



Safety Data Sheet

1. Identification

Product identifier: The Oppenheimer Formula I®
Other means of identification: NONE
Recommended use: Bioremediation of hydrocarbons
Recommended restrictions: None known. Workers (and your customers or users in the case of resale) should be informed of the potential presence of respirable dust. Appropriate training in the proper use and handling of this material should be provided as required under applicable regulations.

Manufacturer

Company name: Oppenheimer Biotechnology, Inc.
Address: PO Box 1490, Pflugerville TX 78691-1490 United States
Telephone: 512-474-1016
Website: <http://www.obio.com>
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2. Hazard(s) identification

This product contains less than 0.25% respirable crystalline silica according to a modified version of the NIOSH 7500 method. It does not meet the criteria for classification as hazardous according to criteria set forth by OSHA Hazard Communication Standard (29 CFR 1910.1200) or EC Regulation 1272/2008.

The microbes are considered Class 1 and have not been connected to any safety issues

Physical hazards: Can be slippery when wet

Health hazards: Not classified

Environmental hazards: Not classified

OSHA defined hazards: Not classified.

Label elements

Hazard symbol: None

Signal word: None

Hazard statement: The substance does not meet the criteria for classification

Precautionary statement

Prevention: Observe good industrial hygiene practices

Response: Wash hands after handling

Storage: Keep dry and store away from incompatible materials

Disposal: Dispose of waste and residues in accordance with local authority requirements

Hazard(s) not otherwise classified (HN OC): None known

Supplemental information: Not applicable.

3. Composition/information on ingredients

Substances

Chemical name	Common name & synonyms	CAS number	%
Bentonite	Smectite Bentonite	1302-78-9	85
Quartz		14808-60-7	<= 8
Cristobalite		14464-46-1	<= 2
Mixed microbe population	NONE		>=5

Bentonite is a UVCB substance sub -type 4. The purity of the product is 100% w/w. Bentonite is composed mainly of smectite group minerals but the composition is varied, as expected for a UVCB substance, and other mineral constituents will be present in small and varying amounts. These minor constituents are not relevant for classification and labelling.

Composition comments: Occupational Exposure Limits for constituents are listed in Section 8. The purity of the product is 100% w/w. Impurities are not applicable for a UVCB substance.

In accordance with paragraph (i) of 1910.1200 on trade secrets a statement that the specific chemical identity and/or exact percentage (concentration of composition have been withheld as a trade secret as our product formulation is proprietary.

4. First-aid measures

Inhalation: If dust from the material is inhaled, remove the affected person immediately to fresh air. Call a physician if symptoms develop or persist. No specific first aid measures noted.

Skin contact: Can be drying. Get medical attention if irritation develops and persists. No specific first aid measures noted. Wash skin with soap and water.

Eye contact: Can be irritating. No specific first aid measures noted. Flush thoroughly with water. If irritation occurs, get medical assistance.

Ingestion: No specific first aid measures noted. Rinse mouth thoroughly. Get medical attention if any discomfort occurs.

Most important symptoms/effects, acute and delayed: Dust in the eyes will cause irritation.

Indication of immediate medical attention and special treatment needed: Provide supportive measures and treat symptomatically.

General information: No hazards which require special first aid measures. Provide general supportive measures and treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media: Water fog. Foam. Dry chemical powder. Carbon dioxide (CO₂). Use any media suitable for the surrounding fires.

Unsuitable extinguishing media: Not applicable, non-combustible.

Specific hazards arising from the chemical: None known. The product itself does not burn.

Special protective equipment and precautions for firefighters: Material can be slippery when wet.

Fire fighting equipment/instructions: In the event of fire, cool with water spray. Material can be slippery when wet.

Specific methods: Cool containers exposed to flames with water until well after the fire is out

General fire hazards: No unusual fire or explosion hazards noted. This material will not burn.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Keep unnecessary personnel away. Material can be slippery when wet. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Avoid inhalation of dust from the spilled material. For personal protection see section 8 of the SOS. No special precautions are necessary beyond normal good hygiene practices. See Section 8 for additional personal protection advice when handling this product.

Methods and materials for containment and cleaning up: If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Sweep up or vacuum up spillage and collect in suitable container for disposal. Collect dust using a vacuum cleaner equipped with HEPA filter. Minimize dust generation and accumulation. Avoid the generation of dusts during clean-up. Following product recovery, flush area with water. For waste disposal, see section 13 of the SOS. Collect powder using special dust vacuum cleaner with particle filter or carefully sweep into closed container.

Environmental precautions: Prevent further leakage or spillage if safe to do so. No special environmental precautions required.

