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-----ISO 9001: 2015-----

MATERIAL SAFETY DATA SHEET

Identification

1.1GHS Product identifier

Acenaphthene, 97%.

Code A 1230

2.Hazard identification

2.1Classification of the substance or mixture

Not classified.

2.2GHS label elements, including precautionary statements

Pictogram(s) No symbol.
Signal word No signal word.
Hazard statement(s) none
Precautionary statement(s)
Prevention none
Response none
Storage none
Disposal none

2.3Other hazards which do not result in classification

none

3.Composition/information on ingredients

3.1Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
acenaphthene	acenaphthene	83-32-9	none	100%

4.First-aid measures

4.1Description of necessary first-aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

Fresh air, rest.

In case of skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

In case of eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

If swallowed

Rinse mouth.

4.2Most important symptoms/effects, acute and delayed

SYMPTOMS: Symptoms of exposure to this compound may include irritation of the skin, eyes, mucous membranes and upper respiratory tract. If ingested, it can cause vomiting. Chronic exposure may result in kidney and liver damage. ACUTE/CHRONIC

HAZARDS: This compound is harmful by inhalation, ingestion or skin absorption. It is an irritant of the skin, eyes, mucous membranes and upper respiratory tract. When heated to decomposition it emits toxic fumes of carbon monoxide and carbon dioxide.

4.3Indication of immediate medical attention and special treatment needed, if necessary

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR if necessary.

Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. /Naphthalene and Related Compounds/

5.Fire-fighting measures

5.1Extinguishing media

Suitable extinguishing media

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.

5.2Specific hazards arising from the chemical

Flash point data for this chemical are not available. It is probably combustible.

5.3Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

6.Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

6.3 Methods and materials for containment and cleaning up

ACCIDENTAL RELEASE MEASURES: Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided. Methods and materials for containment and cleaning up: Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. Handling and storage

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Avoid exposure - obtain special instructions before use. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Separated from strong oxidants. Provision to contain effluent from fire extinguishing. Store in an area without drain or sewer access. Keep container tightly closed in a dry and well-ventilated place. Storage class (TRGS 510): Non Combustible Solids.

8. Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

Recommended Exposure Limit: 10 Hr Time-Weighted Avg: 0.1 mg/cu m (cyclohexane-extractable fraction). /Coal tar pitch volatiles/

NIOSH considers coal tar pitch volatiles to be potential occupational carcinogens. NIOSH usually recommends that occupational exposures to carcinogens be limited to the lowest feasible concentration. /Coal tar pitch volatiles/

Biological limit values

no data available

8.2 Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Respiratory protection

Wear dust mask when handling large quantities.

Thermal hazards

no data available

9. Physical and chemical properties

Physical state	white to light yellowish solid
Colour	White needles
Odour	no data available
Melting point/ freezing point	122°C(lit.)
Boiling point or initial boiling point and boiling range	241°C(lit.)
Flammability	Combustible.
Lower and upper explosion limit / flammability limit	no data available
Flash point	38°C(lit.)
Auto-ignition temperature	>450 °C
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	In water:0.000347 g/100 mL
Partition coefficient n-octanol/water (log value)	log Kow = 3.92
Vapour pressure	10 mm Hg (131 °C)
Density and/or relative density	1.069
Relative vapour density	5.32 (vs air)
Particle characteristics	no data available

10. Stability and reactivity

10.1 Reactivity

no data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

This chemical is a combustible solid. Dust explosion possible if in powder or granular form, mixed with air. ACENAPHTHENE is incompatible with strong oxidizing agents. Incompatible with ozone and chlorinating agents. Forms crystalline complexes with desoxycholic acid.

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Incompatible materials: Strong oxidizing agents.

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions - Carbon oxides.

11. Toxicological information

Acute toxicity

Oral: no data available

Inhalation: no data available

Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

12. Ecological information

12.1 Toxicity

Toxicity to fish: LC50; Species: *Lepomis macrochirus* (bluegill); Conditions: static bioassay; Concentration: 1,700 ug/L for 96 hr

Toxicity to daphnia and other aquatic invertebrates: EC50; Species: *Daphnia magna* (Water Flea) age <24 hr; Conditions: freshwater, static, dissolved oxygen > or =2 mg/L; Concentration: 1275 ug/L for 48 hr (95% confidence interval: 1102-1475 ug/L); Effect: intoxication, immobilization /> or =97% purity

