# Section 1 Identification of the substance/mixture and of the company/undertaking

## 1.1 Product identifier

**Substance name:** 2,2,4 Trimethylpentane

<table>
<thead>
<tr>
<th>Synonyms:</th>
<th>Product type:</th>
<th>Date revised:</th>
<th>Previous:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iso octane (iC8)</td>
<td>Liquid density certified reference material</td>
<td>Jun 2016</td>
<td>Jan 2012</td>
</tr>
</tbody>
</table>

**EC No:** 208-759-1  
**CAS No.:** 540-84-1

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

**Relevant identified uses:**  
For use in the calibration of density meters.

## 1.3 Details of the supplier of the Safety Data Sheet

**Company:** H&D Fitzgerald Ltd.  
**Address:** Cefn Du, Tremeirchion, St Asaph, LL17 0US, UK  
**Telephone #:** +44 (0)1352 720 774  
**Email address:** admin@density.co.uk

## 1.4 Emergency telephone number

+44 (0)1352 720 774

# Section 2 Hazards identification

## 2.1 Classification of the substance or mixture

**Classification according to Regulation (EC) No1272/2008 [CLP]:**

- Flammable liquids (Category 2), H225
- Aspiration hazard (Category 1), H304
- Skin irritation (Category 2), H315
- Specific target organ toxicity - single exposure (Category 3), H336
- Acute aquatic toxicity (Category 1), H400
- Chronic aquatic toxicity (Category 1), H410

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

## 2.2 Label elements

**Pictogram:**

![Pictogram](image)

**Signal word:** Danger

**Hazard statement(s):**

- H225  Highly flammable liquid and vapour
- H304  May be fatal if swallowed and enters airways
- H315  Causes skin irritation
- H336  May cause drowsiness or dizziness
- H400  Very toxic to aquatic life
- H410  Very toxic to aquatic life with long lasting effects.

**Precautionary statement(s):**

- P210  Keep away from heat/sparks/open flames/hot surfaces – No smoking
- P261  Avoid breathing dust/fume/gas/mist/vapours/spray
P273  Avoid release to the environment
P301 + IF SWALLOWED: Immediately call a POISON CENTER or a doctor/physician
P310  Do NOT induce vomiting
P331  Do NOT induce vomiting
P501  Dispose of contents/container to an approved waste disposal plant.

2.3 Other hazards
This substance/mixture contains no components considered either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Section 3 Composition / Information on ingredients
Substance name: 2,2,4 Trimethylpentane
Synonyms: Iso octane (iC8)

<table>
<thead>
<tr>
<th>C.A.S. No.</th>
<th>EINECS No.</th>
<th>Index-No. in CLP Annex IV</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>540-84-1</td>
<td>208-759-1</td>
<td>601-009-00-8</td>
<td>Flam. Liq. 2; Skin Irrit. 2; STOT SE 3; Asp. Tox. 1; Aquatic Acute 1; Aquatic Chronic 1; H225, H315, H336, H304, H400, H410</td>
<td>&lt;= 100%</td>
</tr>
</tbody>
</table>

For full text of H-statements mentioned in this section, see Section 16.

Formula: \( \text{C}_8\text{H}_{18} \)
Molecular Weight: 114.23 g/mol

Section 4 First Aid measures

4.1 Description of first aid measures
General advice: Consult a physician. Show this safety data sheet to the doctor in attendance.
Following inhalation: Move the person into fresh air. If not breathing give artificial respiration. Consult a physician.
Following ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water and consult a physician without delay.
Following eye contact: Rinse thoroughly with plenty of water for at least 15 minutes. Consult a physician.
Following skin contact: Wash off with soap and plenty of water. Consult a physician.

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 Fire fighting measures

5.1 Extinguishing media
Extinguishing media: For small (incipient) fires, use media such as “alcohol” foam, dry chemical or carbon dioxide.
For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.
Unsuitable media: None.
5.2 Special hazards arising from the substance or mixture
- Carbon oxides.
- Flash back possible over considerable distance.
- Container explosion may occur under fire conditions.

5.3 Advice for firefighters
Special protective equipment for fire-fighters: Wear protective clothing and self contained breathing apparatus.

5.4 Further information
Use water spray to cool unopened containers

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### Section 6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
<table>
<thead>
<tr>
<th>Protective equipment:</th>
<th>Wear safety glasses with side shields and gloves.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal precautions:</td>
<td>Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.</td>
</tr>
</tbody>
</table>

6.2 Environmental precautions
- Prevent further leakage or spillage if safe to do so.
- Do not let product enter drains.
- Discharge into the environment must be avoided.

6.3 Methods and material for containment and cleaning up
- Ventilate area.
- Contain spillage, and then collect with non-combustible material and place in a suitable container for disposal according to local/national regulations.

6.4 Reference to other sections
- For disposal see section 13.

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### Section 7 Handling and storage

7.1 Precautions for safe handling
Handling precautions: Avoid contact with eyes and skin. Avoid inhalation of vapour or mist. Use personal protective equipment. Handle in accordance with good industrial hygiene and safety practise. Keep away from from sources of ignition – No smoking. Take measures to prevent the build up of electrostatic charge. For precautions see 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Storage precautions: Store ampoule in the outer packaging until ready to use. Store in a cool place (less than 25°C). Do not store the ampoule once opened, dispose of after use.

