4-Methyl-2-pentanone

33463-6X1L

Version 2.0 Revision Date 08.04.2022 Supersedes 1

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

1.1. Product identifier

Product name	:	4-Methyl-2-pentanone
SDS-number	:	000000020751
Type of product	:	Substance
Remarks	:	SDS according to Art. 31 of Regulation (EC) 1907/2006.
Chemical name	:	4-methylpentan-2-one; isobutyl methyl ketone
Index-No.	:	606-004-00-4
REACH Registration Number	:	no data available

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

Use of the Substance/Mixture	:	Laboratory chemicals
Uses advised against	:	none

1.3. Details of the supplier of the safety data sheet

Company	:	Honeywell International Inc. 115 Tabor Road 07950-2546 Morris Plains USA	Honeywell International, Inc. 115 Tabor Road Morris Plains, NJ 07950-2546 USA
Telephone	:		
For further information, please contact:	:	SafetyDataSheet@Honeywell.com	

1.4. Emergency telephone number

Emergency telephone number	:	+1-703-527-3887 (ChemTrec-Transport) +1-303-389-1414 (Medical)
Country based Poison Control Center	:	see chapter 15.1

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Flammable liquids Category 2
H225 Highly flammable liquid and vapour.
Acute toxicity Category 4 - Inhalation
H332 Harmful if inhaled.
Carcinogenicity Category 2
H351 Suspected of causing cancer.
Eye irritation Category 2
H319 Causes serious eye irritation.
Specific target organ toxicity - single exposure Category 3 - Central nervous system
H336 May cause drowsiness or dizziness.

2.2. Label elements

REGULATION (EC) No 1272/2008

Hazard pictograms :

Signal word	:	Danger	
Hazard statements	:	H225	Highly flammable liquid and vapour.
		H319	Causes serious eye irritation.
		H332	Harmful if inhaled.
		H351	Suspected of causing cancer.
		H336	May cause drowsiness or dizziness.
		EUH066	Repeated exposure may cause skin dryness or cracking.
Precautionary statements	:	P201	Obtain special instructions before use.
		P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
		P280	Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.
		P304 + P340	IF INHALED: Remove person to fresh

	air and keep 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.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.

2.3. Other hazards

Vapours may form explosive mixtures with air. Vapours are heavier than air and may spread along floors. The material can accumulate static charge and can therefore cause electrical ignition. Dermal absorption possible Repeated exposure may cause skin dryness or cracking.

SECTION 3: Composition/information on ingredients

3.1. Substance

Chemical name	CAS-No. Index-No. REACH Registration Number EC-No.	Classification 1272/2008	Concentration	Remarks
4-methylpentan-2-one; isobutyl methyl ketone	108-10-1 606-004-00-4 203-550-1	Flam. Liq. 2; H225 Carc. 2; H351 Acute Tox. 4; H332; Inhalation STOT SE 3; H336 Eye Irrit. 2; H319 EUH066	100 %	ATE(inhalative vapour): 11 mg/l

3.2. Mixture

Not applicable

Occupational Exposure Limit(s), if available, are listed in Section 8.
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 aider needs to protect himself. Move out of dangerous area. Take off all contaminated clothing immediately.

Inhalation:
In case of accident by inhalation: remove casualty to fresh air and keep at rest. Call a physician immediately.

Skin contact:
After contact with skin, wash immediately with plenty of water. Call a physician immediately.

Eye contact:
Rinse thoroughly with plenty of water, also under the eyelids. Protect unharmed eye. Remove contact lenses. Get medical attention immediately.

Ingestion:
Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting. Call a physician immediately.

4.2. Most important symptoms and effects, both acute and delayed

No data available

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

See Section 11 for more detailed information on health effects and symptoms. :

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:
Dry powder
Carbon dioxide (CO2)
Foam
Water spray

Extinguishing media which shall not be used for safety reasons:
High volume water jet

5.2. Special hazards arising from the substance or mixture

Vapours may form explosive mixtures with air.
Fire or intense heat may cause violent rupture of packages.
Heating will cause pressure rise with risk of bursting and subsequent explosion
Flash back possible over considerable distance.

5.3. Advice for firefighters

In the event of fire, wear self-contained breathing apparatus.
No unprotected exposed skin areas.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.Do not use a solid water stream as it may scatter and spread fire.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Wear personal protective equipment. Unprotected persons must be kept away.

6.2. Environmental precautions

Do not flush into surface water or sanitary sewer system. Prevent further leakage or spillage if safe to do so.

6.3. Methods and materials for containment and cleaning up

Soak up with inert absorbent material.

Pick for disposal in tightly closed containers
Personal protection through wearing a tightly closed chemical protection suit and a self-contained breathing apparatus.
Remove all sources of ignition.
Use low-sparking handtools and explosion-proof electrical equipment

6.4. Reference to other sections

For personal protection see section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling:
Exhaust ventilation at the object is necessary. Use explosion-proof equipment. Wear suitable protective clothing and gloves.

