

## 1. Product and company identification

### Product identifier

Trade name: 636W60 - Loctite 243

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

General use: Anaerobe sealing agent, Screw Locking Agent, 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](http://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](mailto: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: blue

Odor: Mild (acryl)

Classification: Sensitization - skin - Category 1. Aquatic toxicity - acute - Category 2.  
Aquatic toxicity - chronic - Category 3.

Hazard symbols:



Signal word:

**Warning**

Hazard statements:

May cause an allergic skin reaction.  
Toxic to aquatic life.  
Harmful to aquatic life with long lasting effects.

## Precautionary statements:

Avoid breathing mist/vapors/spray.  
Contaminated work clothing should not be allowed out of the workplace.  
Avoid release to the environment.  
Wear protective gloves/protective clothing/eye protection.  
IF ON SKIN: Wash with plenty of water/soap.  
Specific treatment (see 'First aid' on this label).  
If skin irritation or rash occurs: Get medical advice/attention.  
Take off contaminated clothing and wash it before reuse.  
Dispose of contents/container to hazardous or special waste collection point.

## Regulatory status

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

## Hazards not otherwise classified

Special danger of slipping by leaking/spilling product.  
see section 11: Toxicological information

## 3. Composition / Information on ingredients

Chemical characterization: Anaerobe sealing agent

Relevant ingredients:

CAS No.	Designation	Concentration	Classification
CAS 2082-81-7	Tetramethylene dimethacrylate	20 - 40 %	Sensitization - skin - Category 1B. Aquatic toxicity - acute - Category 2.
CAS 101-37-1	2,4,6-Triallyloxy-s-triazine	5 - 10 %	Acute Toxicity - oral - Category 4. Aquatic toxicity - acute - Category 2. Aquatic toxicity - chronic - Category 2.
CAS 109-16-0	2,2'-Ethylenedioxydiethyl dimethacrylate	1 - 5 %	Sensitization - skin - Category 1B. Aquatic toxicity - acute - Category 3.
CAS 51978-15-5	[2-[(2-Methyl-1-oxoallyl)oxy]ethyl] hydrogen maleate	< 1 %	Skin Corrosion - Category 1B. Eye Damage - Category 1. Sensitization - skin - Category 1.
CAS 79-41-4	Methacrylic acid	< 1 %	Flammable Liquid - Category 4. Acute Toxicity - oral - Category 4. Acute Toxicity - dermal - Category 3. Acute Toxicity - inhalative - Category 4. Skin Corrosion - Category 1A. Eye Damage - Category 1. Specific Target Organ Toxicity (Single Exposure) - Category 3. Aquatic toxicity - acute - Category 3.
CAS 108-31-6	Maleic anhydride	0.001 - 0.01 %	Acute Toxicity - oral - Category 4. Skin Corrosion - Category 1B. Eye Damage - Category 1. Respiratory Sensitizer - Category 1. Sensitization - skin - Category 1A. Specific Target Organ Toxicity (Repeated Exposure) - Category 1. Aquatic toxicity - acute - Category 3.

Additional information: Contains silicon dioxide, polyethylene.  
The maximum workplace exposure limits are, where necessary, listed in section 8.

### 4. First aid measures

General information: If medical advice is needed, have product container or label at hand.

In case of inhalation: Move victim to fresh air. If you feel unwell, seek medical advice.

Following skin contact: Remove residues with soap and water. Take off contaminated clothing and wash it before reuse. In case of skin reactions, consult a physician.

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 eye irritation consult an ophthalmologist.

After swallowing: Rinse mouth immediately and drink plenty of water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Consult physician.

#### Most important symptoms/effects, acute and delayed

May cause an allergic skin reaction.

#### Information to physician

Treat symptomatically.

### 5. Fire fighting measures

Flash point/flash point range: > 212 °F

Auto-ignition temperature: No data available

Suitable extinguishing media: Water spray jet, dry chemical powder, foam, carbon dioxide

Extinguishing media which must not be used for safety reasons: Full water jet

#### Specific hazards arising from the chemical

Emits toxic fumes under fire conditions.  
In case of fire may be liberated: Nitrogen oxides (NOx), 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: Do not breathe fumes. Do not allow fire water to penetrate into surface or ground water. Contaminated fire-fighting water must be collected separately.

### 6. Accidental release measures

Personal precautions: Avoid breathing mist/vapors/spray. Avoid contact with skin and eyes. If possible, eliminate leakage.  
Provide adequate ventilation. Wear appropriate protective equipment. Take off contaminated clothing and wash it before reuse.  
Keep unprotected people away.

### Environmental precautions:

Do not allow to enter into ground-water, surface water or drains. If necessary, notify appropriate authorities.

