1. *Identification of the* Substance *and the Manufacturer*

1.1. *Product identifiers*

Product name	*Okadaic-acid*	*Formula*	*$C_{44}H_{68}O_{13}$*
Product Code	*OKA*	*Molecular weight*	*805 g/mol*
CAS#	*78111-17-8*	*Mixture?*	*Substance*
ECHA#	*616-589-8*	*PUBCHEM*	*446512*
HSDB	*7243*	*RTECS*	*AA8227800*
Drug bank#	*DB02169*	*Comptox EPA*	*60880002*
Synonyms and other names	*Okadaic acid*		
	9,10-Deepithio-9,10-didehydroacanthifolicin		
Source	*From: Marine dinoflagellates*	*Vers Date*	*3 September, 2024*

1.2. *Intended uses of the Substance and uses advised against*

1.2.1. Intended use:	***1.2.2. Uses advised against:***
Research and development. *Laboratory reagent.* *Reference material.* *Manufacturing of substances.* *To be used by professionals only*	*Not a drug,* *Not a food additive* *Not to be used in humans or animals.*

1.3. *Contacts*

1.3.1. Details of the supplier of the SDS	
FERMENTEK ltd *4 Yatziv street, POB 47120* *Jerusalem 97800,* *Israel*	*Tel: +972 2 5853953* *Fax: +972 2 5853943* *eMail: Fermentek@Fermentek.com* *Safety@Fermentek.com* *Website: Fermentek.com*
This company is the manufacturer of the product and the supplier of the safety data sheet	
1.3.2. Emergency Telephone number	
For chemical emergency spill, leak, fire, exposure, or accident calls CHEMTREC day or night: *Within USA and Canada: 1-800-424-9300. Outside USA and Canada: +1 703-527-3887*	

2. Hazards' identification.

Not hazardous, not classified according to EU Reg. 1272/2008 and US OSHA 1910.1200).

2.1. Classification of the Substance .

2.1.1. GHS Classification: According to EU Reg. 1272/2008 and US OSHA 1910.1200)

To our judgement, hazards of this substance have not been thoroughly investigated

Other suppliers have classified this substance as H300, H310, H330 (Fatal if swallowed, inhaled or in contact with skin, and H350 may cause cancer. To our opinion, these claims are not proven sufficiently. Some closely related substances are highly hazardous. Therefore, we recommend handling all chemicals with caution.

Accute toxicity: Oral	*Category 1*	*H300*	*Fatal if swallowed*

2.2. GHS Label elements, including precautionary statements

2.2.1. Pictogram: {  } Signal word: {Danger }

2.2.2. Hazard Statements

H300	*Fatal if swallowed*

2.2.3. GHS Precautionary Statements

P201	*Obtain, read and follow all safety instructions before use.*
P202	*Do not handle until all safety precautions have been read and understood.*
P261	*Avoid breathing dust or mist.*
P264	*Wash {hands} thoroughly after handling.*
P270	*Do not eat, drink or smoke when using this product.*
P272	*Contaminated work clothing should not be allowed out of the workplace.*
P280	*Wear protective gloves/protective clothing/eye protection/face protection/hearing protection*

2.2.4. GHS Response Phrases:

P301+P310	*IF SWALLOWED: Immediately call a POISON CENTER/doctor/*
P330	*Rinse mouth.*
H362	*May cause harm to breast-fed children*
P308+P313	*IF exposed or concerned: Get medical advice/attention.*

3. Composition/information on ingredients

Substance	
Substance Name:	*Okadaic-acid*
Concentration	*<=100%*

CAS Registry#:	*78111-17-8*
EC#:	*616-589-8*
Molecular Formula:	*$C_{44}H_{68}O_{13}$*
Molecular Weight:	*805 g/mol*
Classification	*Acc O:1 (H300)*
Mixture?	*Substance*

4. First Aid Measures.

4.1. Description of First Aid Measures.

General advice:	*First-aiders need to protect themselves.* *If medical attention is required, show this safety data sheet to the doctor in attendance.*
Eye contact:	*Rinse out with plenty of water. Remove contact lenses.*
Skin Contact:	*In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.*
Ingestion:	*If swallowed: give water to drink (two glasses at most). Seek medical advice immediately.*
Inhalation:	*If inhaled, move the person into fresh air.*

4.2. Most important symptoms and effects, both acute and delayed

General symptoms	*See section 11*

4.3. Indication of any immediate medical attention and special treatment needed

Note to physicians	*NCBI : HAZARDOUS SUBSTANCES DATA BANK* *Antidote and Emergency Treatment (Complete)* *https://pubchem.ncbi.nlm.nih.gov/source/hsdb/7243#section=Emergency-Medical-Treatment*	