Advice on protection against fire and explosion:
Use only in explosion-proof areas. Take measures to prevent the build up of electrostatic charge. Keep away from sources of ignition - No smoking. The heavy vapours can overcome a considerable distance up to the source of ignition.

Hygiene measures:
Take off all contaminated clothing immediately. Recommended preventive skin protection Wash hands before breaks and at the end of workday. When using, do not eat, drink or smoke.

Temperature class:
T1

Fire-fighting class:
Fires involving liquids or liquid containing substances. Also includes substances which become liquid at elevated temperatures.

7.2. Conditions for safe storage, including any incompatibilities

Further information on storage conditions:
Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place.

7.3. Specific end use(s)

no additional data available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits:

Components	Basis / Value type	Value / Form of exposure	Exceeding Factor	Remarks
4-methylpentan-2-one; isobutyl methyl ketone	EH40 WEL TWA	208 mg/m3 50 ppm		
4-methylpentan-2-one; isobutyl methyl ketone	EH40 WEL SKIN_DES			Can be absorbed through the skin.
4-methylpentan-2-one; isobutyl methyl ketone	EU ELV STEL	208 mg/m3 50 ppm		Indicative
4-methylpentan-2-one; isobutyl methyl ketone	EU ELV TWA	83 mg/m3 20 ppm		Indicative
4-methylpentan-2-one; isobutyl methyl ketone	EH40 WEL STEL	416 mg/m3 100 ppm	15 minutes	

TWA - Time weighted average
SKIN_DES - Skin designation:
STEL - Short term exposure limit

DNEL/ PNEC-Values

Component	End-use/impact	Exposure duration	Value	Exposure routes	Remarks
4-methylpentan-2-one; isobutyl methyl ketone	Workers / Long-term systemic effects		83 mg/m3	Inhalation	
4-methylpentan-2-one; isobutyl methyl ketone	Workers / Acute systemic effects		208 mg/m3	Inhalation	
4-methylpentan-2-one; isobutyl methyl ketone	Workers / Long-term local effects		83 mg/m3	Inhalation	
4-methylpentan-2-one; isobutyl methyl ketone	Workers / Acute local effects		208 mg/m3	Inhalation	

4-methylpentan-2-one; isobutyl methyl ketone	Workers / Long-term systemic effects		11,8mg/kg bw/d	Skin contact	
4-methylpentan-2-one; isobutyl methyl ketone	Consumers / Long-term systemic effects		14,7 mg/m3	Inhalation	
4-methylpentan-2-one; isobutyl methyl ketone	Consumers / Acute systemic effects		155,2 mg/m3	Inhalation	
4-methylpentan-2-one; isobutyl methyl ketone	Consumers / Long-term local effects		14,7 mg/m3	Inhalation	
4-methylpentan-2-one; isobutyl methyl ketone	Consumers / Acute local effects		155,2 mg/m3	Inhalation	
4-methylpentan-2-one; isobutyl methyl ketone	Consumers /		4,2mg/kg bw/d	Skin contact	
4-methylpentan-2-one; isobutyl methyl ketone	Consumers /		4,2mg/kg bw/d	Ingestion	

Component	Environmental compartment / Value	Remarks
4-methylpentan-2-one; isobutyl methyl ketone	Fresh water: 0,6 mg/l	Assessment factor: 50
4-methylpentan-2-one; isobutyl methyl ketone	Marine water: 0,06 mg/l	Assessment factor: 500
4-methylpentan-2-one; isobutyl methyl ketone	Sewage treatment plant: 27,5 mg/l	Assessment factor: 10
4-methylpentan-2-one; isobutyl methyl ketone	Fresh water sediment: 8,27 mg/kg dw	
4-methylpentan-2-one; isobutyl methyl ketone	Marine sediment: 0,83 mg/kg dw	
4-methylpentan-2-one; isobutyl methyl ketone	Soil: 1,3 mg/kg dw	

8.2. Exposure controls

Occupational exposure controls

The Personal Protective Equipment must be in accordance with EN standards:respirator EN 136, 140, 149; safety glasses EN 166; protective suit: EN 340, 463, 468, 943-1, 943-2; gloves EN 374, 511; safety shoes EN-ISO 20345.
Ensure that eyewash stations and safety showers are close to the workstation location.
Do not breathe vapours or spray mist.
Avoid contact with skin, eyes and clothing.

Engineering measures
Use with local exhaust ventilation.

Personal protective equipment
Respiratory protection:
In the case of vapour formation use a respirator with an approved filter.

