

ACTIVATED CARBON

Chemwatch Material Safety Data Sheet
Issue Date: 22-Dec-2005

CHEMWATCH 4658-37
CD 2005/4 Page 1 of 12

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

ACTIVATED CARBON

STATEMENT OF HAZARDOUS NATURE

**CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR
1910.1200.**

SUPPLIER

Company: Aquarium Pharmaceuticals Incorporated
Address:
PO Box 218
Chalfont
PA, 18914-0218
USA
Telephone: +1 215 822 8181
Emergency Tel: +1800 222 1222 (US Only)

Company: Aquarium Pharmaceuticals Incorporated
Address:
50 East Hamilton Street
Chalfont
PA, 18914
USA
Telephone: +1 215 822 8181

PRODUCT USE

Used according to manufacturers directions. For products 73, 75 and 76.

SYNONYMS

Section 2 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
carbon, steam activated - not regulated	7440-44-0	100

Section 3 - HAZARDS IDENTIFICATION

CANADIAN WHMIS SYMBOLS



EMERGENCY OVERVIEW

RISK

May cause fire.
Inhalation may produce health damage*.
Cumulative effects may result following exposure*.
Exposure may produce irreversible effects*.

continued...

ACTIVATED CARBON

Chemwatch Material Safety Data Sheet

Issue Date: 22-Dec-2005

CHEMWATCH 4658-37

CD 2005/4 Page 2 of 12

Section 3 - HAZARDS IDENTIFICATION

May produce discomfort of the eyes and respiratory tract*.

*(limited evidence)

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

The material has NOT been classified as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. The material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g. liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality (death) rather than those producing morbidity (disease, ill-health).

Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, unintentional ingestion is not thought to be cause for concern.

EYE

There is some evidence to suggest that this material can cause eye irritation and damage in some persons.

SKIN

The material is not thought to produce adverse health effects or skin irritation following contact (as classified using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED

There is some evidence to suggest that this material, if inhaled, can irritate the throat and lungs of some persons.

Inhalation of dusts, generated by the material during the course of normal handling, may be damaging to the health of the individual.

Effects on lungs are significantly enhanced in the presence of respirable particles.

CHRONIC HEALTH EFFECTS

Repeated exposures, in an occupational setting, to high levels of fine- divided dusts may produce a condition known as pneumoconiosis which is the lodgement of any inhaled dusts in the lung irrespective of the effect. This is particularly true when a significant number of particles less than 0.5 microns (1/50,000 inch), are present. Lung shadows are seen in the X-ray. Symptoms of pneumoconiosis may include a progressive dry cough, shortness of breath on exertion, increased chest expansion, weakness and weight loss. As the disease progresses the cough produces a stringy mucous, vital capacity decreases further and shortness of breath becomes more severe. Pneumoconiosis is the accumulation of dusts in the lungs and the tissue reaction in its presence. It is further classified as being of noncollagenous or collagenous types. Noncollagenous pneumoconiosis, the benign form, is identified by minimal stromal reaction, consists mainly of reticulin fibres, an intact alveolar architecture and is potentially reversible. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

continued...

ACTIVATED CARBON

Chemwatch Material Safety Data Sheet

Issue Date: 22-Dec-2005

CHEMWATCH 4658-37

CD 2005/4 Page 3 of 12

Section 3 - HAZARDS IDENTIFICATION

There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment. There is insufficient evidence to suggest that exposure to carbon black causes increased susceptibility to cancer or other ill effects. Some lung changes can occur after a prolonged period of exposure as well as increased strain on the right side of the heart.

Section 4 - FIRST AID MEASURES

SWALLOWED

- Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Center or a doctor.

EYE

If this product comes in contact with the eyes:

- Wash out immediately with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- If pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin or hair contact occurs:

- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prosthesis such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor.

NOTES TO PHYSICIAN

Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

Flash Point (F): Not Applicable

Lower Explosive Limit (%): Not Applicable

Upper Explosive Limit (%): Not Applicable

Autoignition Temp (F): Not Applicable

EXTINGUISHING MEDIA

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

continued...

ACTIVATED CARBON

Chemwatch Material Safety Data Sheet

Issue Date: 22-Dec-2005

CHEMWATCH 4658-37

CD 2005/4 Page 4 of 12

Section 5 - FIRE FIGHTING MEASURES

- Water spray or fog - Large fires only.

