

1. Product and company identification

Product identifier

Trade name: 634A81 - Silicone Fluid

Relevant identified uses of the substance or mixture and uses advised against

General use: Product for orthopedic procedures.
Reserved for industrial and professional use.

Details of the supplier of the safety data sheet

Company name: Otto Bock Health Care
Street/POB-No.: 3820 W. Great Lakes Drive
Postal Code, city: Salt Lake City, UT 84120
USA
WWW: www.ottobockus.com
Telephone: +1 (801) 956-2400
Telefax: +1 (801) 956-2401
Department responsible for information:
Quality Department,
Telephone: +1 (801) 954-2304 (7 AM – 3 PM, Mountain Time),
Email: USRegulatory@ottobock.com

Additional information: Corporate headquarters:
Ottobock SE & Co. KGaA
Max-Näder-Straße 15
Duderstadt
Germany

Emergency phone number

CHEMTREC, Telephone: +1 (800) 424-9300

Transport:

CONSULTANK Lutz Harder GmbH (Contract QUALI003)

Telephone: +49 (0)178-4337434 (from USA: 01149 178 4337434)

2. Hazards identification

Emergency overview

Appearance: Physical state at 68 °F and 101.3 kPa: liquid
Color: colorless
Odor: nearly odorless
Classification: Flammable Liquid - Category 2. Aquatic toxicity - acute - Category 1.
Aquatic toxicity - chronic - Category 2.

Hazard symbols:



Signal word:

Danger

Hazard statements:

Highly flammable liquid and vapor.
Very toxic to aquatic life with long lasting effects.

Precautionary statements:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Keep container tightly closed.
Avoid release to the environment.
Collect spillage.

Regulatory status

This material is considered hazardous by the U.S. OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards not otherwise classified

Potentially explosive mixtures may form if adequate ventilation is not provided.
Inhaling can lead to irritations of the respiratory tract and mucous membrane.
Higher doses may have a narcotic effect. May become electrostatically charged. Special danger of slipping by leaking/spilling product.
see section 11: Toxicological information

3. Composition / Information on ingredients

Chemical characterization: C6 H18 O Si2
Hexamethyldisiloxane, HMDS 90 % - 100 %
CAS-Number: 107-46-0

4. First aid measures

General information: If medical advice is needed, have product container or label at hand. Take off contaminated clothing and wash it before reuse.
In case of inhalation: Provide fresh air. If you feel unwell, seek medical advice.
Following skin contact: Remove mechanically with cloth or paper. Thoroughly wash skin with soap and water. Consult a doctor if skin irritation persists.
After eye contact: Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing. In case of troubles or persistent symptoms, consult an ophthalmologist.
After swallowing: Rinse mouth with water.
Never give an unconscious person anything through the mouth.
Do not induce vomiting.
If you feel unwell, seek medical advice.

Most important symptoms/effects, acute and delayed

Inhaling can lead to irritations of the respiratory tract and mucous membrane.
Higher doses may have a narcotic effect.

Information to physician

Treat symptomatically.

5. Fire fighting measures

Flash point/flash point range:

26.06 °F (c.c.)

Auto-ignition temperature: 665.6 °F

Suitable extinguishing media:

Water spray jet, alcohol resistant foam, dry chemical powder, carbon dioxide.

Extinguishing media which must not be used for safety reasons:

Full water jet

Specific hazards arising from the chemical

Highly flammable liquid and vapor.

Air combined with vapors may form potentially explosive mixtures that are heavier than air. Vapors may proceed on the ground over great distances and cause fire and backflashes.

In case of fire may be liberated: silicon dioxide, traces of incompletely burned carbon compounds, formaldehyde, carbon monoxide and carbon dioxide.

Protective equipment and precautions for firefighters:

Wear self-contained positive pressure breathing apparatus and full firefighting protective clothing.

Additional information:

Heating will lead to pressure increase: Danger of bursting and explosion. Use fine water spray to cool endangered containers.

Move undamaged containers from immediate hazard area if it can be done safely.

In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Do not allow fire water to penetrate into surface or ground water.

Fire residuals and contaminated extinguishing water must be disposed of in accordance with the regulations of the local authorities.

6. Accidental release measures

Personal precautions:

Do not breathe vapors. Avoid contact with the substance.

Eliminate all ignition sources if safe to do so. Provide adequate ventilation.

Wear appropriate protective equipment. Take off contaminated clothing and wash it before reuse. Keep unprotected people away.

Cordon off downwind area at risk and warn inhabitants.

Environmental precautions:

Do not allow to enter into ground-water, surface water or drains. Danger of explosion!