Hand protection:
Glove material: butyl-rubber
Break through time: > 30 min
Glove thickness: 0,7 mm
Butoject® 898
Gloves must be inspected prior to use.
Replace when worn.
Remarks:Supplementary note: The specifications are based on information and tests from similar substances by analogy.
Due to varying conditions (e.g.temperature or other strains) it must be considered that the usage of a chemical protective glove in practice may be much shorter than the permeation time determined in accordance with EN 374.
Since actual conditions of practical use often deviate from standardised conditions according EN 374 the glove manufacturer reccomends to use the chemical protective glove in practice not longer than 50% of the recomended permeation time.
Manufacturer´s directions for use should be observed because of great diversity of types .
Suitable gloves tested according EN 374 are supplied e.g. from KCL GmbH, D-36124 Eichenzell, Vertrieb@kcl.de

Eye protection:
Safety goggles

Skin and body protection:
Protective suit

Environmental exposure controls

Handle in accordance with local environmental regulations and good industrial practices.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	liquid
Colour	:	colourless
Odour	:	characteristic
molecular weight	:	100,16 g/mol
Melting point/range	:	-83 °C
Boiling point/boiling range	:	115 - 117 °C at 1.013 hPa
Flammability	:	Not applicable
Upper explosion limit	:	8 %(V)
Lower explosion limit	:	1,4 %(V)
Flash point	:	14 °C Method: DIN 51755
Auto-ignition temperature	:	460 °C
Decomposition temperature	:	At normal pressure may be distilled without decomposition.
pH	:	No data available
Viscosity, kinematic	:	No data available
Water solubility	:	20 g/l at 20 °C
Solubility in other solvents	:	Soluble in most organic solvents

Partition coefficient: n-octanol/water	:	log Pow 1,39
Vapour pressure	:	20 hPa at 20 °C
Vapour pressure	:	33,3 hPa at 30 °C
Density	:	ca. 0,8 g/cm3 at 20 °C
Bulk density	:	Not applicable
Relative vapour density	:	3,46 (Air = 1.0)

9.2 Other Information

Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Evaporation rate	:	No data available
Viscosity, dynamic	:	No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under normal conditions.

10.2. Chemical stability

At normal pressure may be distilled without decomposition.

10.3. Possibility of hazardous reactions

Vapours may form explosive mixture with air.

10.4. Conditions to avoid

Protect from exposure to air/oxygen (peroxide formation).

10.5. Incompatible materials

Plastic materials can be attacked.
Aldehydes
Oxidizing agents
Nitric acid

10.6. Hazardous decomposition products

No decomposition if stored and applied as directed.
Hazardous decomposition products due to incomplete combustion

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute oral toxicity:
LD50
Species: Rat
Value: 2.080 mg/kg
Method: OECD Test Guideline 401

Acute dermal toxicity:
Not classified due to data which are conclusive although insufficient for classification.

Acute inhalation toxicity:
LC50
Species: Rat
Value: 2000 - 4000 ppm
Exposure time: 4 h
Method: OECD Test Guideline 403

Acute toxicity estimate
Value: 11 mg/l

Skin irritation:
Species: Rabbit
Result: non-irritant
Exposure time: 4 h

Method: OECD Test Guideline 404

Eye irritation:
Classification based on Annex VI of regulation 1272/2008/EC.

Respiratory or skin sensitisation:
Maximisation Test
Route of exposure: Dermal
Species: Guinea pig
Result: non-sensitizing
Method: OECD Test Guideline 406

Repeated dose toxicity:
Note: No data available

Carcinogenicity:
Species: not specified
Note: Classification based on Annex VI of regulation 1272/2008/EC.
Germ cell mutagenicity:
Note: Not classified due to data which are conclusive although insufficient for classification.

Reproductive toxicity:
Species: not specified
Remarks: Not classified due to data which are conclusive although insufficient for classification.

STOT - single exposure:
Route of exposure: Inhalation
target organs: Central nervous system
Assessment: May cause drowsiness or dizziness.

Aspiration hazard:
No data available

11.2. Information on other hazards

Endocrine disrupting properties
No data available

Other information:
No data available

SECTION 12: Ecological information

12.1. Toxicity

Toxicity to fish:
LC50
static test
Species: Danio rerio (zebra fish)
Value: > 179 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

NOEC
static test
Species: Danio rerio (zebra fish)
Value: > 179 mg/l

Toxicity to aquatic plants:
EC50
Growth inhibition
Species: Lemna gibba (gibbous duckweed)
Value: > 146 mg/l
Exposure time: 7 d

Toxicity to Microorganisms:
Not classified due to data which are conclusive although insufficient for classification.

