1. Product and company identification

Product identifier

Trade name: 634A28 - Thinner

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

General use: casting resin 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
Dept. 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: Form: liquid
Color: colorless
Odor: ester-like
Classification: Flammable Liquid - Category 2; Skin Irritation - Category 2; Sensitization - skin - Category 1; Specific Target Organ Toxicity (Single Exposure) - Category 3;

Hazard symbols:

Signal word: **Danger**

Hazard statements:
Highly flammable liquid and vapor.
Causes skin irritation.
May cause an allergic skin reaction.
May cause respiratory irritation.

Precautionary statements:
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Take precautionary measures against static discharge.
Avoid breathing vapors.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
Store in a well-ventilated place. Keep container tightly closed.

Regulatory status

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

Hazards not otherwise classified

High concentrations of vapor or inhalation for an extended period may lead to paralysis of the central nervous system. Pulmonary edema is possible.
see section 11: Toxicological information

3. Composition / Information on ingredients

Relevant ingredients:

CAS No.	Designation	Content	Classification
CAS 80-62-6	Methyl methacrylate	>= 90 %	Flammable Liquid - Category 2. Skin Irritation - Category 2. Sensitization - skin - Category 1. Specific Target Organ Toxicity (Single Exposure) - Category 3.

4. First aid measures

General information:
Take off immediately all contaminated clothing.
Always seek medical assistance if symptoms develop that are possibly due to exposure through skin or eye contact or through inhalation of fumes.

In case of inhalation:
Move victim to fresh air, put at rest and loosen restrictive clothing. If breathing becomes irregular or ceases, apply rescue breathing or artificial respiration immediately, where required supply oxygen. Seek medical attention.

Following skin contact:
After contact with skin, wash immediately with soap and plenty of water.
Seek medical attention if irritation persists.

After eye contact:
Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Subsequently consult an ophthalmologist.

After swallowing:
Do not induce vomiting. Immediately get medical attention.

Most important symptoms/effects, acute and delayed

inhalation, skin: irritant
Methyl methacrylate: Allergic reactions, cough, shortage of breath, drowsiness, amyosthenia, CNS disorders, coma

Information to physician

Monitor breathing.
Treat symptomatically.
If spray contacts eyes, immediately and thoroughly flush eyes with water; profitable is the application of isotonic eye rinse.
On irritation of the respiratory system use an aerosol dispenser and treat with 5 doses of dexamethasone aerosol (e.g. Auxiloson, Thomae) every 10 minutes until symptoms cease.
Estimated lethal dose: 30g

5. Fire fighting measures

Flash point/flash point range:
50 °F (DIN 51755)

Auto-ignition temperature: No data available

Suitable extinguishing media:
Foam, dry chemical powder, carbon dioxide

Extinguishing media which must not be used for safety reasons:
Water

Specific hazards arising from the chemical

Highly flammable liquid and vapor.
Vapours are heavier than air, spread along floors and form explosive mixtures with air.
Beware of reignition.
In case of fire may be liberated: carbon monoxide and carbon dioxide.

Protective equipment and precautions for firefighters:
Wear a self-contained breathing apparatus and chemical protective clothing.

Additional information: Cool endangered containers with water spray and, if possible, remove from danger zone.
Contaminated fire-fighting water must not get into the sewerage network.

6. Accidental release measures

Personal precautions: Keep away from sources of ignition.
Provide adequate ventilation.
Wear suitable protective clothing.
When vapors form, use respiratory protection.

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

Methods for clean-up: In case of greater quantities: Collect mechanically (use only explosion-proof equipment when pumping out).
Smaller amounts:
Soak up with absorbent materials such as sand, siliceus earth, acid- or universal binder.
Store in special closed containers and dispose of according to ordinance.
Final cleaning.

7. Handling and storage

Handling

Advices on safe handling: Keep container tightly closed.
Provide adequate ventilation.