In case of release, notify competent authorities.

Methods for clean-up:

Isolate leaked material using non-flammable absorption agent (e.g. sand, earth, vermiculit, diatomaceous earth) and collect it for disposal in appropriate containers in accordance with the local regulations (see section 13).

Beware of reignition. Thoroughly clean surrounding area.

In case of greater quantities: Collect mechanically (use only explosion-proof equipment when pumping out).

Additional information:

Use explosion-proof equipment and non-sparking tools/utensils.

Special danger of slipping by leaking/spilling product.

7. Handling and storage

Handling

Advices on safe handling: Provide adequate ventilation, and local exhaust as needed.

Wear suitable protective clothing.

Avoid contact with skin and eyes.

Do not breathe vapor/aerosol. The use of local exhaust ventilation is recommended.

Do not eat, drink or smoke when using this product.

Take off contaminated clothing and wash it before reuse. Wash hands and face thoroughly after handling.

When handling large quantities, supply emergency spray.

Precautions against fire and explosion:

Keep away from sources of ignition - No smoking.

Take precautionary measures against static discharges.

Use only explosion-protected equipment/instruments. Do not weld.

In partially filled containers explosive mixtures may form.

Storage

Requirements for storerooms and containers:

Keep container tightly closed and in a well-ventilated place.

Keep container dry. Keep only in the original container.

Protect from heat and direct sunlight.

Store containers in upright position. Explosion protection required.

Hints on joint storage:

Do not store together with combustible or self-igniting materials or any highly flammable solids. Keep away from food, drink and animal feedingstuffs. Keep away from: strong oxidizing agents, Organic peroxides, Flammable solids, pyrophoric liquids and solids, Gases, Substances which, in contact with water, emit flammable gases, explosive(s).

Further details:

Measurements taken at temperatures exceeding 302 °F have revealed that a small quantity of formaldehyde splits off through oxidative decomposition.
Formaldehyde: Toxic by inhalation, in contact with skin and if swallowed. Corrosive. May cause sensitization by skin contact. Limited evidence of a carcinogenic effect.

8. Exposure controls / personal protection

Engineering controls

Provide for good ventilation or exhaust system or work with completely self-contained equipment. Explosion protection required.

See also information in chapter 7, section storage.

Personal protection equipment (PPE)

Eye/face protection: Tightly sealed goggles according to OSHA Standard - 29 CFR: 1910.133 or ANSI Z87.1-2010.

Skin protection: Flame retardant, antistatic and chemical resistant protective clothing.
Protective gloves according to OSHA Standard - 29 CFR: 1910.138.
Glove material: butyl caoutchouc (butyl rubber), neoprene, nitrile rubber, ethylene vinyl alcohol laminate (EVAL), polyvinyl alcohol, polyvinyl chloride, fluoro rubber
Layer thickness: > 0.35 mm
Breakthrough time: > 120 min
Observe glove manufacturer's instructions concerning penetrability and breakthrough time.

Respiratory protection: Respiratory protection must be worn whenever the TLV (WEL) levels have been exceeded. Use combination filter type A/P2 according to OSHA Standard - 29 CFR: 1910.134 or ANSI Z88.2.

General hygiene considerations:

- Take off contaminated clothing and wash it before reuse. Use only non-sparking tools.
- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Do not breathe vapor/aerosol. Avoid contact with skin and eyes.
- When using do not eat, drink or smoke.
- Wash hands before breaks and after work.
- When handling large quantities, supply emergency spray.

Environmental exposure controls

Refer to 6.: Section "Environmental precautions".

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance:	Physical state at 68 °F and 101.3 kPa: liquid Color: colorless
Odor:	nearly odorless
Odor threshold:	No data available
pH:	No data available
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	> 95 °F
Flash point/flash point range:	26.06 °F (c.c.)
Evaporation rate:	No data available
Flammability:	No data available
Explosion limits:	LEL (Lower Explosion Limit): 1,5 % UEL (Upper Explosive Limit): 14,65 %
Vapor pressure:	at 68 °F: 43 hPa at 77 °F: 55 hPa at 122 °F: 175 hPa
Vapor density:	No data available
Density:	at 77 °F: 0.760 g/mL (DIN 51757)
Water solubility:	at 73.4 °F: 0.930 mg/L
Partition coefficient: n-octanol/water:	at 77 °F: 4.20 log P(o/w) Based on the n-octanol/water partition coefficient accumulation in organisms is possible.
Auto-ignition temperature:	665.6 °F
Thermal decomposition:	302 °F
Viscosity, dynamic:	at 77 °F: 0.5 mPa*s (DIN 51562)
Viscosity, kinematic:	at 77 °F: 0.65 mm²/s (DIN 53018)
Explosive properties:	Vapors may form explosive mixtures with air.
Ignition temperature:	644 °F (DIN 51794)
Molecular weight	162 g/mol
Additional information:	Relative vapor density (air=1): 5,6 Evaporation rate (butyl acetate =1): >1.

