SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name: Iodomethane

Product Number: 289566
Brand: Sigma-Aldrich
Index-No.: 602-005-00-9
CAS-No.: 74-88-4

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

Identified uses: Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company: Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone: +1 314 771-5765
Fax: +1 800 325-5052

1.4 Emergency telephone

Emergency Phone #: 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

- Flammable liquids (Category 3), H226
- Acute toxicity, Oral (Category 3), H301
- Acute toxicity, Inhalation (Category 3), H331
- Acute toxicity, Dermal (Category 4), H312
- Skin irritation (Category 2), H315
- Eye irritation (Category 2A), H319
- Carcinogenicity (Category 2), H351
- Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
- Short-term (acute) aquatic hazard (Category 1), H400
- Long-term (chronic) aquatic hazard (Category 2), H411

For the full text of the H-Statements mentioned in this Section, see Section 16.
## 2.2 GHS Label elements, including precautionary statements

**Pictogram**

<table>
<thead>
<tr>
<th>Signal Word</th>
<th>Danger</th>
</tr>
</thead>
</table>

**Hazard statement(s)**
- **H226** Flammable liquid and vapor.
- **H301 + H331** Toxic if swallowed or if inhaled.
- **H312** Harmful in contact with skin.
- **H315** Causes skin irritation.
- **H319** Causes serious eye irritation.
- **H335** May cause respiratory irritation.
- **H351** Suspected of causing cancer.
- **H400** Very toxic to aquatic life.
- **H411** Toxic to aquatic life with long lasting effects.

**Precautionary statement(s)**
- **P201** Obtain special instructions before use.
- **P202** Do not handle until all safety precautions have been read and understood.
- **P210** Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
- **P233** Keep container tightly closed.
- **P240** Ground/bond container and receiving equipment.
- **P241** Use explosion-proof electrical/ ventilating/ lighting/ equipment.
- **P242** Use only non-sparking tools.
- **P243** Take precautionary measures against static discharge.
- **P261** Avoid breathing mist or vapors.
- **P264** Wash skin thoroughly after handling.
- **P270** Do not eat, drink or smoke when using this product.
- **P271** Use only outdoors or in a well-ventilated area.
- **P273** Avoid release to the environment.
- **P280** Wear protective gloves/ protective clothing/ eye protection/ face protection.
- **P301 + P310 + P330** IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
- **P303 + P361 + P353** IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
- **P304 + P340 + P311** IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor.
- **P305 + P351 + P338** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- **P308 + P313** IF exposed or concerned: Get medical advice/ attention.
- **P332 + P313** If skin irritation occurs: Get medical advice/ attention.
- **P337 + P313** If eye irritation persists: Get medical advice/ attention.
- **P362** Take off contaminated clothing and wash before reuse.
- **P370 + P378** In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
- **P391** Collect spillage.
- **P403 + P233** Store in a well-ventilated place. Keep container tightly closed.
- **P403 + P235** Store in a well-ventilated place. Keep cool.
- **P405** Store locked up.
- **P501** Dispose of contents/ container to an approved waste disposal
2.3 **Hazards not otherwise classified (HNOC) or not covered by GHS**

Vesicant., Rapidly absorbed through skin.

### SECTION 3: Composition/information on ingredients

#### 3.1 Substances

- **Synonyms**: Methyl iodide
- **Formula**: CH₃I
- **Molecular weight**: 141.94 g/mol
- **CAS-No.**: 74-88-4
- **EC-No.**: 200-819-5
- **Index-No.**: 602-005-00-9

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>iodomethane</td>
<td>Flam. Liq. 3; Acute Tox. 3; Acute Tox. 4; Skin Irrit. 2; Eye Irrit. 2A; Carc. 2; STOT SE 3; Aquatic Acute 1; Aquatic Chronic 2; H226, H301, H331, H312, H315, H319, H351, H335, H400, H411 M-Factor - Aquatic Acute: 1</td>
</tr>
</tbody>
</table>

For the full text of the H-Statements mentioned in this Section, see Section 16.

### SECTION 4: First aid measures

#### 4.1 Description of first-aid measures

**General advice**
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

**If inhaled**
After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

**In case of skin contact**
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. Consult a physician.

**In case of eye contact**
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

**If swallowed**
If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting.
(only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Hydrogen iodide
Not combustible.
Vapors are heavier than air and may spread along floors.
Forms explosive mixtures with air at elevated temperatures.
Ambient fire may liberate hazardous vapours.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Remove container from danger zone and cool with water. Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections
For disposal see section 13.
SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons.

Storage stability
Recommended storage temperature
2 - 8 °C
Light sensitive. Moisture sensitive.

Storage class
Storage class (TRGS 510): 3: Flammable liquids

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>iodomethane</td>
<td>74-88-4</td>
<td>TWA</td>
<td>2 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
<td></td>
<td>Danger of cutaneous absorption</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>2 ppm</td>
<td>10 mg/m³</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Potential Occupational Carcinogen</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Potential for dermal absorption</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>5 ppm</td>
<td>28 mg/m³</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
</tr>
</tbody>
</table>

Skin designation
8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin 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.

Full contact
Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Break through time: > 480 min
Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

Splash contact
Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Break through time: > 480 min
Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body protection
Flame retardant antistatic protective clothing.