FIRE FIGHTING

- Alert Emergency Responders and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

- Solid which exhibits difficult combustion or is difficult to ignite.
 - Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.
 - Dry dust can be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport.
 - Build-up of electrostatic charge may be prevented by bonding and grounding.
 - Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.
- Combustion products include, carbon dioxide (CO₂), other pyrolysis products typical of burning organic material.
May emit poisonous fumes.
May emit corrosive fumes.

FIRE INCOMPATIBILITY

Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

PERSONAL PROTECTION

- Glasses:
Chemical goggles.
- Gloves:
PVC chemical resistant type.
- Respirator:
Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Control personal contact by using protective equipment.
- Use dry clean up procedures and avoid generating dust.
- Place in a suitable labelled container for waste disposal.

continued...

ACTIVATED CARBON

Chemwatch Material Safety Data Sheet

Issue Date: 22-Dec-2005

CHEMWATCH 4658-37
CD 2005/4 Page 5 of 12

Section 6 - ACCIDENTAL RELEASE MEASURES

MAJOR SPILLS

Moderate hazard.

- CAUTION: Advise personnel in area.
- Alert Emergency Responders and tell them location and nature of hazard.
- Control personal contact by wearing protective clothing.
- Prevent, by any means available, spillage from entering drains or water courses.
- Recover product wherever possible.
- IF DRY: Use dry clean up procedures and avoid generating dust. Collect residues and place in sealed plastic bags or other containers for disposal. IF WET: Vacuum/shovel up and place in labelled containers for disposal.
- ALWAYS: Wash area down with large amounts of water and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise emergency services.

ACUTE EXPOSURE GUIDELINE LEVELS (AEG) (in ppm)

AEG 1: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

AEG 2: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

AEG 3: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:

carbon, steam activated - not regulated 500 mg/m³

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:

carbon, steam activated - not regulated 10 mg/m³

other than mild, transient adverse effects without perceiving a clearly defined odour is:

carbon, steam activated - not regulated 6 mg/m³

The threshold concentration below which most people will experience no appreciable risk of health effects:

carbon, steam activated - not regulated 2 mg/m³

American Industrial Hygiene Association (AIHA)

Ingredients considered according exceed the following cutoffs

Very Toxic (T+) >= 0.1% Toxic (T) >= 3.0%

continued...

ACTIVATED CARBON

Chemwatch Material Safety Data Sheet
Issue Date: 22-Dec-2005

CHEMWATCH 4658-37
CD 2005/4 Page 6 of 12

Section 6 - ACCIDENTAL RELEASE MEASURES

R50 $\geq 0.25\%$ Corrosive (C) $\geq 5.0\%$
R51 $\geq 2.5\%$
else $\geq 10\%$

where percentage is percentage of ingredient found in the mixture

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

NOTE: Wet, activated carbon removes oxygen from the air thus producing a severe hazard to workers inside carbon vessels and in enclosed or confined spaces where activated carbons might accumulate. Before entry to such areas, sampling and test procedures for low oxygen levels should be undertaken; control conditions should be established to ensure the availability of adequate oxygen supply.

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- DO NOT allow material to contact humans, exposed food or food utensils.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

RECOMMENDED STORAGE METHODS

- Polyethylene or polypropylene container.
- Check all containers are clearly labelled and free from leaks.

STORAGE REQUIREMENTS

Observe manufacturer's storing and handling recommendations.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Peak ppm	Peak mg/m ³
US - Idaho - Toxic and Hazardous Substances - Mineral Dust	Silicates (less than 1% crystalline silica): Graphite (natural)	15					

continued...

ACTIVATED CARBON

Chemwatch Material Safety Data Sheet

Issue Date: 22-Dec-2005

CHEMWATCH 4658-37

CD 2005/4 Page 7 of 12

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Peak ppm	Peak mg/m ³
US - California Permissible Exposure Limits for Chemical Contaminants	Graphite, synthetic Respirable fraction(n)	--	5				
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	Graphite, synthetic - Respirable Fraction		5				
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	Graphite, synthetic - Total dust				10		
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	Graphite (synthetic)				(See Table 11)		
US - California Permissible Exposure Limits for Chemical Contaminants	Graphite, synthetic Total dust	--			10		
US - Minnesota Permissible Exposure Limits (PELs)	Graphite, synthetic - Total dust				10		

No data for Activated Carbon.

