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

1.1 Product identifier

Trade name **2,6-Dimethyl-4-heptanone, (sum of 2,6-Dimethyl-4-heptanone & 4,6-Dimethyl-2-heptanone)**

Stock number: L16015

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

Identified use: SU24 Scientific research and development

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier: Thermo Fisher (Kandel) GmbH

Zeppelinstr. 7b

76185 Karlsruhe / Germany

Tel: +49 (0) 721 84007 280

Fax: +49 (0) 721 84007 300

Email: tech@alfa.com

www.alfa.com

Informing department: Product safety Tel + +049 (0) 7275 986687-0

1.4 Emergency telephone number:

Carechem 24: +44 (o) 1235 239 670 (Multi-language emergency number)

Poison Information Center Mainz

www.giftinfo.uni-mainz.de  Telephone: +49(0)6131/19240

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

- GHS02 flame
- Flam. Liq. 3 H226 Flammable liquid and vapour.
- GHS07
- STOT SE 3 H335 May cause respiratory irritation.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC

- Xi; Irritant

- R37: Irritating to respiratory system.

Information concerning particular hazards for human and environment:

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

Other hazards that do not result in classification: No information known.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 The product is classified and labelled according to the CLP regulation.

Hazard pictograms

GHS02 GHS07

Signal word Warning

Hazard-determining components of labelling:

- 2,6-Dimethyl-4-heptanone
- 4,6-Dimethyl-4-heptanone

Hazard statements

- H226 Flammable liquid and vapour.
- H335 May cause respiratory irritation.

Precautionary statements

- P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
- P260 Wear protective gloves/protective clothing/eye protection/face protection.
- P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P405 Store locked up.
- P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards

Results of PBT and vPvB assessment

- PBT: Not applicable.
- vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Dangerous components:

- CAS: 108-83-8
  - 2,6-Dimethyl-4-heptanone
  - Xi R37
  - Flam. Liq. 3, H226, STOT SE 3, H335
  - 66.0%

- CAS: 19549-80-5
  - 4,6-Dimethyl-4-heptanone
  - Xi R37
  - Flam. Liq. 3, H226, STOT SE 3, H335
  - 34.0%

Additional information None known.

SECTION 4: First aid measures

4.1 Description of first aid measures

After inhalation

- Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
- Seek immediate medical advice.

After skin contact

- Instantly wash with water and soap and rinse thoroughly.
- Seek immediate medical advice.

After eye contact

- Rinse opened eye for several minutes under running water. Then consult doctor.

After swallowing

- Seek medical treatment.

4.2 Most important symptoms and effects, both acute and delayed

No further relevant information available.
SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing agents: CO2, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.

5.2 Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
- Carbon monoxide and carbon dioxide

5.3 Advice for firefighters
Protective equipment:
- Wear self-contained breathing apparatus.
- Wear full protective suit.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation. Keep away from ignition sources.

6.2 Environmental precautions:
If this product is involved in a fire, the following can be released:
- Carbon monoxide and carbon dioxide

6.3 Methods and material for containment and cleaning up:
- Keep away from ignition sources.
- Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Prevention of secondary hazards: Keep away from ignition sources.

6.4 Reference to other sections
See Section 7 for information on safe handling. See Section 8 for information on personal protection equipment. See Section 13 for information on disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Keep containers tightly sealed. Store in cool, dry place in tightly closed containers. Keep away from heat and direct sunlight. Ensure good ventilation/exhaustion at the workplace.

Information about protection against explosions and fires:
- Protect from heat.
- Protect against electrostatic charges.
- Fumes can combine with air to form an explosive mixture.

7.2 Conditions for safe storage, including any incompatibilities
Storage
- Requirements to be met by storerooms and containers: No special requirements.
- Information about storage in one common storage facility: Store away from oxidising agents.

Further information about storage conditions:
- Keep container tightly sealed.
- Store in cool, dry conditions in well sealed containers.
- Protect from heat and direct sunlight.

7.3 Specific end use(s)
No further relevant information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Components with critical values that require monitoring at the workplace:
- 108-83-8 2,6-Dimethyl-4-heptanone (66,0%)

Additional information about design of technical systems:
- Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

8.1.1 Control parameters

Additional information:
- No data

8.2 Exposure controls
Personal protective equipment
- General protective and hygienic measures
The usual precautionary measures should be adhered to in handling the chemicals.
- Keep away from foodstuffs, beverages and food.
- Instantly remove any soiled and impregnated garments.
- Wash hands during breaks and at the end of the work.
- Do not inhale dust / smoke / mist.
- Maintain an ergonomically appropriate working environment.

Breathing equipment: Use breathing protection with high concentrations.

Protection of hands:
Check protective gloves prior to each use for their proper condition.

Material of gloves
- Impervious gloves
Penetration time of glove material (in minutes) Not determined

Eye protection:
- Safety glasses
- Face protection

Body protection: Protective work clothing.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties
General Information
- Appearance:
  - Form: Liquid
  - Colour: Colourless
  - Smell: Unpleasant
  - Odour threshold: Not determined.
- pH-value: Not determined.
### Section 3: Safety data sheet

**Trade name:** 2,6-Dimethyl-4-heptanone, (sum of 2,6-Dimethyl-4-heptanone & 4,6-Dimethyl-2-heptanone)

**Melting point/Melting range:** -42 °C

**Boiling point/Boiling range:** 163-173 °C

**Sublimation temperature/start:** Not determined

**Flash point:** 49 °C

**Inflammability (solid, gaseous):** Not determined.

**Ignition temperature:** 345 °C

**Decomposition temperature:** Not determined

**Self-inflammability:** Product is not self-igniting.

**Danger of explosion:**
- Product is not explosive. However, formation of explosive air/steam mixtures is possible.

**Critical values for explosion:**
- Lower: 0.8 Vol %
- Upper: 6.2 Vol %

**Steam pressure at 20 °C:** 2.6 hPa

**Density at 20 °C:** 0.808 g/cm³

**Relative density:** Not determined.

**Vapour density:** Not determined.

**Evaporation rate:** Not determined.

**Solubility in / Miscibility with**
- **Water:** Not miscible or difficult to mix
- **Partition coefficient (n-octanol/water):** Not determined.
- **Viscosity:**
  - **Dynamic:** Not determined.
  - **Kinematic:** Not determined.

