

10070  
2-Methylbutyric acid

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

Identification of the substance/preparation

### 2-Methylbutyric acid

CAS-No 116-53-0  
EINECS-No 204-145-2  
Registration number (REACH) 01-2119959862-23-0000\*\*\*  
Use of the Substance / Preparation Intermediate.

Company/Undertaking Identification **OXEA GmbH**  
Otto-Roelen-Str. 3  
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Germany

Product Information Product Stewardship  
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Emergency telephone number +44 (0) 1235 239 671 (UK)

## 2. Hazards identification

### GHS / CLP

Basis for Classification This substance is classified based on Directive 1272/2008/EC and its amendments (CLP Regulation, GHS)

### Classification

Acute oral toxicity	Category 4
Acute dermal toxicity	Category 4
Skin corrosion/irritation	Category 1B
Serious eye damage/eye irritation	Category 1

### Labelling

Hazard symbols



Signal word

**Danger**

Hazard statements

H302: Harmful if swallowed  
H312: Harmful in contact with skin  
H314: Causes severe skin burns and eye damage

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**Precautionary statements**  
P280: Wear protective gloves and eye/face protection  
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting  
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  
P310: Immediately call a POISON CENTRE or doctor

**Other Hazards** Vapour/air-mixtures are explosive at intense warming

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

**Basis for Classification** The product is classified in accordance with Annex VI to Directive 67/548/EEC.

**contains** 2-Methylbutyric acid (CAS 116-53-0)

**Symbol(s)** C - Corrosive

**R-phrase(s)**  
R21/22 - Harmful in contact with skin and if swallowed  
R34 - Causes burns

**S-phrase(s)**  
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice  
S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  
S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)

**Other hazards** Vapour/air-mixtures are explosive at intense warming

## 3. Composition / Information on ingredients

Component	CAS-No	REACH-No	67/548/EEC	1272/2008/EC	Concentration (%)
2-Methylbutyric acid	116-53-0	01-211995986 2-23-0000***	Xn;R21/22 C;R34	Acute Tox. 4; H302 Acute Tox. 4; H312 Skin Corr. 1B; H314 Eye Dam. 1; H318	> 99,0

## 4. First aid measures

### General advice

Remove contaminated, soaked clothing immediately and dispose of safely. First aider needs to protect himself.

### Inhalation

Keep at rest. Aerate with fresh air. When symptoms persist or in all cases of doubt seek medical advice.

### Eyes

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Immediate medical attention is required.

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## Skin

Wash off immediately with soap and plenty of water. When symptoms persist or in all cases of doubt seek medical advice.

## Ingestion

Call a physician immediately. Do not induce vomiting without medical advice.

## Main symptoms

cough, dizziness, nausea, shortness of breath, unconsciousness, gastrointestinal discomfort.

## Special hazard

Lung irritation, Lung oedema, Dermatitis.

## Notes to physician

Treat symptomatically. If ingested, flush stomach and compensate acidosis. In case of lung irritation, first treatment with cortisone spray.

## 5. Firefighting measures

### Suitable extinguishing media

foam, dry chemical, carbon dioxide (CO<sub>2</sub>), water spray

### Extinguishing media which must not be used for safety reasons

Do not use a solid water stream as it may scatter and spread fire.

### Special exposure hazards arising from the substance or preparation itself, its combustion products, or released gases

Under conditions giving incomplete combustion, hazardous gases produced may consist of:

carbon monoxide (CO)

carbon dioxide (CO<sub>2</sub>)

Combustion gases of organic materials must in principle be graded as inhalation poisons

Vapours are heavier than air and may spread along floors

Vapour/air-mixtures are explosive at intense warming

### Special protective equipment for fire-fighters

Fire fighter protection should include a self-contained breathing apparatus (NIOSH-approved or EN 133) and full fire-fighting turn out gear.

### Precautions for fire-fighting

Cool containers / tanks with water spray. Water run-off and vapor cloud may be corrosive. Dike and collect water used to fight fire. Keep people away from and upwind of fire.

## 6. Accidental release measures

### Personal precautions

Avoid contact with skin and eyes. Avoid breathing vapors or mists. Keep people away from and upwind of spill/leak. Ensure adequate ventilation, especially in confined areas. Keep away from heat and sources of ignition. For emergency responders: Personal protection see section 8.

### Environmental precautions

Prevent further leakage or spillage. Do not discharge product into the aquatic environment without pretreatment (biological treatment plant).

### Methods for containment

Stop the flow of material, if possible without risk. Dike spilled material, where this is possible.

