. Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Nitric acid and other strong oxidizing agents can cause explosive-type reactions when mixed with ion exchange resins. Proper design of equipment to prevent build up of pressure is necessary if use of an oxidizing agent such as nitric acid is contemplated.

Primary Route(s) of Exposure: Eye contact

Inhalation – Acute Effects: Vapors are unlikely due to physical properties.

Material Safety Data Sheet

Skin Contact – Acute Effects: No adverse effects are expected from brief skin contact. Extended skin contact may cause skin rash.

Eye Contact – Acute Effects: The spherical beads may cause severe damage to eyes, eye irritation, redness, and moderate corneal injury.

Ingestion – Acute Effects: Single dose oral toxicity is considered to be low. No hazards anticipated from swallowing small amounts incidental to normal handling operation. Swallowing large amounts may cause irritation to the gastrointestinal tract.

SECTION 4 – FIRST AID MEASURES

Inhalation First Aid: Remove affected person from area to fresh air and provide oxygen if breathing is difficult. Give artificial respiration ONLY if breathing has stopped and give CPR ONLY if there is no breathing and no pulse. Obtain medical attention. No adverse effects anticipated by this route of exposure.

Skin Contact First Aid: Immediately remove clothing from affected and wash skin vigorously with flowing water. Clothing should be washed before reuse. Seek medical attention if irritation develops. DO NOT instruct person to neutralize affected skin area.

Eye Contact First Aid: Immediately irrigate eyes with flowing water continuously for 15 minutes while holding eyes open. Contacts should be removed before or during flushing. Obtain medical attention. DO NOT instruct person to neutralize.

Ingestion First Aid: No adverse effects anticipated by this route of exposure incidental to proper industrial handling. If ingestion does occur, if victim is alert and not convulsing rinse mouth with water and give plenty of water to drink. If spontaneous vomiting occurs, have affected person lean forward with head down to avoid breathing in of vomitus. Rinse mouth again and give more water to drink. Obtain medical attention.

Medical Conditions Aggravated: There are no known conditions aggravated by exposure.

Note to Physician: No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

SECTION 5 – FIRE FIGHTING MEASURES

Flash Point/Method: Not applicable.

Auto Ignition Temperature: Above 500°C (900°F)

Upper/Lower Explosion Limits: Not applicable.

Extinguishing Media: Water, carbon dioxide, dry chemical

Fire Fighting Procedures: Keep people away. Isolate fire area and deny unnecessary entry. Cool surrounding area with water to localize fire zone. Soak thoroughly with water to cool and prevent reignition.

Material Safety Data Sheet

Use NIOSH approved positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots and gloves). If protective equipment is not available or not used, fight fire from a protected location or a safe distance.

Fire & Explosion Hazards: This material will not burn until moisture is removed, then resin starts to burn in flame at 230°C. Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Nitric acid and other strong oxidizing agents can cause explosive-type reactions when mixed with ion exchange resins. Proper design of equipment to prevent build up of pressure is necessary if use of an oxidizing agent such as nitric acid is contemplated.

Hazardous Products of Decomposition and/or Combustion: May include but are not limited to unidentified hydrocarbons, sulfur and nitrogen oxides, organic sulfonates and nitrates, carbon monoxide, carbon dioxide and benzene compounds.

NFPA Ratings:

HEALTH- 1 FLAMMABILITY- 1 REACTIVITY- 0

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Spill/Leak Procedures: Isolate spill area to prevent falls as material can be a slipping hazard. Avoid contact with eyes and skin. Material is heavier than water and has limited water solubility. It will collect on the lowest surface.

Cleanup: Clean up floor area. Sweep up.

Regulatory Requirements: Follow all applicable Federal, State, Local, or Provincial regulations.

Disposal: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State, Local and Provincial laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.

SECTION 7 – HANDLING AND STORAGE

Handling: Practice reasonable care and caution. Metal equipment should be compatible with feed, regenerant, resin form and effluent of that process.

Storage: Keep containers tightly closed when not in use. Store between 35° - 100°F.

General Comments: Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

SECTION 8 – PERSONAL PROTECTION/ EXPOSURE CONTROL

Respiratory Protection: No respiratory protection should be needed.

Material Safety Data Sheet

Skin Protection: Wear gloves impervious to this material to prevent skin contact.

Eye Protection: Wear safety glasses. Wear chemical goggles if product contact is likely. Do not wear contact lenses while working with this product.

Ventilation Protection: Good general ventilation should be sufficient.

Other Protection: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Safety showers, with quick opening valves which stay open, and eye wash fountains, or other means of washing the eyes with a gentle flow of cool to tepid tap water, should be readily available in all areas where this material is handled or stored. Water should be supplied through insulated and heat-traced lines to prevent freeze-ups in cold weather.

Exposure Limits:

Exposure limits have not been developed for this product.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor: Spherical beads/Odorless to slight amine odor

Specific Gravity: Greater than water

Solubility in Water: Insoluble

Auto Ignition Temperature: Above 500°C (900°F)

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable under normal handling and storage conditions.

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

Polymerization: Hazardous polymerization cannot occur.

Decomposition: Hazardous decomposition products depend upon temperature, air supply, and the presence of other materials. Hazardous decomposition products may include and are not limited to unidentified hydrocarbons, sulfur and nitrogen oxides, organic sulfonates and nitrates, carbon monoxide, carbon dioxide and benzene compounds.

Conditions to Avoid: Resin can decompose at temperatures greater than 90°C (194°F). Do not pack column with dry ion exchange resins. Dry beads expand when wet. This expansion can cause a glass column to shatter.

Material Safety Data Sheet

SECTION 11 – TOXICOLOGICAL INFORMATION

Toxicological Data for Cation Resin:

No data available.

Toxicological Data for Anion Resin:

No data available.

SECTION 12 – ECOLOGICAL INFORMATION

The environmental fate and ecological toxicity are not known.

SECTION 13 – DISPOSAL CONSIDERATIONS

Spill/Leak Procedures: Isolate spill area to prevent falls as material can be a slipping hazard. Avoid contact with eyes and skin. Material is heavier than water and has limited water solubility. It will collect on the lowest surface.

Cleanup: Clean up floor area. Sweep up.

Regulatory Requirements: Follow all applicable Federal, State, Local, or Provincial regulations.

Disposal: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State Local and Provincial laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.

SECTION 14 – TRANSPORTATION INFORMATION

US Domestic:

This product is not hazardous for transportation purposes and is not regulated by US DOT when shipped domestically.

International:

This product is not a dangerous good for transportation purposes and is not regulated when shipped according to ICAO, IATA, or IMDG regulations.

SECTION 15 – REGULATORY INFORMATION

US Regulations:

SARA HAZARD CATEGORY:

Acute: yes

Chronic: no

Fire: no

Pressure Release: no

Reactivity: no

Material Safety Data Sheet

Canadian Regulations:

WHMIS Information: D2B - eye or skin irritant. Refer elsewhere in the MSDS for specific warnings and safe handling information.

CPR Statement: This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

SECTION 16 – OTHER INFORMATION

Disclaimer: The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the user thereof. It is the buyer's responsibility to ensure that its activities comply with federal, state, provincial and local laws.

Revision Indicator: April 2011, Revised Section 1 (Updated manufacturer's name)