Respiratory protection
required when vapours/aerosols are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains. Risk of explosion.
SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance
   Form: liquid

b) Odor
   No data available

c) Odor Threshold
   No data available

d) pH
   6.3 at 21.1 °C (70.0 °F)

e) Melting point/freezing point
   Melting point/range: -64 °C (-83 °F) - lit.

f) Initial boiling point and boiling range
   41 - 43 °C 106 - 109 °F - lit.

g) Flash point
   ca.32.1 °C (89.8 °F) at ca.998.1 hPa - closed cup - Regulation (EC) No. 440/2008, Annex, A.9

h) Evaporation rate
   No data available

i) Flammability (solid, gas)
   No data available

j) Upper/lower flammability or explosive limits
   Upper explosion limit: 66 %(V)
   Lower explosion limit: 8.5 %(V)

k) Vapor pressure
   544 hPa at 20 °C (68 °F)
   1,660 hPa at 55 °C(131 °F)

l) Vapor density
   4.90 - (Air = 1.0)

m) Density
   2.28 g/cm³ at 25 °C (77 °F) - lit.
   Relative density
   2.2725 °C

n) Water solubility
   soluble

o) Partition coefficient: n-octanol/water
   log Pow: 1.57 at 20 °C (68 °F) - Bioaccumulation is not expected.

p) Autoignition temperature
   350 °C (662 °F) at 994.10 hPa

q) Decomposition temperature
   No data available

r) Viscosity
   0.23 mm²/s at 10 °C (50 °F) - OPPTS 830.7100 - 0.2 mm²/s at 30 °C (86 °F) - OPPTS 830.7100 -

s) Explosive properties
   No data available

t) Oxidizing properties
   none

9.2 Other safety information

Relative vapor density
4.90 - (Air = 1.0)
SECTION 10: Stability and reactivity

10.1 Reactivity
Vapor/air-mixtures are explosive at intense warming.

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature).
Contains the following stabilizer(s):
Copper(bulk) (>0 - <=0100 ppm)

10.3 Possibility of hazardous reactions
Risk of explosion with:
phosphines
sodium
strong alkalis
Potassium
Calcium
Oxygen
Exothermic reaction with:
Strong oxidizing agents
Reducing agents
Chlorites

10.4 Conditions to avoid
Heating.

10.5 Incompatible materials
No data available

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - male and female - 79.84 mg/kg
(OECD Test Guideline 401)
LC50 Inhalation - Rat - male and female - 4 h - 4.076 mg/l - vapor

(US-EPA)
LD50 Dermal - Guinea pig - 800 mg/kg
Remarks: (RTECS)
No data available

Skin corrosion/irritation
Skin - Rabbit
Result: Irritations - 4 h
(OECD Test Guideline 404)
(Regulation (EC) No 1272/2008, Annex VI)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Eye irritation
Respiratory or skin sensitization
Maximization Test - Guinea pig
Result: negative

Germ cell mutagenicity
Test Type: in vitro test
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: US-EPA
Result: negative
Remarks: (ECHA)

Carcinogenicity
Suspected of causing cancer.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
Inhalation - May cause respiratory irritation. - Respiratory system
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available
11.2 Additional Information

Repeated dose toxicity - Rat - male and female - Oral - 90 d - NOAEL (No observed adverse effect level) - 5 mg/kg
Remarks: Subchronic toxicity

Repeated dose toxicity - Rat - male and female - Dermal - 28 d - NOAEL (No observed adverse effect level) - 30 mg/kg
Remarks: Subacute toxicity

Nausea, Dizziness, Headache, Blurred vision, Weakness, Drowsiness, Ataxia, Confusion, Convulsions, narcosis, Pulmonary edema. Effects may be delayed. Symptoms of systemic copper poisoning may include: capillary damage, headache, cold sweat, weak pulse, and kidney and liver damage, central nervous system excitation followed by depression, jaundice, convulsions, paralysis, and coma. Death may occur from shock or renal failure. Chronic copper poisoning is typified by hepatic cirrhosis, brain damage and demyelination, kidney defects, and copper deposition in the cornea as exemplified by humans with Wilson's disease. It has also been reported that copper poisoning has lead to hemolytic anemia and accelerates arteriosclerosis. Nausea, Dizziness, Headache, Blurred vision, Weakness, Drowsiness, Ataxia, Confusion, Convulsions, narcosis, Pulmonary edema. Effects may be delayed.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish  
- semi-static test LC50 - Oncorhynchus mykiss (rainbow trout) - 1.4 mg/l - 96 h  
  (OECD Test Guideline 203)
- semi-static test NOEC - Oncorhynchus mykiss (rainbow trout) - 0.62 mg/l - 96 h  
  (OECD Test Guideline 203)

Toxicity to daphnia and other aquatic invertebrates  
- static test EC50 - Daphnia magna (Water flea) - 0.57 mg/l - 48 h  
  (OECD Test Guideline 202)

Toxicity to algae  
- static test ErC50 - Pseudokirchneriella subcapitata (algae) - 1.69 mg/l - 72 h  
  (OECD Test Guideline 201)

12.2 Persistence and degradability

Biodegradability  
aerobic - Exposure time 28 d
Result: 0 % - Not biodegradable  
(OECD Test Guideline 301F)

12.3 Bioaccumulative potential

No data available

Sigma-Aldrich - 289566
12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties
No data available

12.7 Other adverse effects
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14: Transport information

DOT (US)
UN number: 2644  Class: 6.1I  Packing group: I
Proper shipping name: Methyl iodide
Reportable Quantity (RQ): 100 lbs
Poison Inhalation Hazard: Hazard Zone B

IMDG
UN number: 2644  Class: 6.1  Packing group: I  EMS-No: F-A, S-A
Proper shipping name: METHYL IODIDE

IATA
UN number: 2644  Class: 6.1
Proper shipping name: Methyl iodide
IATA Passenger: Not permitted for transport
IATA Cargo: Not permitted for transport

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>iodomethane</td>
<td>74-88-4</td>
<td>2013-02-08</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazards
**Acute Health Hazard, Chronic Health Hazard**

**Massachusetts Right To Know Components**
No components are subject to the Massachusetts Right to Know Act.

---

**SECTION 16: Other information**

**Further information**
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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