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## Methods for cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. If liquid has been spilt in large quantities clean up promptly by scoop or vacuum. Dispose of in accordance with local regulations. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).

## 7. Handling and storage

### Handling

#### Advice on safe handling

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Provide sufficient air exchange and/or exhaust in work rooms.

#### Advice on protection against fire and explosion

Keep away from sources of ignition - No smoking. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). In case of fire, emergency cooling with water spray should be available. Ground and bond containers when transferring material. Vapour/air-mixtures are explosive at intense warming.

#### Advice on the protection of the environment

See Section 8: Environmental exposure controls.

### Storage

#### Technical measures/Storage conditions

Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care. Keep at temperatures between -18 and 38 °C (0 and 100 °F).

#### Suitable material

stainless steel, aluminium

#### Unsuitable material

nickel, copper

#### Advice on common storage

Incompatible products:

bases

amines

oxidizing agents

#### Temperature class

T2

## 8. Exposure controls / Personal protection

### Exposure limits Egypt

No exposure limits established.

### Exposure limits Israel

No exposure limits established.

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## Exposure limits South Africa

No exposure limits established.

## Exposure limits United Arab Emirates

No exposure limits established.

## Exposure limits Kuwait

No exposure limits established.

## Occupational Exposure Controls

### **Engineering measures**

General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred. Explosion-proof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems.

### **Personal protective equipment**

#### **General industrial hygiene practice**

Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Ensure that eyewash stations and safety showers are close to the workstation location.

#### **Hygiene measures**

When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

#### **Respiratory protection**

Respirator with filter for organic vapour. Use the indicated respiratory protection if the occupational exposure limit is exceeded and/or in case of product release (dust). Equipment should conform to NIOSH, EN or other applicable national standards.

#### **Hand protection**

Wear protective gloves. Recommendations are listed below. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

**Suitable material** nitrile rubber

**Suitable material** polyvinylchloride

#### **Eye protection**

Tightly fitting safety goggles. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face.

#### **Skin and body protection**

Impervious clothing. Wear face-shield and protective suit for abnormal processing problems.

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## Environmental exposure controls

If possible use in closed systems. If leakage can not be prevented, the substance needs to be suck off at the emersion point, if possible without danger. Observe the exposure limits, clean exhaust air if needed. If recycling is not practicable, dispose of in compliance with local regulations. Inform the responsible authorities in case of leakage into the atmosphere, or of entry into waterways, soil or drains.

## 9. Physical and chemical properties

<b>Physical state</b>	liquid			
<b>Colour</b>	colourless			
<b>Odour</b>	unpleasant			
<b>Molecular weight</b>	102,13			
<b>Molecular formula</b>	C5 H10 O2			
<b>Flash point</b>	77 °C			
<b>Method</b>	EN 22719			
<b>Autoignition temperature</b>	435 °C			
<b>Method</b>	DIN 51794			
<b>Lower explosion limit</b>	1,6 Vol %			
<b>Upper explosion limit</b>	7,3 Vol %			
<b>Melting point/range</b>	- 90 °C (Pour point)			
<b>Boiling point/range</b>	177 °C @ 1013 hPa			
<b>Vapour pressure</b>				
Values [hPa]	Values [kPa]	Values [atm]	@ °C	@ °F
2	0,2	0,002	20	68
9,1	0,91	0,009	50	122
<b>Density</b>				
Values [g/cm <sup>3</sup> ]	@ °C	@ °F	Method	
0,9360	20	68	DIN 51757	
<b>Refractive index</b>	1,405 @ 20 °C			
<b>Viscosity</b>	2,1 mPa*s @ 20 °C			
<b>Method</b>	dynamic, ASTM D445			
<b>pH</b>	3,1 (1 % in water @ 20 °C (68 °F))			
<b>Water solubility</b>	45 g/l @ 20 °C, OECD 105			
<b>log Pow</b>	1,8 (measured), OECD 117			
<b>Vapour density</b>	~ 3,5 (Air = 1) @ 20 °C (68 °F)			
<b>Surface tension</b>	64,2 mN/m (1 g/l @ 20°C), OECD 115			

## 10. Stability and reactivity

### Stability

Stable under recommended storage conditions.

### Conditions to avoid

Avoid contact with heat, sparks, open flame and static discharge. Avoid any source of ignition.

### Materials to avoid

bases, amines, oxidizing agents.

### Hazardous decomposition products

No decomposition if stored and applied as directed.