**Solvent content:**
- **Organic solvents:** 66.0 %

**Other information:**
- No further relevant information available.

### Section 10: Stability and reactivity

#### 10.1 Reactivity
- No information known.

#### 10.2 Chemical stability
- Stable under recommended storage conditions.

**Thermal decomposition / conditions to be avoided:**
- No decomposition if used and stored according to specifications.

#### 10.3 Possibility of hazardous reactions
- Reacts with strong oxidising agents.

#### 10.4 Conditions to avoid
- No further relevant information available.

#### 10.5 Incompatible materials
- Oxidising agents

#### 10.6 Hazardous decomposition products
- Carbon monoxide and carbon dioxide

### Section 11: Toxicological information

**Acute toxicity:** The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for components in this product.

**LD/LC50 values that are relevant for classification:**
- **108-83-8 2,6-Dimethyl-4-heptanone**
  - **Oral LD50** 5750 mg/kg (rat)

**Skin irritation or corrosion:** May cause irritation

**Eye irritation or corrosion:** May cause irritation

**Sensitization:** No sensitizing effect known.

**Germ cell mutagenicity:** No effects known.

**Carcinogenicity:** No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

**Reproductive toxicity:** No effects known.

**Specific target organ system toxicity - repeated exposure:** No effects known.

**Aspiration hazard:** No effects known.

**Subacute to chronic toxicity:** No effects known.

**Additional toxicological information:**
- To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.
- The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version:
  - Irritant

### Section 12: Ecological information

**Aquatic toxicity:**
- No further relevant information available.

**Bioaccumulative potential:**
- No further relevant information available.

**Mobility in soil:**
- No further relevant information available.

**Additional ecological information:**

**General notes:**
- Do not allow material to be released to the environment without proper governmental permits.
- Water hazard class 1 (Self-assessment):
  - Slightly hazardous for aquatic life
  - Do not allow undiluted product or large quantities to reach ground water, water course or sewage system.
  - Avoid transfer into the environment.

**Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

**Other adverse effects:**
- No further relevant information available.

### Section 13: Disposal considerations

**Waste treatment methods**

**Recommendation**
- Hand over to disposers of hazardous waste.
- Must be specially treated under adherence to official regulations.
- Consult state, local or national regulations for proper disposal.

**Uncleaned packagings**

**Recommendation**
- Disposal must be made according to official regulations.

### Section 14: Transport information

**UN-Number**
- UN1224

**ADR, IMDG, IATA**

**DE**
14.2 UN proper shipping name
ADR 1224 KETONES, LIQUID, N.O.S. (DIISOBUTYL KETONE, 4,6-Dimethyl-4-heptanone)
IMDG, IATA KETONES, LIQUID, N.O.S. (DIISOBUTYL KETONE, 4,6-Dimethyl-4-heptanone)

14.3 Transport hazard class(es)
ADR

Class Label 3 (F1) Flammable liquids.
IMDG, IATA 3

Class Label 3 Flammable liquids.

Packing group
ADR, IMDG, IATA III

14.5 Environmental hazards:
Marine pollutant: No

14.6 Special precautions for user
Warning: Flammable liquids.
Kemler Number: 30
EMS Number: F-E,S-D

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not applicable.

Transport/Additional information:
ADR

Excepted quantities (EQ): E1
Limited quantities (LQ) 5L
Transport category 3
Tunnel restriction code D/E

UN "Model Regulation": UN1224, KETONES, LIQUID, N.O.S. (DIISOBUTYL KETONE, 4,6-Dimethyl-4-heptanone), 3, III

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Australian Inventory of Chemical Substances
None of the ingredients is listed.

Standard for the Uniform Scheduling of Drugs and Poisons
None of the ingredients is listed.

National regulations
Information about limitation of use:
Employment restrictions concerning young persons must be observed.
For use only by technically qualified individuals.
Classification according to VbF: A II
Technical instructions (air):

Class Share in %

 NK 66,0

Water hazard class: Water hazard class 1 (Self-assessment): slightly hazardous for water.

Other regulations, limitations and prohibitive regulations
ELINCS (European List of Notified Chemical Substances)
None of the ingredients is listed.

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.
None of the ingredients are listed.

The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.
None of the ingredients are listed.

Annex XIV of the REACH Regulations (requiring Authorisation for use)
None of the ingredients is listed.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

 SECTION 16: Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Relevant phrases
H226 Flammable liquid and vapour.
H335 May cause respiratory irritation.
R10 Flammable.
R37 Irritating to respiratory system.

Department issuing SDS: Global Marketing Department

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
VFR: Verordnung über bestimmte Flüssigkeiten, Österreich (Ordinance on the storage of combustible liquids, Austria)
LC50: Lethal co/concentration, 50 percent
LD50: Lethal dose, 50 percent
vPvB: very Persistent and very Bioaccumulative
ACGIH: American Conference of Governmental Industrial Hygienists (USA)
OSHA: Occupational Safety and Health Administration (USA)
NTP: National Toxicology Program (USA)
IARC: International Agency for Research on Cancer
EPA: Environmental Protection Agency (USA)