7. Handling and storage

Precautions for safe handling: Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Avoid breathing dust. Avoid contact with skin and eyes. In case of insufficient ventilation, wear suitable respiratory equipment. Practice good housekeeping.

Conditions for safe storage, including any incompatibilities: No special restrictions on storage with other products. Store in a dry area. Store in original tightly closed container. Keep the container dry. Store away from incompatible materials (see Section 10 of the SOS). Guard against dust accumulation of this material.

8. Exposure controls /personal protection

Occupational exposure limits

US. OSHA Table Z-3 (29 CFR 1910.1 000)

Constituents	Type	Value	Form
INERT OR NUISANCE DUSTS	TWA	5 mg/m ³	Respirable fraction.
		15 mg/m ³	Total dust
		50 mppcf	Total dust
		15 mppcf	Respirable fraction

Biological limit values: No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls: Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing. If engineering measures are not sufficient to maintain concentrations of dust particulates below the OEL, suitable respiratory protection must be worn.

Individual protection measures, such as personal protective equipment

Eye/face protection: Use tight fitting goggles if dust is generated. Wear dust-resistant safety goggles where there is danger of eye contact.

Skin protection: No protection is ordinarily required under normal conditions of use

Hand protection: Wear gloves to prevent drying

Other: Normal work clothing (long sleeved shirts and long pants) is recommended.

Respiratory protection: Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.

Thermal hazards: Not applicable

General hygiene considerations: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Use good industrial hygiene practices in handling this material.

9. Physical and chemical properties

Appearance: Fine powder

Physical state: Solid. Color: Light grey

Odor: Slight oil smell

Odor threshold: Not applicable.

pH: 8.5

Melting point: > 842 °F (> 450 °C) Freezing point: Not applicable

Initial boiling point/range: Not applicable

Flash point: Not applicable

Evaporation rate: Not available

Flammability (solid, gas) This product is not flammable

Upper/lower flammability or explosive limits

Flammability limit - lower (%): Not applicable

Flammability limit - upper (%): Not applicable

Explosive limit - lower (%): Not available.

Explosive limit - upper (%): Not available

Vapor pressure: Not applicable.

9. Physical and chemical properties (continued)

Vapor density: Not applicable.

Relative density: 2.6 g/cm³

Solubility(ies)

Solubility (water): < 0.9 mg/l

Partition coefficient: Not applicable

(n-octanol/water): Not applicable.

Auto-ignition temperature: Not applicable.

Decomposition temperature: > 932 °F (> 500 °C)

Viscosity: Not applicable.

Viscosity temperature: Not applicable.

Other information

Bulk density: 0.9 - 1.4 g/cm³

Explosive limit: Not applicable.

Explosive properties: Not explosive

Explosivity: Not applicable.

Flame extension: Not applicable.

Flammability: Not applicable.

Flammability(flashback): Not applicable.

Flammability (Heat of combustion): Not applicable.

Flammability (Train fire): Not applicable.

Flammability class: Not applicable.

Flash point class: Not flammable

Molecular formula: UVCB Substance

Molecular weight: Not applicable.

Oxidizing properties: None.

Percent volatile: 0 %

pH in aqueous solution: 8.5

Specific gravity: Not applicable.

VOC (Weight %): 0 %

10. Stability and reactivity

Reactivity: The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability: Stable at normal conditions.

Possibility of hazardous reactions: Will not occur.

Conditions to avoid: Moisture. Avoid temperatures exceeding the decomposition temperature. Contact with incompatible materials. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).

Incompatible materials: None known.

Hazardous decomposition products: None.

11. Toxicological information

Information on likely routes of exposure

Inhalation: Inhalation of dusts may cause respiratory irritation.

Skin contact: Not classified.

Eye contact: Dust in the eyes will cause irritation.

Ingestion: Not classified.

Symptoms related to the physical, chemical and toxicological characteristics: None known.

Information on toxicological effects

Product	Species	Test Results
The Oppenheimer Formula		
<u>Acute</u>		
Inhalation/Dust		
LC50	Rat	> 5.27 mg/l, 4 hr OECD 436
Oral/Dust		
LDSO	Rat	> 2000 mg/kg OECD 425

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation: Not classified.

Serious eye damage/eye irritation: Dust in the eyes will cause irritation. Mild irritant to eyes (according to the modified Kay & Calandra criteria)

Respiratory or skin sensitization

Respiratory sensitization Not classified.

Skin sensitization: Not classified.

11. Toxicological information (continued)

Germ cell mutagenicity: Not classified.