Toxicity to aquatic invertebrates:
EC50
static test
Species: Daphnia magna (Water flea)
Value: > 200 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

12.2. Persistence and degradability

Biodegradability:
aerobic
Biodegradation: 83 %
Exposure time: 28 d

Result: Readily biodegradable
Method: OECD Test Guideline 301F

12.3. Bioaccumulative potential

No data available

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

No data available

12.6. Endocrine disrupting properties

No data available

12.7. Other adverse effects

Do not flush into surface water or sanitary sewer system.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product:
Dispose according to legal requirements.

Packaging:
Legal requirements are to be considered in regard of reuse or disposal of used packaging materials

Further information:
Provisions relating to waste:
EC Directive 2006/12/EC; 2008/98/EEC
Regulation No. 1013/2006

For personal protection see section 8.

SECTION 14: Transport information

14.1 UN number

ADR/RID:1245 IMDG:1245 IATA:1245

14.2 UN proper shipping name
ADR/RID:METHYL ISOBUTYL KETONE
IMDG:METHYL ISOBUTYL KETONE
IATA:Methyl isobutyl ketone

14.3 Transport hazard class(es)
ADR/RID: 3 IMDG: 3 IATA: 3

14.4 Packaging group
ADR/RID: II IMDG: II IATA: II

14.5 Environmental hazards
ADR/RID:no Marine pollutant: no

14.6 Special precautions for user
No data available

14.7 Maritime transport in bulk according to IMO instruments
No data available

SECTION 15: Regulatory information

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

Basis	Value	Remarks
Directive 2012/18/EC Listed in Regulation : P5c: FLAMMABLE LIQUIDS Number in Regulation: 1.2.5.3	**Quantity**: 5.000.000 kg **Quantity**: 50.000.000 kg	
Substances of very high concern (SVHC)		This product does not contain substances of very high concern according to Regulation (EC) No Article 57 above the respective regulatory 1907/2006 (REACH), concentration limit of ≥ 0.1 % (w/w).

Poison Control Center

Country	Phone Number	Country	Phone Number

Austria	+4314064343
Belgium	070 245245
Bulgaria	(+)35929154233
Croatia	(+3851)23-48-342
Cyprus	+357 2240 5611
Czech Republic	+420224919293; +420224915402
Denmark	82121212
Estonia	16662; (+372)6269390
Finland	9471977
France	+33(0)145425959
Greece	+30 210 779 3777
Hungary	(+36-80)201-199
Iceland	5432222
Ireland	+353(1)8092166
Italy	0382 24444
Germany	Berlin : 030/19240
	Bonn : 0228/19240
	Erfurt : 0361/730730
	Freiburg : 0761/19240
	Göttingen : 0551/19240
	Homburg : 06841/19240
	Mainz : 06131/19240
	Munich : 089/19240
Latvia	+37167042473

Liechtenstein	+41 442515151
Lithuania	+370532362052
Luxembourg	070245245; (+352)80002-5500
Malta	+356 2395 2000
Netherlands	030-2748888
Norway	22591300
Poland	+48 42 25 38 400
Portugal	800250250
Romania	+40 21 318 3606
Slovakia (NTIC)	+421 2 54 774 166
Slovenia	+386 1 400 6051
Spain	+34915620420
Sweden	112 (begär Giftinformation);+46104566786
Switzerland	145
United Kingdom	(+44) 844 892 0111

Other inventory information

US. Toxic Substances Control Act
On TSCA Inventory

Australia. Industrial Chemicals Act (AIIC), as amended
On the inventory, or in compliance with the inventory

Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)
All components of this product are on the Canadian DSL

Japan. Kashin-Hou Law List
On the inventory, or in compliance with the inventory

Korea. Existing Chemicals Inventory (KECI)
On the inventory, or in compliance with the inventory

Philippines. Inventory of Chemicals and Chemical Substances (PICCS)
On the inventory, or in compliance with the inventory

China. Inventory of Existing Chemical Substances (IECSC)
On the inventory, or in compliance with the inventory

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand
On the inventory, or in compliance with the inventory

15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Text of H-statements referred to under heading 3

4-methylpentan-2-one; isobutyl methyl ketone	:	H225	Highly flammable liquid and vapour.
		H351	Suspected of causing cancer.
		H332	Harmful if inhaled.
		H336	May cause drowsiness or dizziness.
		H319	Causes serious eye irritation.
		EUH066	Repeated exposure may cause skin dryness or cracking.

Further information

All directives and regulations refer to amended versions.
Vertical lines in the left hand margin indicate a relevant amendment from the previous version.

Honeywell
Riedel-de Haën™

4-Methyl-2-pentanone

33463-6X1L

Version 2.0 Revision Date 08.04.2022 Supersedes 1

Abbreviations:
EC European Community
CAS Chemical Abstracts Service
DNEL Derived no effect level
PNEC Predicted no effect level
vPvB Very persistent and very biaccumulative substance
PBT Persistent, bioaccmulative und toxic substance

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. Final determination of suitability of any material is the sole responsibility of the user.
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