Toxicity to algae: no data available

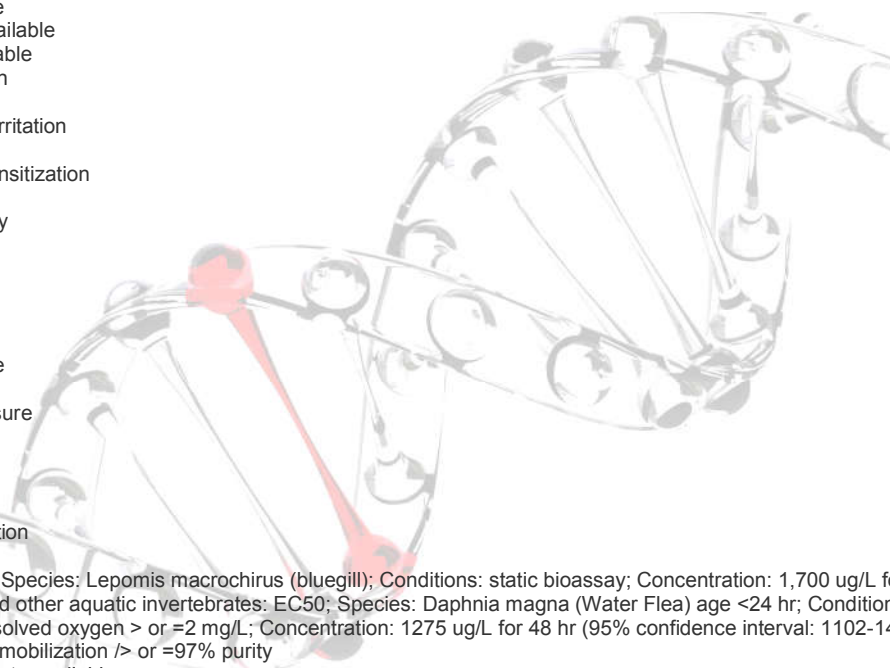
Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: Acclimated mixed cultures in mineral salt media were able to degrade 50% of a crude oil containing acenaphthene within 48 hr(1). Grab samples of groundwater aquifer soil that had acclimated to creosote wastes containing acenaphthene were able to degrade acenaphthene at concentration between 0.02 and 0.12 ppm under aerobic conditions at 25°C for a 56 day period at an average rate of 130% per week(2); an average loss of 5.0% per week was observed for autoclaved controls(2). Unacclimated material from the same aquifer degraded acenaphthene at an average rate of 6.6% per week; however, autoclaved controls lost acenaphthene at an overall rate of 9.2% per week(2). The biotransformation half-life for 2 mg/L of acenaphthene in hard water with zero suspended solids was 24.8 days(3). The half-lives for 2 mg/L of acenaphthene in hard water with suspended solid concentration of 52, 403 and 601 mg/L from Roselawn Pond, Denton, TX were 3.52, 4.03 and 2.23 days, respectively(3). The half-lives for 2 mg/L of acenaphthene in hard water with suspended solid concentrations of 83, 397 and 591 mg/L from Pat Mayseake, Paris, TX were 4.91, 1.20 and 0.83 days, respectively(3); all half-lives were corrected for abiotic losses by controls(3). Acenaphthene, present at 100 mg/L, reached 0% of its theoretical BOD in 4 weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test(4).

12.3 Bioaccumulative potential

After a 28 day exposure to an average water concentration of 8.94 ug/L, the log BCF of acenaphthene in the tissue of bluegill sunfish (*Lepomis macrochirus*) was 2.59 (BCF of 389(1,2)). A BCF range of 254-1270 was measured in fish for acenaphthene(SRC), using carp (*Cyprinus carpio*) which were exposed over an 8-week period to 0.003-0.03 mg/L(3). According to a classification scheme(4), the BCF range suggests the potential for bioconcentration in aquatic organisms is high to very high(SRC), provided the compound is not metabolized by the organism(SRC). PAHs may not bioconcentrate in aquatic organisms which contain microsomal oxidase, such as fish, as this enzyme enables the rapid metabolism of certain polycyclic aromatic hydrocarbons(4). Some marine organisms have no detectable aryl hydrocarbons hydroxylase enzyme systems, namely: phytoplankton, certain zooplankton,



mussels (*Mytilus edulis*), scallops (*Placopecten* sp), and snails (*Littornia littorea*)(5). Those organisms which lack a metabolic detoxification enzyme system, tend to accumulate polycyclic aromatic hydrocarbons(5).

12.4 Mobility in soil

Acenaphthene has a reported experimental log Koc value of 3.59 (Koc of 3890) in soil(1). Desorption-sorption tests using 11 soils found a log Koc range of 3.40-5.33 (Koc of 2510-2.14X10+5)(2). The log Koc of acenaphthene in 16 historically contaminated sediments ranged from 2.97 to 5.87 (Koc of 933 to 7.4X10+5 with a median of 4.39 (Koc of 2.45X10+4)(3). According to a classification scheme(4), the Koc range in soil suggests that acenaphthene is expected to have slight to no mobility in soil.

12.5 Other adverse effects

no data available

13. Disposal considerations

13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

14. Transport information

14.1 UN Number

ADR/RID: UN3077

IMDG: UN3077

IATA: UN3077

14.2 UN Proper Shipping Name

ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

IATA: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

14.3 Transport hazard class(es)

ADR/RID: 9

IMDG: 9

IATA: 9

14.4 Packing group, if applicable

ADR/RID: III

IMDG: III

IATA: III

14.5 Environmental hazards

ADR/RID: no

IMDG: no

IATA: no

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

15. Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
acenaphthene	acenaphthene	83-32-9	none
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Not Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.

Section 16: Other Information

This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.