5. Fire-fighting measures.

5.1. Extinguishing media.

Suitable extinguishing media	*Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.*
Unsuitable extinguishing media	*None known*

5.2. Other information

Hazardous combustion products	*Carbon oxides, Nitrogene oxides, Sulfur oxides, Sulfur dihydrogene, Formula $C_{44}H_{68}O_{13}$*
Advice for firefighters	*Wear self-contained breathing apparatus for fire fighting if necessary. Wear protective suit.*

6. Accidental release measures

6.1. Personal precautions, protective equipment, and emergency procedures

Personal precautions	*Use personal protective equipment as required. Keep people away from and upwind of spill/leak.*

6.2. Environmental precautions

Environmental precautions	*Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.*

6.3. Methods and material for containment and cleaning up

Methods for containment:	*Prevent further leakage or spillage if safe to do so. Cover the powder spill with a plastic sheet or tarp to minimize spreading. Dike far ahead of liquid spill for later disposal.*
Methods for cleaning up:	*Clean-up should be dealt with only by qualified personnel familiar with the specific substance. Cover liquid spill with sand, earth or other non-combustible absorbent material (e.g., sand, earth, diatomaceous earth, and vermiculite). Cover the powder spill with a plastic sheet or tarp to minimize spreading. Sweep up and shovel into suitable containers for disposal.*

7. Handling and storage

7.1. Precautions for safe handling

Advice on safe handling:	*Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Wash contaminated clothing before reuse. Do not breathe dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product.*

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions:	*Keep container tightly closed in a dry and well-ventilated place.* *Keep out of the reach of children.* *Store at -20 °C.*
Suitable packaging	*Must only be kept in original packaging.*
Incompatible materials:	*None known based on information available.*

8. Exposure Controls/Personal Protection

***Attention**:*

Usually, the product of concern would be present at the intended workplace in miniscule amounts, while surrounded by considerable amounts of other flammable, toxic or otherwise hazardous substances. Therefore, a risk assessment should be performed by the employer/user prior to the use of this product.

The type of protective equipment must be selected based on the amount and concentration of all dangerous materials being used in the workplace.

All recommendations included in this document are advisory in nature

8.1. Control parameters

Control parameters	Components with workplace control parameters

8.2. Exposure controls

Appropriate engineering controls	Showers, Eyewash stations, Ventilation systems Avoid contact with skin, eyes, and clothing. Wash hands before breaks and immediately after handling the product. Use fume-hood for routine work.

8.3. Personal protective equipment

[PPE=Personal Protection Equipment]	
PPE: Respiratory protection	Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
PPE: Hand Protection:	Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal techniques to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices, and wash and dry hands
PPE: Eye Protection:	Use a face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU)

PPE: Skin and Body Protection:	*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 Regulation (EU) 2016/425 and the standard EN 374 derived from it.*

9. Physical and chemical properties

9.1. Physical/chemical properties

Physical state at room temperature	*Solid*
Appearance	*Powder, White*
No further safety relevant data are available	

10. Stability and reactivity

Reactivity:	*No information available.*
Chemical stability:	*Stable under normal conditions.*
Conditions to avoid	*Heat, flames and sparks. Sunlight.*
Incompatible materials	*Strong reducers and exidizers*
Possibility of Hazardous Reactions	*None under normal processing*
Hazardous combustion products	*See section 5*

11. Toxicological information

11.1. Information on toxicological effects

To the best of our knowledge, the toxicological effects of this product have not been thoroughly studied yet.

11.1.1. Acute Toxicity

Acute toxicity:	*Oral, Mouse, LD50= 192 µg/kg (**MICRO**gram/Kg)* *No other acute toxicity available.*
Skin corrosion/irritation:	*No data available*
Serious eye damage/eye irritation:	*No data available*
Respiratory or skin sensitization/corrosion:	*No data available*

11.1.2. Chronic toxicity

Chronic toxicity	*No data available*

11.1.3. CRM (Carcinogene, Mutagene, Reproductive hazards)

Germ cell mutagenicity:	*Mutagenicity reported in human, rodent cells cultures <see RTECS>*
Carcinogenicity:	*12 mg/kg on skin for 30W caused tumor in mouse.*

	Sustance not classified by IARC <As at 8-2024>
Repro-Tox	*No data available*

11.2. Additional information

RTECS number	*AA8227800*
General symptoms	*Lungs, Thorax, or Respiration - acute pulmonary edema* *Liver - other changes* *Peripheral Nerve and Sensation - spastic paralysis with or without sensory change* *Gastrointestinal - ulceration or bleeding from stomach. Hypermotility, diarrhea -and other changes* *Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - phosphatases* *Behavioral - food intake (animal)* *Cardiac - cardiomyopathy including infarction*