10. Stability and reactivity

Reactivity: Highly flammable liquid and vapor. Vapors may form explosive mixtures with air.

Chemical stability: Stable under recommended storage conditions.

Possibility of hazardous reactions:

Electrostatic charge

Conditions to avoid: Keep away from heat sources, sparks and open flames.
Protect from direct sunlight.

Incompatible materials: Strong oxidizing agents

Hazardous decomposition products:

formaldehyde.

Thermal decomposition: 302 °F

11. Toxicological information

Toxicological tests

Acute toxicity: LD50 Rat, oral: > 5,000 mg/kg
LC50 Rat, inhalative: approx. 106 mg/L/4h (OECD 403)
LD50 Rabbit, dermal: > 2,000 mg/kg

Toxicological effects: Acute toxicity (oral): Based on available data, the classification criteria are not met.
Acute toxicity (dermal): Based on available data, the classification criteria are not met.
Acute toxicity (inhalative): Based on available data, the classification criteria are not met.
Skin corrosion/irritation: Based on available data, the classification criteria are not met.
mild irritant
Species Rabbit: 500 mg/24h
Serious eye damage/irritation: Based on available data, the classification criteria are not met.
mild irritant
Species Rabbit
Sensitisation to the respiratory tract: Based on available data, the classification criteria are not met.
Skin sensitisation: Based on available data, the classification criteria are not met.
Germ cell mutagenicity/Genotoxicity: Based on available data, the classification criteria are not met.
gene-mutations mammalian cells: not a mutagen
chromosomal aberrations mammalian cells: not a mutagen
not mutagenic in bacterial mutagenicity
Carcinogenicity: Based on available data, the classification criteria are not met.
Reproductive toxicity: Based on available data, the classification criteria are not met.
Effects on or via lactation: Based on available data, the classification criteria are not met.
Specific target organ toxicity (single exposure): Lack of data.
Specific target organ toxicity (repeated exposure): Lack of data.
Aspiration hazard: Lack of data.

Other information: Measurements taken at temperatures exceeding 302 °F have revealed that a small quantity of formaldehyde splits off through oxidative decomposition. Formaldehyde: Toxic by inhalation, in contact with skin and if swallowed. Corrosive. May cause sensitization by skin contact. Limited evidence of a carcinogenic effect.

12. Ecological information

Ecotoxicity

Aquatic toxicity: Very toxic to aquatic life with long lasting effects.
 Algae toxicity:
 EC50 Selenastrum capricornutum (green algae), growth rate: > 0.55 mg/L/72h (OECD 201)
 Daphnia toxicity:
 NOEC Daphnia magna (Big water flea): 0.1 mg/L/21d
 Fish toxicity:
 LC50 Oncorhynchus mykiss: 0.46 mg/L/96h

Mobility in soil

No data available

Persistence and degradability

Further details: Biodegradability: 2 %/28 d (OECD 301 C), not easily bio-degradable

Additional ecological information

Volatile organic compounds (VOC):
 100 % by weight / 760 g/L
 General information: Do not allow to enter into ground-water, surface water or drains.

13. Disposal considerations

Product

Recommendation: Incinerate as hazardous waste according to applicable local, state, and federal regulations.

Package

Recommendation: Handle empty containers with care. Incineration may cause explosion. Residual substance emptied and rinsed clean. Do not re-use the empty container. Dispose of waste according to applicable legislation.

14. Transport information

UN number

ADR/RID, IMDG, IATA-DGR:
 UN 1993

UN proper shipping name

ADR/RID, IMDG, IATA-DGR:
 UN 1993, FLAMMABLE LIQUID, N.O.S. (Hexamethyldisiloxane)

Transport hazard class(es)

ADR/RID: Class 3, Code: F1
IMDG: Class 3, Subrisk -
IATA-DGR: Class 3

Packing group

ADR/RID, IMDG, IATA-DGR:
II

Environmental hazards

Marine pollutant: yes

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

No data available

USA: Department of Transportation (DOT)