Carcinogenicity: In June 2003, SCOEL (the EU Scientific Committee on Occupational exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is

increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk ..." (SCOEL SUM Doc 94-final, June 2003) According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory occupational exposure limits. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled. No carcinogenicity data available for this product. Sepiolite was evaluated by IARC as class 3 ("Cannot be classified as to carcinogenicity to humans"). Based on read-across with sepiolite, bentonite was assessed as non-carcinogenic. Therefore classification of bentonite for carcinogenicity is not warranted.

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IARC Monographs. Overall Evaluation of Carcinogenicity: Not available.
 US. National Toxicology Program (NTP) Report on Carcinogens: Not available

Reproductive toxicity: Not classified.
 Specific target organ toxicity - single exposure. Not classified.
 Specific target organ toxicity - repeated exposure. Not classified
 Aspiration hazard: Not available.

12. Ecological information

Ecotoxicity: The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Product	Species	Test Results
Bentonite (CAS 1302-78-9)		
Aquatic		
Algae	EC50	Freshwater algae > 100 mg/l, 72 hours
Crustacea	EC50	Coon stripe shrimp (Pandalus danae) 24.8 mg/l, 96 hours Daphnia > 100 mg/l, 48 hours Dungeness or edible crab (Cancer magister) 81.6 mg/l, 96 hours
Fish	LC50	Freshwater fish 16000 mg/l. 96 hours Marine water fish 2800 - 3200 mg/l, 24 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability: Not relevant for inorganic substances
 Bioaccumulative potential: Will not bio-accumulate
 Mobility in soil: Bentonite is almost insoluble and thus presents a low mobility in most soils. The microbes are slightly mobile and present a low mobility in most soils
 Mobility in general: The product has poor water-solubility.
 Other adverse effects: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions: Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose in accordance with all applicable regulations.
 Local disposal regulations: Dispose in accordance with all applicable regulations.
 Hazardous waste code: The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
 Waste from residues / unused products: Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
 Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Store containers and offer for recycling of material when in accordance with the local regulations.

14. Transport information

DOT: Not regulated as dangerous goods.
 IATA: Not regulated as dangerous goods.
 IMDG: Not regulated as dangerous goods.
 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable.

15. Regulatory information

US federal regulations
 CERCLA Hazardous Sub stance List (40 CFR 302.4): Not listed.
 Superfund Amendments and Reauthorization Act of 1986 (SARA)
 Hazard categories Immediate Hazard – No
 Delayed Hazard – No
 Fire Hazard - No

Pressure Hazard – No
Reactivity Hazard – No

SARA 302 Extremely hazardous substance: Not listed.
SARA 311/312 Hazardous chemical: No
SARA 313 (TRI reporting) : Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List: Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130): Not regulated.

Safe Drinking Water Act (SOW A) : Not regulated.
Food and Drug: Total food additive

Administration (FDA): Direct food additive
GRAS food additive

US state regulations

US. California Controlled Substances.
CA Department of Justice (California Health and Safety Code Section 11100): Not listed.
US. Massachusetts RTK - Substance List: Not regulated.
US. New Jersey Worker and Community Right-to-Know Act: Not regulated.
US. Pennsylvania Worker and Community Right-to- Know Law: Not listed.
US. Rhode Island RTK: Not regulated.
US. California Proposition 65
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name		On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes	
Canada	Domestic Substances List (DSL)		Yes
Canada	Non-Domestic Substances List (NDSL)		No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes	
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes	
Europe	European List of Notified Chemical Substances (ELINCS)		No
Japan	Inventory of Existing and New Chemical Substances (ENCS)		No
Korea	Existing Chemicals List (ECL)		Yes
New Zealand	New Zealand Inventory		Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes	
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory		Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country (s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date July 2017 Version #1

Further information: This safety datasheet only contains information relating to safety and does not replace any product information or product specification.

HMIS® ratings: Health: 1 Flammability: 0 Physical hazard: 0
NFPA ratings: Health: 1 Flammability: 0 Instability: 0

List of abbreviations

SWERF = Size-Weighted Relevant Fine Fraction methodology is a scientific method developed to quantify the content of respirable particles within a bulk product. All details about the SWERF method are available at www.crystallinesilica.eu.

UVCB = a substance of Unknown or Variable composition, Complex reaction products or Biological materials

References: For any information on literature references or toxicity/ ecotoxicity studies, please contact the supplier.

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 is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The manufacturer expressly does not make any representations, warranties, or guarantees as to its accuracy, reliability or completeness nor assumes any liability, for its use. It is the user's responsibility to verify the suitability and completeness of such information for each particular use. 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 specified in the text. The information in the sheet was written based on the best knowledge and experience currently available.