SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Methylheptenone
Substance name: 6-methylhept-5-en-2-one
CAS-No.: 110-93-0

1.2 Relevant identified uses of the substance or mixture and uses advised against
Use of the Substance/Mixture: Ingredient for fragrances, Ingredient for flavours

1.3 Details of the supplier of the safety data sheet
Company: DSM Nutritional Products Ltd.
PO Box 2676
CH-4002 Basel
Telephone: +41618158888
Telefax: +41618157253
E-mail address: sds.nutritionalproducts@dsm.com

1.4 Emergency telephone number
+41 62 866 2314

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

<table>
<thead>
<tr>
<th>CAUTION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>clear liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>colourless, light yellow</td>
</tr>
<tr>
<td>Odour</td>
<td>herbal, like fruit</td>
</tr>
</tbody>
</table>

GHS Classification
Flammable liquids: Category 3
Eye irritation: Category 2A
Specific target organ toxicity: Category 3 (Respiratory system)
- single exposure

GHS Label element
Hazard pictograms:

- Flammable liquid
- Eye irritation

Signal word: Warning
Hazard statements:
H226 Flammable liquid and vapour.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Precautionary statements:
Prevention:
P210 Keep away from heat/sparks/open flames/hot surfaces.
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No smoking.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242 Use only non-sparking tools.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 Call a POISON CENTER or doctor/ physician if you feel unwell.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage:
P403 Store in a well-ventilated place.
P405 Store locked up.

Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Potential Health Effects

Eyes : May cause eye irritation.

Aggravated Medical Condition : None known.

Symptoms of Overexposure : No specific symptoms known.

Experience with human exposure

Inhalation : May cause irritation of respiratory tract.

Carcinogenicity:

IARC 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.

ACGIH No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

OSHA No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
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NTP

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Additional hazards and advice
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: 5-Hepten-2-one, 6-methyl-MH

Brief description of the product: Substance

Molecular formula: C8-H14-O

Hazardous components

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Weight percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-methylhept-5-en-2-one</td>
<td>110-93-0</td>
<td>90 - 100</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

General advice: Move out of dangerous area. Show this safety data sheet to the doctor in attendance.

If inhaled: Move to fresh air. Consult a physician after significant exposure.

In case of skin contact: Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. If symptoms persist, call a physician.

In case of eye contact: Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed: Clean mouth with water and drink afterwards plenty of water. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. Obtain medical attention. Do NOT induce vomiting.

Most important symptoms and effects, both acute and delayed: No specific symptoms known.

Notes to physician: Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

Flammable properties
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Flash point: 122 °F (50 °C)
Ignition temperature: 250 °C (DIN 51794)
Lower explosion limit: 1.1 %(V)
Upper explosion limit: 7.3 %(V)

Fire fighting
Suitable extinguishing media: Alcohol-resistant foam
Carbon dioxide (CO2)
Dry chemical
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media:  High volume water jet

Further information:
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Use water spray to cool unopened containers.

Protective equipment and precautions for firefighters
Specific hazards during firefighting: None known.

Special protective equipment for firefighters:
In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:
Evacuate personnel to safe areas.
Use personal protective equipment.
Ensure adequate ventilation.
Remove all sources of ignition.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions:
Prevent further leakage or spillage if safe to do so.
Prevent product from entering drains.

Methods and materials for containment and cleaning up:
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

SECTION 7. HANDLING AND STORAGE

Advice on safe handling:
Avoid contact with skin and eyes.
For personal protection see section 8.
Container may be opened only under exhaust ventilation hood.
Smoking, eating and drinking should be prohibited in the ap-
Advice on protection against fire and explosion:
- Keep away from sources of ignition - No smoking.
- Take necessary action to avoid static electricity discharge.
- Avoid formation of aerosol.

Conditions for safe storage:
- Protect from humidity.
- Protect against light.
- No smoking.
- Keep container tightly closed and dry.
- Containers which are opened must be carefully resealed and kept upright to prevent leakage.
- Electrical installations / working materials must comply with the technological safety standards.

Storage temperature: < 77 °F (< 25 °C)

SECTION 8. EXPOSURE CONTROLS/PERSOAL PROTECTION

Components with workplace control parameters:
Contains no substances with occupational exposure limit values.

Personal protective equipment:

Respiratory protection:
- In the case of vapour formation use a respirator with an approved filter.
- In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit.

Hand protection:
- Glove material: for example nitrile rubber
- Solvent-resistant gloves
- Consider the hazard characteristics of this product and any special workplace conditions when selecting the appropriate type of protective gloves.

Eye protection:
- Safety glasses with side-shields

Skin and body protection:
- Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures:
- Handle in accordance with good industrial hygiene and safety practice.
- Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance:
- clear liquid

Colour:
- colourless - light yellow

Odour:
- herbal, like fruit

Odour Threshold:
- No information available.

pH:
- No data available.
### Boiling point/boiling range
173 °C (at 1,013 hPa)