7.3 Specific end use(s)
Recommendations: Liquid density certified reference material for calibration of density meters.
Section 8 Exposure controls and personal protection

8.1 Control parameters
Components with workplace control parameters
Contains no components with occupational exposure limit values.

8.2 Exposure controls
Personal protective equipment
Respiratory protection: Use in a well ventilated area.
Eye/face protection: Wear safety glasses with side shields conforming to EN166.
Hand protection: Handle with gloves conforming to EN374.
Other skin protection: Use of protective clothing is good industrial practice.
Hygiene measures: Handle in accordance with good industrial hygiene and safety practice.
Wash hands with soap before breaks and at the end of the workday.

Environmental exposure controls
Prevent further leakage or spillage if safe to do so.
Do not let product enter drains. Discharge into the environment must be avoided.

Section 9 Physical and chemical properties

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Colourless, liquid</td>
</tr>
<tr>
<td>Odour</td>
<td>strong</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>no data available</td>
</tr>
<tr>
<td>pH</td>
<td>no data available</td>
</tr>
<tr>
<td>Melting point</td>
<td>-107°C</td>
</tr>
<tr>
<td>Boiling point &amp; range</td>
<td>98-99°C</td>
</tr>
<tr>
<td>Flash point</td>
<td>-12°C – closed cup</td>
</tr>
<tr>
<td>Flammability</td>
<td>Highly flammable</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits:</td>
<td>Upper limit: 6%(V) Lower limit: 1%(V)</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>55hPa at 21°C 117hPa at 37.8°C</td>
</tr>
<tr>
<td>Relative vapour density</td>
<td>3.94 (Air = 1.0)</td>
</tr>
<tr>
<td>Density of liquid</td>
<td>692 kgm⁻³ at 25°C</td>
</tr>
<tr>
<td>Solubility</td>
<td>insoluble</td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>n-octanol/water log Pow: 4.6</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>no data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>no data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>no data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>no data available</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>no data available</td>
</tr>
</tbody>
</table>

9.2 Other information
Miscibility with water: immiscible with water

Section 10 Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
Heat, flames and sparks. Extremes of temperature and direct sunlight.

10.5 Incompatible materials
Strong oxidising agents.

10.6 Hazardous decomposition products
Hazardous decomposition products formed under fire conditions – carbon oxides.
Section 11 Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation: LC50 Inhalation - Rat - 4h - >33.52 mg/l (OECD Test Guideline 403)
Ingestion: LD50 Oral - Rat - > 5000 mg/kg (OECD Test Guideline 401)
Skin corrosion/irritation: LD50 Dermal - Rabbit - > 2000 mg/kg (OECD Test Guideline 402)
Skin Rabbit. Result: Irritating to to skin (OECD Test Guideline 404)
Serious eye damage/irritation: Eyes - Rabbit. Result: No irritation (OECD Test Guideline 405)
Germ cell mutagenicity: Rat - Unscheduled DNA synthesis
Carcinogenicity: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Reproductive toxicity: No data available.
Specific target organ toxicity – single exposure: May cause drowsiness or dizziness.
Specific target organ toxicity – repeated exposure: No data available.
Aspiration hazard: This substance is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

Additional information: RTECS: SA3320000
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Liver - Irregularities - Based on human evidence.

Section 12 Ecological information

2,2,4 Trimethylpentane is unlikely to present any ecological risk in the quantity supplied in a 10 ml ampoule.

12.1 Toxicity No data available

12.2 Persistence and degradability No data available

12.3 Bioaccumulative potential No data available

12.4 Mobility in soil No data available

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects Very toxic to aquatic life with long lasting effects.

Section 13 Disposal considerations

General requirements: Observe all national and local environmental regulations.
Contaminated packaging: Dispose of as unused product.

Section 14 Transport information

<table>
<thead>
<tr>
<th>UN Number</th>
<th>UN proper shipping name</th>
<th>Transport hazard class(es)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1262</td>
<td>octanes</td>
<td>3</td>
</tr>
<tr>
<td>Environmental hazards</td>
<td>EMS-No:</td>
<td>Packing group</td>
</tr>
<tr>
<td>not classified</td>
<td>F-E, S-E</td>
<td>packing group II</td>
</tr>
<tr>
<td>Section 15 Regulatory information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>15.1 Safety health and environmental regulations/legislation specific for the substance or mixture</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This safety data sheet complies with the requirements of Regulation (EC) No. 453/2010.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>15.2 Chemical safety assessment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No chemical assessment has been carried out for this substance by the supplier.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 16 Other information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reason for revision:</strong></td>
</tr>
<tr>
<td>Updated to comply with European Regulation (EC) No 453/2010.</td>
</tr>
<tr>
<td><strong>Text of H-code(s) mentioned in Section 2 &amp; 3</strong></td>
</tr>
<tr>
<td>H225</td>
</tr>
<tr>
<td>H304</td>
</tr>
<tr>
<td>H315</td>
</tr>
<tr>
<td>H336</td>
</tr>
<tr>
<td>H400</td>
</tr>
<tr>
<td>H410</td>
</tr>
</tbody>
</table>

**Disclaimer**

H&D Fitzgerald believes that data given here is accurate. It is derived from published information about 2,2,4 Trimethylpentane. No warranty, expressed or implied, is intended. The data is provided for your information and consideration when using 2,2,4 Trimethylpentane as a certified reference material for the calibration of density meters. H&D Fitzgerald assumes no legal responsibility for its use.