Precautions against fire and explosion:

Keep away from sources of ignition - No smoking.
Take precautionary measures against static discharges.
Flammable mixtures may form in the air when product is heated above the flash point and/or during spraying.
Use only explosion-proof equipment.

Specific use(s): casting resin

Storage

Requirements for storerooms and containers:

Keep only in the original container at temperature not exceeding 86 °F.
Protect from light.
Because oxygen (air) is necessary to stabilize product, fill container only to 90% of capacity.
Provide adequate oxygen (air) circulation for large containers to ensure product stability.

Hints on joint storage: Do not store together with organic peroxides, ammonia or persulphates.

8. Exposure controls / personal protection

Exposure guidelines

Occupational exposure limit values:

CAS No.	Designation	Type	Limit value
80-62-6	Methyl methacrylate	USA: ACGIH: STEL	410 mg/m³; 100 ppm
		USA: ACGIH: TWA	205 mg/m³; 50 ppm
		USA: NIOSH: TWA	410 mg/m³; 100 ppm
		USA: OSHA: TWA	410 mg/m³; 100 ppm

Engineering controls

Do not breathe vapors.
Avoid contact with skin and eyes.
See also information in chapter 7, section storage.

Personal protection equipment (PPE)

Eye/face protection: Tightly sealed safety glasses according to OSHA Standard - 29 CFR: 1910.133 or ANSI Z87.1-2003.

Skin protection: When handling larger quantities: face protection, rubber boots and rubber apron.

Protective gloves according to OSHA Standard - 29 CFR: 1910.138.
Glove material: butyl caoutchouc (butyl rubber)-Layer thickness: 0,7 mm.
Breakthrough time ca. 60 min (EN 374)
Observe glove manufacturer's instructions concerning penetrability and breakthrough time.

Respiratory protection: In case of insufficient ventilation, wear suitable respiratory equipment.
For short exposures or in case of accident: Filter apparatus type A (= against vapors of organic substances).

General hygiene considerations:

Separate storage of work clothes.
Take off immediately all contaminated clothing.
Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance:	Form: liquid Color: colorless
Odor:	ester-like
Odor threshold:	No data available
pH value:	No data available
Melting point/freezing point:	-54.4 °F
Initial boiling point and boiling range:	212.54 °F (1013 hPa)
Flash point/flash point range:	50 °F (DIN 51755)
Evaporation rate:	No data available
Flammability:	No data available
Explosion limits:	LEL (Lower Explosion Limit): 2.10 Vol-% UEL (Upper Explosive Limit): 12.50 Vol-%
Vapor pressure:	at 68 °F: 47 hPa at 122 °F: 159 hPa
Vapor density:	No data available
Density:	at 68 °F: 0.94 g/mL
Solubility:	miscible with organic solvents
Water solubility:	at 68 °F: 15.9 g/L
Partition coefficient: n-octanol/water:	1.38 log P(o/w) Based on the n-octanol/water partition coefficient significant accumulation in organisms is not expected.
Auto-ignition temperature:	No data available
Thermal decomposition:	No adverse effects known to this day, when properly handled.
Viscosity, dynamic:	at 68 °F: 0.6 mPa*s (Brookfield)
Ignition temperature:	806 °F (DIN 51794)
Additional information:	Relative vapor density at 68 °F (air=1): 3,5

10. Stability and reactivity

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

Chemical stability:
Product is stable under normal storage conditions.
Product is normaly delivered in a stable state. However, if shelf life and/or recommended storage temperature are exceeded to a large degreee, product may polymerize and generate heat.

Possibility of hazardous reactions
Due to reducing substances, peroxides and heavy metal ions, polymerization with heat generation may occur.

Conditions to avoid:
Keep at temperature not exceeding 86 °F.
Protect from light.

Incompatible materials: Watch for exothermic reactions with peroxides.
Strong oxidizing agents:
Due to reducing substances and heavy metal ions polymerization with heat generation may occur.
keep away from ammonia and amines.