Identification number: UN1993
Proper shipping name: UN 1993, FLAMMABLE LIQUIDS, N.O.S.
(Hexamethyldisiloxane)
Hazard class or Division: 3
Packing Group: II
Labels: 3
Symbols: G
Special Provisions: IB2, T7, TP1, TP8, TP28
Packaging – Exceptions: 150
Packaging – Non-bulk: 202
Packaging – Bulk: 242
Quantity limitations – Passenger aircraft / rail: 5 L
Quantity limitations – Cargo only: 60 L
Vessel stowage – Location: B

Sea transport (IMDG)

UN number: UN 1993
Proper shipping name: UN 1993, FLAMMABLE LIQUID, N.O.S. (Hexamethyldisiloxane)
Class or division, Subsidiary risk: Class 3, Subrisk -
Packing Group: II
EmS: F-E, S-E
Special Provisions: 274
Limited quantities: 1 L
Excepted quantities: E2
Package - Instructions: P001
Package - Provisions: -
IBC - Instructions: IBC02
IBC - Provisions: -
Tank instructions - IMO: -
Tank instructions - UN: T7
Tank instructions - Provisions: TP1, TP8, TP28
Stowage and handling: Category B.
Properties and observations: -
Marine pollutant: yes
Segregation group: none



Air transport (IATA)

UN/ID number: UN 1993
 Proper shipping name: UN 1993, FLAMMABLE LIQUID, N.O.S. (Hexamethyldisiloxane)
 Class or division, Subsidiary risk: Class 3
 Packing Group: II
 Hazard label: Flamm. liquid
 Excepted Quantity Code: E2
 Passenger and Cargo Aircraft: Ltd.Qty.: Pack.Instr. Y341 - Max. Net Qty/Pkg. 1 L
 Passenger and Cargo Aircraft: Pack.Instr. 353 - Max. Net Qty/Pkg. 5 L
 Cargo Aircraft only: Pack.Instr. 364 - Max. Net Qty/Pkg. 60 L
 Special Provisions: A3
 Emergency Response Guide-Code (ERG): 3H

15. Regulatory information

National regulations - U.S. Federal Regulations

TSCA Inventory: listed

National regulations - U.S. State Regulations

No data available

16. Other information

Text for labeling: Contains 100 % Hexamethyldisiloxane. Safety data sheet available on request.

Hazard rating systems:



NFPA Hazard Rating:

Health: 1 (Slight)
 Fire: 3 (Serious)
 Reactivity: 0 (Minimal)

HMIS Version III Rating:

Health: 1 (Slight)
 Flammability: 3 (Serious)
 Physical Hazard: 0 (Minimal)
 Personal Protection: X = Consult your supervisor

HEALTH	1
FLAMMABILITY	3
PHYSICAL HAZARD	0
	X

Abbreviations and acronyms:

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
 ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
 Aquatic toxicity - acute: Hazardous to the aquatic environment - acute
 Aquatic toxicity - chronic: Hazardous to the aquatic environment - chronic
 AS/NZS: Australian Standards/New Zealand Standards
 CAS: Chemical Abstracts Service
 CFR: Code of Federal Regulations
 CLP: Classification, Labelling and Packaging
 DMEL: Derived minimal effect level
 DNEL: Derived no-effect level
 EC: European Community
 EC50: Effective Concentration 50%
 EmS: Emergency Response Procedures for Ships Carrying Dangerous Goods
 EN: European Standard
 EQ: Excepted quantities
 Flammable Liquid: Flammable liquid
 IATA: International Air Transport Association
 IATA-DGR: International Air Transport Association – Dangerous Goods Regulations
 IBC Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
 IMDG Code: International Maritime Dangerous Goods Code
 IMO: International Maritime Organization
 LC50: Median lethal concentration
 LD50: Lethal dose 50%
 LEL: Lower Explosion Limit
 log P(o/w): Partition coefficient: octanol/water
 MARPOL: Maritime Pollution: The International Convention for the Prevention of Pollution from Ships
 NOEC: No Observed Effect Concentration
 OECD: Organisation for Economic Co-operation and Development
 OEL: Occupational Exposure Limit Value
 OSHA: Occupational Safety and Health Administration
 PBT: Persistent, bioaccumulative and toxic
 PNEC: Predicted no-effect concentration
 REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals
 RID: Regulations Concerning the International Carriage of Dangerous Goods by Rail
 TLV: Threshold Limit Value
 TRGS: Technical Rules for Hazardous Substances
 UN: United Nations
 vPvB: Very persistent and very bioaccumulative
 WEL: Workplace Exposure Limit

Reason of change: General revision

Date of first version: 10/25/2012

Department issuing data sheet

Contact person: see section 1: Department responsible for information

The information in this data sheet has been established to our best knowledge and was up-to-date at time of revision. It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.