EXPOSURE STANDARDS FOR MIXTURE

"Worst Case" computer-aided prediction of spray/ mist or fume/ dust components and concentration:

"Worst Case" computer-aided prediction of spray/ mist or fume/ dust components and concentration:

Composite Exposure Standard for Mixture (TWA) :3 mg/m³.

"Worst Case" computer-aided prediction of spray/ mist or fume/ dust components and concentration:

Composite Exposure Standard for Mixture (TWA) (mg/m³):

Operations which produce a spray/mist or fume/dust, introduce particulates to the breathing zone.

If the breathing zone concentration of ANY of the components listed below is exceeded, "Worst Case" considerations deem the individual to be overexposed.

Component Breathing Zone ppm Breathing Zone mg/m³ Mixture Conc (%).

Component	Breathing Zone (mg/m ³)	Mixture Conc (%)
carbon, steam activated - 100.0	not reg	3.0000

INGREDIENT DATA

CARBON, STEAM ACTIVATED - NOT REGULATED:

continued...

ACTIVATED CARBON

Chemwatch Material Safety Data Sheet
Issue Date: 22-Dec-2005

CHEMWATCH 4658-37
CD 2005/4 Page 8 of 12

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

for carbon blacks of mineral origin

TLV TWA: 3.5 mg/m³ A4

NOTE: This substance has been classified by the ACGIH as A4 NOT classifiable as causing Cancer in humans.

ES TWA: 3 mg/m³

Carbon blacks of vegetable origin not listed.

PERSONAL PROTECTION

EYE

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. DO NOT wear contact lenses.

HANDS/FEET

Wear chemical protective gloves, eg. PVC.

Wear safety footwear or safety gumboots, eg. Rubber.

OTHER

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.
- Eye wash unit.

RESPIRATOR

Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
10 x PEL	P1 Air-line*	-	PAPR-P1
50 x PEL	Air-line**	P2	PAPR-P2
100 x PEL	-	P3 Air-line*	-
100+ x PEL	-	Air-line**	PAPR-P3

* - Negative pressure demand ** - Continuous flow

Explanation of Respirator Codes:

Class 1 low to medium absorption capacity filters.

Class 2 medium absorption capacity filters.

Class 3 high absorption capacity filters.

PAPR Powered Air Purifying Respirator (positive pressure) cartridge.

Type A for use against certain organic gases and vapors.

Type AX for use against low boiling point organic compounds (less than 65°C).

Type B for use against certain inorganic gases and other acid gases and vapors.

Type E for use against sulfur dioxide and other acid gases and vapors.

Type K for use against ammonia and organic ammonia derivatives

Class P1 intended for use against mechanically generated particulates of sizes most commonly encountered in industry, e.g. asbestos, silica.

Class P2 intended for use against both mechanically and thermally generated particulates, e.g. metal fume.

Class P3 intended for use against all particulates containing highly toxic materials, e.g. beryllium.

continued...

ACTIVATED CARBON

Chemwatch Material Safety Data Sheet

Issue Date: 22-Dec-2005

CHEMWATCH 4658-37

CD 2005/4 Page 9 of 12

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

Use appropriate NIOSH-certified respirator based on informed professional judgement. In conditions where no reasonable estimate of exposure can be made, assume the exposure is in a concentration IDLH and use NIOSH-certified full face pressure demand SCBA with a minimum service life of 30 minutes, or a combination full facepiece pressure demand SAR with auxiliary self-contained air supply. Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

ENGINEERING CONTROLS

- Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
- Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.
- If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered. Such protection might consist of:
 - (a): particle dust respirators, if necessary, combined with an absorption cartridge;
 - (b): filter respirators with absorption cartridge or canister of the right type;
 - (c): fresh-air hoods or masks
- Build-up of electrostatic charge on the dust particle, may be prevented by bonding and grounding.
- Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Does not mix with water.

Floats on water.

Molecular Weight: Not Applicable

Melting Range (C): Not Available

Solubility in water (g/L): Immiscible

pH (1% solution): Not Applicable

Volatile Component (%vol): Not Applicable

Relative Vapor Density (air=1): Not Applicable

Lower Explosive Limit (%): Not Applicable

Autoignition Temp (C): Not Applicable

State: Divided Solid

Boiling Range (C): Not Applicable

Specific Gravity (water=1): 0.25-0.60

pH (as supplied): Not Applicable

Vapor Pressure (kPa): Not Applicable

Evaporation Rate: Not Applicable

Flash Point (C): Not Applicable

Upper Explosive Limit (%): Not Applicable

Decomposition Temp (°C): Not Available

APPEARANCE

Black granules of powder with no odor; insoluble in water.

continued...