Hazardous decomposition products:
In case of fire may be liberated: Carbon monoxide and carbon dioxide

Thermal decomposition: No adverse effects known to this day, when properly handled.

11. Toxicological information

Toxicological tests

Acute toxicity:
LD50 Rat, oral: > 5000 mg/kg (OECD 401)
LC50 Rat, inhalative: 29.8 mg/l/4h
LD50 Rabbit, dermal: > 5000 mg/kg

Toxicological effects:
Acute toxicity (oral): Lack of data.

Acute toxicity (dermal): Lack of data.

Acute toxicity (inhalative): Lack of data.

Skin corrosion/irritation: Skin Irritation - Category 2 = Causes skin irritation.

Serious eye damage/irritation: Lack of data.

Sensitisation to the respiratory tract: Lack of data.

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): Specific Target Organ Toxicity (Single Exposure) - Category 3 = May cause respiratory irritation.

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

Aspiration hazard: Lack of data.

Symptoms

In case of inhalation:
Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.
In case of ingestion:
mucous membrane irritation, cough, shortage of breath, damage of respiratory tract
After contact with skin: irritant
After eye contact: slightly irritant

General remarks

May cause sensitization by skin contact.
Varying incidences of allergic reactions have been observed in humans. (Symptoms: Headache, eye irritations, skin problems)

Mutagenicity:
not a mutagen (Dose 10000 µg/plate (Salmonella typhimurium, Ames-Test)
Mouse, Lymphoma L 5178 Y TK+/-Cells: mutagenic
CHO-Cells: Slight increase of the SCE (SCE-test).

No increase of the number of micronucleides under the following test conditions:
OECD 474:
4520 mg/kg/Dose 1 - 1130 mg/kg/Dose 4
CD-1 Mouse, male, 6h/d, 5d: not a mutagen (Dominant letal Test)
Product did not show any carcinogenous, mutagenous or teratogenic effects in animal experiments. (Teratogenicity:
Rat, inhalative: 2028 ppm, 6 - 15 d)
Chronic toxicity:
Rat, inhalative 250 - 1000 ppm (6h/d, 5d/w) exceeding 2a). Symptoms: Damage of the mucous membranes in nose, throat and lungs. Degeneration of olfactory epithelia.
Mouse, inhalative 500 - 1000 ppm (6h/d, 5d/w) exceeding 2a). Symptoms: Damage of the mucous membranes in nose, throat and lungs. Degeneration of olfactory epithelia.

12. Ecological information

Ecotoxicity

Aquatic toxicity:

Algae toxicity:
EC3 Scenedesmus quadricauda: 37mg/l, 8d (DIN 38412 T.9)
Bacterial toxicity:
EC0 Pseudomonas putida: 100 mg/l
Daphnia toxicity:
EC50 Daphnia magna: 69mg/l, 48h (OECD 202/ISO 6341/EEC 84/449/V, C2)
Fish toxicity:
LC50 Oncorhynchus mykiss >79 mg/l/96h (OECD 203/ISO 7346/EEC 84/449/V, C1)
NOEC Oncorhynchus mykiss >40 mg/l/96h (OECD 203/ISO 7346/EEC 84/449/V, C1)

Further details: Appreciable bio-accumulation is not to be expected (log P(o/w 1-3).

Mobility in soil

No data available

Persistence and degradability

Analytical method: OECD 301 C, 14 d
Degree of elimination: 94%
Further details: Product is readily biodegradable.

Additional ecological information

Volatile organic compounds (VOC):
100 % by weight = 940 g/L
General information: Do not allow to penetrate into soil, waterbodies or drains.