### Flash point
50 °C

### Evaporation rate
not determined

### Lower explosion limit
1.1 %(V)

### Upper explosion limit
7.3 %(V)

### Vapour pressure
1.2 hPa (at 20 °C)

### Relative vapour density
not determined

### Density
0.857 g/cm³ (at 20 °C, 1,013 hPa)

### Water solubility
3.02 g/l (25 °C)

### Solubility in other solvents
various organic solvents: soluble

### Partition coefficient: n-octanol/water
log Pow 2.4 (25 °C; Tested according to Annex V of Directive 67/548/EEC.)

### Ignition temperature
250 °C (DIN 51794)

### Thermal decomposition
Not relevant

### Viscosity, dynamic
ca. 1 mPa.s (at 20 °C)

### Explosive properties
Not explosive

### Oxidizing properties
No data available

### Molecular weight
126.20 g/mol

### Surface tension
ca. 27 mN/m (20 °C)

## SECTION 10. STABILITY AND REACTIVITY

### Reactivity
No hazards to be specially mentioned.

### Chemical stability
Stable under recommended storage conditions.

### Possibility of hazardous reactions
Possible incompatibility with materials listed under section 10.5.

### Conditions to avoid
Heat, flames and sparks.

### Incompatible materials
Strong acids and strong bases
Oxidizing agents
Reducing agents

### Hazardous decomposition products
No decomposition if used as directed.
SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity : LD50 (Mouse): > 2,000 mg/kg
: LD50 (Rat): 3,500 mg/kg

Acute dermal toxicity : LD50 (Rat): > 5,000 mg/kg

Skin irritation : May irritate skin.

Eye irritation : Eye irritation (Rabbit)

Sensitisation : Did not cause sensitization. (Guinea pig)
: Did not cause sensitization. (human, Maximisation Test (GPMT))

Genotoxicity in vitro : not mutagenic (Various test systems)

Teratogenicity : not teratogenic
: not embryotoxic
: NOAEL: 200 mg/kg bw/d (Rat)

STOT - single exposure (Acute exposure) : May cause respiratory irritation.

STOT - repeated exposure (Chronic exposure) : LOAEL (Oral, Rat) : 50 mg/kg bw/d
: Sub-chronic toxicity study (90-day)
: OECD Test Guideline 408

Experience with human exposure: Inhalation : May cause irritation of respiratory tract.

Further information : Solvents may degrease the skin.

Aspiration toxicity : No aspiration toxicity classification

SECTION 12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish : Leuciscus idus (Golden orfe)
: LC50 (96 h) ca. 73 mg/l (nominal concentration)
: DIN 38412

Toxicity to daphnia and other : Daphnia magna (Water flea)
aquatic invertebrates: EC50 (48 h) ca. 129 mg/l (nominal concentration) (DIN 38412)

Toxicity to algae: Desmodesmus subspicatus (green algae) ErC50 (72 h) ca. 191 mg/l (nominal concentration) (DIN 38412)

Toxicity to bacteria: activated sludge EC50 (0.5 h) ca. 800 mg/l (nominal concentration) (OECD Test Guideline 209)

Persistence and degradability
Biodegradability: Readily biodegradable.
91 % (28 d)
74 %, (14 d) (OECD Test Guideline 301F)

Bioaccumulative potential

Mobility in soil
Distribution among environmental compartments: No data available
Surface tension: ca. 27 mN/m (20 °C)

Other adverse effects
Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information: Harmful to aquatic organisms.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods
Waste from residues: Discharge into the environment must be avoided.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Do not dispose of waste into sewer.
Offer surplus and non-recyclable solutions to a licensed disposal company.

User must determine if any wastes generated exhibit hazardous characteristics as per 40 CFR Part 261 or other national /
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Contaminated packaging: Do not burn, or use a cutting torch on, the empty drum. Dispose of as unused product. Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

**International Regulation**

<table>
<thead>
<tr>
<th>IATA-DGR</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>UN No.</td>
<td>UN 1224</td>
</tr>
<tr>
<td>Proper shipping name</td>
<td>Ketones, liquid, n.o.s. (6-methylhept-5-en-2-one)</td>
</tr>
<tr>
<td>Class</td>
<td>3</td>
</tr>
<tr>
<td>Packing group</td>
<td>III</td>
</tr>
<tr>
<td>Labels</td>
<td>Flammable Liquids</td>
</tr>
<tr>
<td>Packing instruction (cargo aircraft)</td>
<td>366</td>
</tr>
<tr>
<td>Packing instruction (passenger aircraft)</td>
<td>355</td>
</tr>
</tbody>
</table>

**IMDG-Code**

| UN number | UN 1224 |
| Proper shipping name | KETONES, LIQUID, N.O.S. (6-methylhept-5-en-2-one) |
| Class    | 3 |
| Packing group | III |
| Labels   | 3 |
| EmS Code |  |
| Marine pollutant | no |

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

Not applicable for product as supplied.

**National Regulations**

| 49 CFR |  |
| UN/ID/NA number | UN 1224 |
| Proper shipping name | Ketones, liquid, n.o.s. (6-methylhept-5-en-2-one) |
| Class    | 3 |
| Packing group | III |
| Labels   | FLAMMABLE LIQUID |
| ERG Code | 127 |
| Marine pollutant | no |
| Remarks  | No additional requirements. |

SECTION 15. REGULATORY INFORMATION

**TSCA list**

Not relevant

Not relevant
EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Fire Hazard
                     : Acute Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act
This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act
This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

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

Pennsylvania Right To Know
6-methylhept-5-en-2-one 110-93-0 90 - 100 %

New Jersey Right To Know
6-methylhept-5-en-2-one 110-93-0 90 - 100 %

The components of this product are reported in the following inventories:
TSCA : On TSCA Inventory
SECTION 16. OTHER INFORMATION

Further information

NFPA:  

Flammability

Health

2

0

Special hazard.

HMIS III:

HEALTH

FLAMMABILITY

PHYSICAL HAZARD

2

2

0

0 = not significant, 1 = Slight, 2 = Moderate, 3 = High, 4 = Extreme, * = Chronic

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.