### Methods for clean-up:

Smaller amounts:

Collect spilled material using paper towels and dispose.

Large amounts:

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents) and place in closed containers for disposal.

Never return spills in original containers for re-use.

### Additional information:

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. Avoid breathing mist/vapors/spray. Avoid contact with skin and eyes.

Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Wear appropriate protective equipment.

Take off contaminated clothing and wash it before reuse. Have eye wash bottle or eye rinse ready at work place.

#### Precautions against fire and explosion:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

### 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.

#### Hints on joint storage:

Keep away from food, drink and animal feedingstuffs.

Do not store together with: Acids, reducing agents, strong bases, strong oxidizing agents.

## 8. Exposure controls / personal protection

### Exposure guidelines

#### Occupational exposure limit values:

CAS No.	Designation	Type	Limit value
79-41-4	Methacrylic acid	USA: ACGIH: TWA	70 mg/m <sup>3</sup> ; 20 ppm
		USA: NIOSH: TWA	70 mg/m <sup>3</sup> ; 20 ppm (may be absorbed through the skin)
108-31-6	Maleic anhydride	USA: ACGIH: TWA	0.01 mg/m <sup>3</sup> ; 0.0025 ppm
			(inhalable fraction and vapor)
		USA: IDLH: TWA	10 mg/m <sup>3</sup>
		USA: NIOSH: TWA	0.25 mg/m <sup>3</sup> ; 1 ppm
7631-86-9	Silicon dioxide	USA: OSHA: TWA	1 mg/m <sup>3</sup> ; 0.25 ppm
		USA: IDLH: TWA	3,000 mg/m <sup>3</sup>
		USA: NIOSH: TWA	6 mg/m <sup>3</sup>
		USA: OSHA: TWA	20 mppcf
		USA: OSHA: TWA	80 mg/m <sup>3</sup> (total dust)

### Engineering controls

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

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: Wear suitable protective clothing.

Protective gloves according to OSHA Standard - 29 CFR: 1910.138.

Glove material: Nitrile rubber - Layer thickness:  $\geq 0.4$  mm.

Breakthrough time:  $\geq 480$  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. In case of inadequate ventilation wear respiratory protection.

Recommendation: Use filter type A (= against vapors of organic substances) according to OSHA Standard - 29 CFR: 1910.134 or ANSI Z88.2.

The filter class must be suitable for the maximum contaminant concentration (gas/vapor/aerosol/particulates) that may arise when handling the product.

General hygiene considerations:

Avoid breathing mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product.

Wash hands thoroughly after handling. Take off contaminated clothing and wash it before reuse. Have eye wash bottle or eye rinse ready at work place.

### 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: blue

Odor: Mild (acryl)

Odor threshold: No data available

pH: No data available

Melting point/freezing point:  $< -22$  °F

Initial boiling point and boiling range:  $> 302$  °F

Flash point/flash point range:  $> 212$  °F

Evaporation rate: No data available

Flammability: This material is combustible, but will not ignite readily.

Explosion limits: LEL (Lower Explosion Limit): Not determined

UEL (Upper Explosive Limit): Not determined

Vapor pressure: at 80.6 °F:  $< 1.33$  hPa

Vapor density: 1 (Air = 1)

Density: 1.08 g/mL

Water solubility: Not miscible in any proportion

Partition coefficient: n-octanol/water:	3.1 log P(o/w) (Tetramethylene dimethacrylate) Based on the n-octanol/water partition coefficient significant accumulation in organisms is not expected. at 68 °F: 2.8 log P(o/w) (2,4,6-Triallyloxy-s-triazine) Based on the n-octanol/water partition coefficient significant accumulation in organisms is not expected.
Auto-ignition temperature:	No data available
Thermal decomposition:	No data available
Viscosity, dynamic:	1,300 - 3,000 mPa*s (Brookfield)
Viscosity, kinematic:	at 104 °F: > 20.5 mm²/s
Ignition temperature:	Not determined

## 10. Stability and reactivity

Reactivity:	Refer to subsection "Possibility of hazardous reactions".
Chemical stability:	Product is stable under normal storage conditions.
Possibility of hazardous reactions:	Exothermic polymerization may occur.
Conditions to avoid:	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Incompatible materials:	Acids, reducing agent, strong bases, strong oxidizing agents
Hazardous decomposition products:	No hazardous decomposition products when regulations for storage and handling are observed.
Thermal decomposition:	No data available

## 11. Toxicological information

### Toxicological tests

Toxicological effects: The statements are derived from the properties of the single components. No toxicological data is available for the product as such.

Acute toxicity (oral): Lack of data.

Acute toxicity (dermal): Lack of data.