12. Ecological Information

Eco-Toxicity	*No data available*
Other adverse effects	*No data available*

13. Disposal Considerations

13.1. Waste treatment methods

Waste Disposal	*Dispose of in accordance with local regulations*
Contaminated packaging	*Dispose of as unused product*

14. Transport information

14.1. UN Number, Proper Shipping Name, Transport Hazard Class, packing group

UN Number *UN proper shipping name*	*UN 3462: Toxins, Extracted from Living Sources, Solid, N.O.S. (Okadaic-acid)*
Transport Hazard Class & Packing Group	*Class 6.1 (Poison) ; Packing group I*

15. Regulatory information

15.1. Safety, health, and environmental regulations/legislation

USA EPA / TSCA	*This product is not listed on the USA EPA TSCA (it is for research)*
EU ECHA Status	*This product is registered with the EU ECHA, Number 616-589-8. REACH: PreRegistered.* *ANNEX III (criteria for 1 - 10 tonne registered substances): Not Listed (as at 8-2024)*

16. Other information

16.1. Version information

Version date:8-2024	*Toxicity data updated Oral acute set to 1 According to RTECS of 4-2024 update. Added symptoms and adverse effects according to HSDB (Hazardous substances Data Bank).*

16.2. Department issuing this SDS

Quality systems and regulatory affairs

16.3. General Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication.

The information given here is designed only as guidance for safe handling, use, processing, storage, transportation, disposal, and release and ***is not to be considered a warranty or quality specification****.*

The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless explicitly specified in the text.

16.4. The users'/employers' responsibility:

Usually, the product of concern would be present at the intended workplace in miniscule amounts, while surrounded by considerable amounts of other flammable, toxic or otherwise hazardous substances. Therefore, a risk assessment should be performed by the employer/user prior to the use of this product.

The type of protective equipment must be selected based on the amount and concentration of all dangerous materials being used in the workplace.

All recommendations included in this document are advisory in nature.

16.5. No © copyright

16.5.1. END OF SDS

Appendix A: Abbreviations and acronyms:

Acute Tox.:	*Acute toxicity*
CAS:	*Chemical Abstracts Service*
Comptox	*CompTox Chemicals Dashboard Resource Hub (EPA)*
DOT:	*US Department of Transportation*
ECHA	*European Chemicals Agency*
EINECS:	*European Inventory of Existing Commercial Chemical Substances*
EPA	*United States Environmental Protection Agency*
Eye Dam.:	*Serious eye damage/eye irritation*
HSDB	*Hazardous Substances Data Bank*
HMIS:	*Hazardous Materials Identification System (USA)*
IATA:	*International Air Transport Association*
IMDG:	*International Maritime Code for Dangerous Goods*
LC50:	*Lethal concentration, Median*
LD50:	*Lethal dose, Median*
LDL0	*Letal dose, leatst published*
NDG	*Not dangerous goods (for transport)*
NFPA:	*National Fire Protection Association USA*
NIOSH:	*National Institute for Occupational Safety*
OSHA:	*Occupational Safety & Health*
PBT:	*Persistent, Bioaccumulative, and Toxic*
PEL:	*Permissible Exposure Limit*
REL:	*Recommended Exposure Limit*
Repr.:	*Reproductive toxicity*
RTECS:	*Registry of Toxic Effects of Chemical Substances*
Skin Irrit:	*Skin corrosion/irritation*
STOT/SE	*Specific target organ toxicity/Single exposure*
STOT/RE	*Specific target organ toxicity/Repeated exposure*
T3DB	*Toxin and Toxin Target Database*
TDL0	*Toxic dose, least published*

Appensix B:

Source: https://www.ilo.org/legacy/english/protection/safework/ghs/ghsfinal/ghsc05.pdf

How to interpret existing toxicity information, and to deduct classification.

Data in mg/kg body weight ; LD50/oral/Mouse or Rat; rats usually are more susceptible.

If no oral data available but subcutaneous/IV is, you can guess oral by multiplying IP by 10 or IV by 20.

Exposure	CAT 1	CAT 2 LD50/oral/mouse	CAT 3 LD50/oral/mouse	CAT 4 LD50/oral/mouse
Oral	<5	5-50	50-300	300-2000
Dermal	<50	5-200	200-1000	1000-2000
Dust/Mist mg/L (timing?)	<0.2	0.2-2	2-4	
				
Packing Group	*1*	*2*	*3*	*NDG*