13. Disposal considerations

Product

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

Contaminated packaging

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

14. Transport information

USA: Department of Transportation (DOT)

Identification number:	UN1247
Proper shipping name:	UN 1247, UN 1247, METHYL METHACRYLATE MONOMER, STABILIZED
Hazard class or Division:	3
Packing Group:	II
Labels:	3
Special provisions:	IB2, T4, TP1
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
Vessel stowage – Other:	40

Sea transport (IMDG)

UN number:	UN 1247
Proper shipping name:	UN 1247, METHYL METHACRYLATE MONOMER, STABILIZED
Class or division, Subsidary risk:	Class 3, Subrisk -
Packing Group:	II
EmS:	F-E, S-D
Special provisions:	386
Limited quantities:	1 L
Excepted quantities:	E2
Contaminated packaging - Instructions:	P001
Contaminated packaging - Provisions:	-
IBC - Instructions:	IBC02
IBC - Provisions:	-
Tank instructions - IMO:	-
Tank instructions - UN:	T4
Tank instructions - Provisions:	TP1
Stowage and handling:	Category C. SW1 SW2
Properties and observations:	Colourless, volatile liquid. Flashpoint: 8°C c.c. Eplosive limits: 1.5% to 11.6%. Immiscible with water, Irritating to skin, eyes and mucous membranes.
Marine pollutant:	no
Segregation group:	none

Air transport (IATA)

UN/ID number:	UN 1247
Proper shipping name:	UN 1247, METHYL METHACRYLATE MONOMER, STABILIZED
Class or division, Subsidary 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:	A209
Emergency Response Guide-Code (ERG):	3L

15. Regulatory information

National regulations - U.S. Federal Regulations

Methyl methacrylate:

TSCA Inventory: listed; EPA flags T
TSCA HPVC: not listed
TSCA: listed - Flags: T
Carcinogen Status:
IARC Rating: Group 3
OSHA Carcinogen: not listed
NTP Rating: not listed
Clean Air Act:
Hazardous Air Pollutants: Code XOV
SOCMI Chemical: yes
Clean Water Act:
Hazardous Substances: RQ 1000 lbs.
Other Environmental Laws:
CERCLA: RQ 1000 lbs.
RCRA Hazardous Wastes: Code U162
RCRA Groundwater Monitoring: Methods 8015, 8240 / PQL 2, 5
SARA Title III Section 313, Toxic Release: Conc. 1.0% / Threshold Standard
NIOSH Recommendations:
Occupational Health Guideline: 0426

National regulations - U.S. State Regulations

Methyl methacrylate:

Delaware Air Quality Management List:
DRQ: 1000 - RQ State: Federal Regulations Apply
Idaho Air Pollutant List:
Title 585; AAC: 20,5 - EL: 27,3 - OEL: 410 - Title 586: -
Massachusetts Haz. Substance Codes: 2,4,5,6 F8 F9
Main: HAP - 2000
Minnesota Haz. Substance:
Codes: AO - Ratings: 3.79 - Status: Air Pollutant. Title III. TRI.
New Jersey RTK Hazardous Substance:
DOT: 1247 - Sub No.: 1277
New York List of Hazardous Substances:
RQ-Air: 1000 - RQ-Land: 1
No Note Associated with this chemical
Pennsylvania Haz. Substance Code: E
Washington Air Contaminant: TWA: 100 ppm = 410 mg

National regulations - Great Britain

Hazchem-Code: 3YE

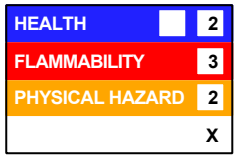
16. Other information

Text for labeling: Contains >= 90 % Methyl methacrylate. Safety data sheet available on request.

Hazard rating systems: NFPA Hazard Rating:

Health: 2 (Moderate)
Fire: 3 (Serious)
Reactivity: 2 (Moderate)

HMIS Version III Rating:
Health: 2 (Moderate)
Flammability: 3 (Serious)
Physical Hazard: 2 (Moderate)
Personal Protection: X = Consult your supervisor



Reason of change: Changes in section 1.3: Corporate headquarters
Date of first version: 10/27/1994

Department issuing data sheet

Contact person: see section 1: Dept. 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.