Acute toxicity (inhalative): Lack of data.

Skin corrosion/irritation: Based on available data, the classification criteria are not met.

Serious eye damage/irritation: Based on available data, the classification criteria are not met.

Sensitisation to the respiratory tract: Based on available data, the classification criteria are not met.

Skin sensitisation: Sensitization - skin - Category 1 = May cause an allergic skin reaction.

Germ cell mutagenicity/Genotoxicity: Lack of data.

Carcinogenicity: Lack of data.

Reproductive toxicity: Lack of data.

Effects on or via lactation: Lack of data.

Specific target organ toxicity (single exposure): Lack of data.

Specific target organ toxicity (repeated exposure): Based on available data, the classification criteria are not met.

Aspiration hazard: Based on available data, the classification criteria are not met.

Other information: Information about Tetramethylene dimethacrylate (CAS 2082-81-7):

LD50 Rat, oral: 10,660 mg/kg (OECD 401)

LD50 Rat, dermal: > 2,000 mg/kg (OECD 402)

Information about 2,4,6-Triallyloxy-s-triazine (CAS 101-37-1):

LD50 Rat, oral: 753mg/kg (OECD 401)

LD50 Rabbit, dermal: > 2,000 mg/kg (OECD 402), no mortality occurred

Information about Methacrylic acid (CAS 79-41-4):

LD50 Rat, oral: 1,320 mg/kg (OECD 401)

LD50 Rabbit, dermal: ≥ 500 mg/kg

LC50 Rat, inhalative (dust/mist): 3.19 mg/L/4h (OECD 403)

Carcinogenic effect, Silicon dioxide (CAS 7631-86-9):

IARC Rating: Group 3

OSHA Carcinogen: not listed

NTP Rating: not listed

Carcinogenic effect, Polyethylene (CAS 9002-88-4):

IARC Rating: Group 3

OSHA Carcinogen: not listed

NTP Rating: not listed

### Symptoms

After contact with skin: Skin rash, urticaria

## 12. Ecological information

### Ecotoxicity

Aquatic toxicity: Toxic to aquatic life with long lasting effects.

Information about Tetramethylene dimethacrylate (CAS 2082-81-7):

Fish toxicity:

LC50 Danio rerio (zebrafish): 3.34 mg/L/96h (OECD 203)

Daphnia toxicity:

EC50 Daphnia magna (Big water flea): 28.4 mg/L/48h (data obtained by analogy conclusion, e.g. (Q)SAR)

NOEC Daphnia magna (Big water flea): 5.09 mg/L/21d (OECD 211)

Algae toxicity:

ErC50 Desmodesmus subspicatus (green algae): 9.79 mg/L/72h (OECD 201)

NOEC Desmodesmus subspicatus (green algae): 2.11 mg/L/72h (OECD 201)

Information about 2,4,6-Triallyloxy-s-triazine (CAS 101-37-1):

Fish toxicity:

LC50 Danio rerio (zebrafish): 7.05 mg/L/96h (OECD 203)

Daphnia toxicity:

EC50 Daphnia magna (Big water flea): 40 mg/L/48h (OECD 202)

Algae toxicity:

ErC50 Desmodesmus subspicatus (green algae): 10.52 mg/L/72h (OECD 201)

NOEC Desmodesmus subspicatus (green algae): 2.5 mg/L/72h (OECD 201)

Effects in sewage plants: Information about 2,4,6-Triallyloxy-s-triazine (CAS 101-37-1):

EC50 activated sludge: > 1,000 mg/L/3h

### Mobility in soil

Information about 2,4,6-Triallyloxy-s-triazine (CAS 101-37-1):

log KOC: 2.6

### Persistence and degradability

Further details: Biodegradability:

Information about Tetramethylene dimethacrylate (CAS 2082-81-7):

Formation of carbon dioxide: 84%/28d (OECD 310), easily bio-degradable

Information about 2,4,6-Triallyloxy-s-triazine (CAS 101-37-1):

Formation of carbon dioxide: 9%/28d (OECD 301 B), not easily bio-degradable

### Additional ecological information

Volatile organic compounds (VOC):

< 3 % by weight

General information:

Do not allow to enter into ground-water, surface water or drains.

## 13. Disposal considerations

### Product

Recommendation: Dispose of waste according to applicable legislation. Do not allow to enter drains.

### Package

Recommendation: Dispose of waste according to applicable legislation. Non-contaminated packages may be recycled. Handle contaminated packages in the same way as the substance itself.