ACTIVATED CARBON

Chemwatch Material Safety Data Sheet

Issue Date: 22-Dec-2005

CHEMWATCH 4658-37
CD 2005/4 Page 10 of 12

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerization will not occur.

STORAGE INCOMPATIBILITY

Activated carbon, when exposed to air, represents a potential fire hazard due to a high surface area and adsorptive capacity. Freshly prepared material may ignite spontaneously in the presence of air especially at high humidity. Spontaneous combustion in air may occur at 90-100 deg. C. The presence of moisture in air facilitates the ignition. Drying oils and oxidising oils promote spontaneous heating and ignition; contamination with these must be avoided. Unsaturated drying oils (linseed oil etc.) may ignite following adsorption owing to an enormous increase in the surface area of oil exposed to air; the rate of oxidation may also be catalysed by metallic impurities in the carbon. A similar, but slower effect occurs on fibrous materials such as cotton waste. Spontaneous heating of activated carbon is related to the composition and method of preparation of the activated carbon. Free radicals, present in charcoal, are responsible for autoignition. Self-heating and autoignition may also result from adsorption of various vapours and gases (especially oxygen). For example, activated carbon auto-ignites in flowing air at 452-518 deg. C.; when the base, triethylene-diamine, is adsorbed on the carbon (5%) the autoignition temperature is reduced to 230-260 deg. C.. An exotherm is produced at 230-260 deg. C., at high flow rates of air, although ignition did not occur until 500 deg. C.. Mixtures of sodium borohydride with activated carbons, in air, promote the oxidation of sodium borohydride, producing a self-heating reaction that may result in the ignition of charcoal and in the production of hydrogen through thermal decomposition of the borohydride. Avoid reaction with oxidizing agents.

Section 11 - TOXICOLOGICAL INFORMATION

Activated Carbon

Not available. Refer to individual constituents.

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances

CARBON, STEAM ACTIVATED - NOT REGULATED:

No data of toxicological significance identified in literature search.

Section 12 - ECOLOGICAL INFORMATION

Marine Pollutant: Not Determined
DO NOT discharge into sewer or waterways.

continued...

ACTIVATED CARBON

Chemwatch Material Safety Data Sheet

Issue Date: 22-Dec-2005

CHEMWATCH 4658-37
CD 2005/4 Page 11 of 12

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.

- Recycle wherever possible.
- Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility can be identified.
- Dispose of by: Burial in a licensed land-fill or Incineration in a licensed apparatus (after admixture with suitable combustible material)
- Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

Section 14 - TRANSPORTATION INFORMATION

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS:UN,IATA,IMDG

Section 15 - REGULATORY INFORMATION

RISK

Risk Codes	Risk Phrases
R07	May cause fire.

REGULATIONS

carbon, steam activated - not regulated (CAS: 7440-44-0) is found on the following regulatory lists;
Canada Domestic Substances List (DSL)
US - Minnesota Hazardous Substance List
US EPA High Production Volume Program Chemical List
US Toxic Substances Control Act (TSCA)

Section 16 - OTHER INFORMATION

LIMITED EVIDENCE

Inhalation may produce health damage*.
Cumulative effects may result following exposure*.
May produce discomfort of the eyes and respiratory tract*.
Limited evidence of a carcinogenic effect*.

* (limited evidence).

Reasonable care has been taken in the preparation of this information, but the author makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The author makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use. For additional technical information please call our toxicology department on +800 CHEMCALL.

Issue Date: 22-Dec-2005

continued...

ACTIVATED CARBON

Chemwatch Material Safety Data Sheet
Issue Date: 22-Dec-2005

CHEMWATCH 4658-37
CD 2005/4 Page 12 of 12
Section 16 - OTHER INFORMATION

Print Date: 22-Dec-2005

This document is copyright. Apart from any fair dealing for the purposes of private study, research, review or criticism, as permitted under the Copyright Act, no part may be reproduced by any process without written permission from CHEMWATCH. TEL (+61 3) 9572 4700.