### 14. Transport information

#### UN number

ADR/RID, IMDG, IATA-DGR:

not applicable

#### UN proper shipping name

ADR/RID, IMDG, IATA-DGR:

Not restricted

#### Transport hazard class(es)

ADR/RID, IMDG, IATA-DGR:

not applicable

#### Packing group

ADR/RID, IMDG, IATA-DGR:

not applicable

#### Environmental hazards

Marine pollutant:

no

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

No data available

#### USA: Department of Transportation (DOT)

Proper shipping name:

Not restricted

#### Sea transport (IMDG)

Proper shipping name::

Not restricted

Marine pollutant:

no

#### Air transport (IATA)

Proper shipping name::

Not restricted

#### Further information

No dangerous good in sense of these transport regulations.

### 15. Regulatory information

#### National regulations - U.S. Federal Regulations

Tetramethylene dimethacrylate:	TSCA Inventory: listed
2,4,6-Triallyloxy-s-triazine:	TSCA Inventory: listed
2,2'-Ethylenedioxydiethyl dimethacrylate:	TSCA Inventory: listed
[2-[(2-Methyl-1-oxoallyl)oxy]ethyl] hydrogen maleate:	TSCA Inventory: listed; EPA flags PMN; 5E
Methacrylic acid:	TSCA Inventory: listed Clean Air Act: CAA SOCM Chemical: yes NIOSH Recommendations: Occupational Health Guideline: 0386*
Maleic anhydride:	TSCA Inventory: listed Clean Air Act: CAA Hazardous Air Pollutants: yes CAA SOCM Chemical: yes Clean Water Act: CWA Hazardous Substances: RQ 5000 lbs. Other Environmental Laws: CERCLA: RQ 5000 lbs. RCRA Hazardous Wastes: Code U147 SARA Title III - Section 313, Toxic Release: Conc. 1.0% / Threshold Standard NIOSH Recommendations: Occupational Health Guideline: 0376
Polyethylene:	TSCA Inventory: listed Carcinogen Status: IARC Rating: Group 3 OSHA Carcinogen: not listed NTP Rating: not listed
Silicon dioxide:	TSCA Inventory: listed Carcinogen Status: IARC Rating: Group 3 OSHA Carcinogen: not listed NTP Rating: not listed NIOSH Recommendations: Occupational Health Guideline: 0552

#### National regulations - U.S. State Regulations

Methacrylic acid:	Idaho Air Pollutant List: Title 585 -- AAC: 3.5 -- EL: 4.67 -- WEL: 70 - Title 586 - Massachusetts Haz. Substance codes: 4,5,6 Minnesota Haz. Substance: Codes: A -- Ratings: - Pennsylvania Haz. Substance code: - Washington Air Contaminant: TWA: 20 ppm - 70 mg Skin: Protective measures should be taken to prevent or reduce skin absorption.
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## 16. Other information

Text for labeling:

Contains 20 - 40 % Tetramethylene dimethacrylate, 5 - 10 % 2,4,6-Triallyloxy-s-triazine, 1 - 5 % 2,2'-Ethylenedioxydiethyl dimethacrylate, < 1 % [2-[(2-Methyl-1-oxoallyl)oxy]ethyl] hydrogen maleate, < 1 % Methacrylic acid, 0.001 - 0.01 % Maleic anhydride.

Hazard rating systems:



NFPA Hazard Rating:

Health: 1 (Slight)

Fire: 1 (Slight)

Reactivity: 0 (Minimal)

HMIS Version III Rating:

Health: 1 (Slight)

Flammability: 1 (Slight)

Physical Hazard: 0 (Minimal)

Personal Protection: X = Consult your supervisor

HEALTH	1
FLAMMABILITY	1
PHYSICAL HAZARD	0
	X

Classification procedure:

Physical hazards: on basis of test data

Health hazards, environmental hazards: calculation method

Abbreviations and acronyms:

Acute Toxicity: Acute toxicity

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

BCF: Bioconcentration Factor

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

Eye Damage: Eye damage

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

QSAR: Quantitative Structure-Activity Relationship

Respiratory Sensitizer: Sensitisation to the respiratory tract

RID: Regulations Concerning the International Carriage of Dangerous Goods by Rail

Sensitization - skin: Skin sensitisation

Skin Corrosion: Skin corrosion

STOT RE: Specific target organ toxicity - repeated exposure

STOT SE: Specific target organ toxicity - single exposure

TLV: Threshold Limit Value

TRGS: Technical Rules for Hazardous Substances

vPvB: Very persistent and very bioaccumulative

WEL: Workplace Exposure Limit

Reason of change: Changes in section 2: Classification, labelling  
Changes in section 3: Composition/information on ingredients  
Changes in section 9: Physical and chemical properties  
Changes in section 14: Transport information  
General revision

Date of first version: 2/24/2005

**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.