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## 11. Toxicological information

**Principle Routes of Exposure** Inhalation, Eye contact, Skin contact, Ingestion

Acute toxicity				
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Routes of Exposure	Endpoint	Values	Species	Method
Oral	LD50	1750 mg/kg	rat, male/female	OECD 401
Dermal	LD50	2228 mg/kg	rabbit male	OECD 402
Dermal	LD50	1367 mg/kg	rabbit female	OECD 402
Inhalative	LC0	8375 mg/m <sup>3</sup> (6 h)	rat, male/female	OECD 403

Irritation and corrosion				
2-Methylbutyric acid (116-53-0)				
Target Organ Effects	Species	Result	Method	
Skin	rabbit	corrosive	OECD 404	3 min

Subacute, subchronic and prolonged toxicity				
2-Methylbutyric acid (116-53-0)				
Type	Dose	Species	Method	
Subchronic toxicity	NOAEL: 5000 mg/kg/d (90d)	rat, male	Oral	read across

Carcinogenicity, Mutagenicity, Reproductive toxicity					
2-Methylbutyric acid (116-53-0)					
Type	Dose	Species	Evaluation	Method	
Mutagenicity		Salmonella typhimurium	negative	Ames test	read across
Developmental Toxicity	NOAEL 600 mg/kg/d	rat		OECD 414, Oral	read across

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#### Main symptoms

cough, dizziness, nausea, shortness of breath, unconsciousness, gastrointestinal discomfort.

#### Note

An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration. Handle in accordance with good industrial hygiene and safety practice. Further details on substance data can be found in the registration dossier under the following link:

<http://apps.echa.europa.eu/registered/registered-sub.aspx>.\*\*\*

## 12. Ecological information

Acute aquatic toxicity			
2-Methylbutyric acid (116-53-0)			
Species	Exposure time	Dose	Method
Danio rerio (Zebra fish)	96h	LC50: > 1000 mg/l	OECD 203
Bacteria / Sewage	24h	TTC: 1250 mg/l	ETAD Fermentation tube method

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## Biodegradation

67,9 % (10 d), Sewage, domestic, non-adapted, Readily biodegradable, OECD 301 D.

### Note

Avoid release to the environment.

## 13. Disposal considerations

### Product Information

Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal.

Hazardous waste according to European Waste Catalogue (EWC)

### Uncleaned empty packaging

Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.

## 14. Transport information

### ADR/RID

UN/ID No	UN 3265
Proper shipping name	Corrosive liquid, acidic, organic, n.o.s.
Hazard Inducer	(2-Methylbutyric acid)
Class	8
Packing group	II
ADR Tunnel restriction code	(E)
Classification Code	C3
Hazard Number	80

### ADN

ADN: Container and Tanker

UN/ID No	UN 3265
Proper shipping name	Corrosive liquid, acidic, organic, n.o.s.
Hazard Inducer	(2-Methylbutyric acid)
Class	8
Packing group	II
Classification Code	C3
Hazard Number	80

### ICAO/IATA

UN/ID No	UN 3265
Proper shipping name	Corrosive liquid, acidic, organic, n.o.s.
Hazard Inducer	(2-Methylbutyric acid)
Class	8
Packing group	II

### IMDG

UN/ID No	UN 3265
Proper shipping name	Corrosive liquid, acidic, organic, n.o.s.
Hazard Inducer	(2-Methylbutyric acid)
Class	8
Packing group	II
EmS	F-A, S-B

## 15. Regulatory information



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## GHS / CLP

**Basis for Classification** This substance is classified based on Directive 1272/2008/EC and its amendments (CLP Regulation, GHS). (See chapter 2)

## International Inventories

### **2-Methylbutyric acid, CAS: 116-53-0**

AICS (AU)  
DSL (CA)  
IECSC (CN)  
EC-No. 2041452 (EU)  
ENCS (2)-608 (JP)  
ISHL (2)-608 (JP)  
KECI KE-23544 (KR)  
PICCS (PH)  
TSCA (US)  
NZIoC (NZ)

## National regulatory information Egypt

**Banned Chemicals (Unified List of Hazardous Substances, List A)**  
not listed

**Substances Requiring Permits (Unified List of Hazardous Substances, List B)**  
not listed

**Non-Restricted Substances (Unified List of Hazardous Substances, List C)**  
not listed

## National regulatory information Israel

**Harmful Chemicals (Hazardous Substances Law, 5753-1993, Annex 1)**  
not listed

**Toxic Chemicals (Hazardous Substances Law, 5753-1993, Annex 2)**  
not listed

**Hazardous materials requiring annual testing (Labor Inspection Regs., Appendix 1)**  
not listed

**Hazardous Substances Regulations (Classification & Exemptions)**  
not listed

## National regulatory information South Africa

**Group 1 Hazardous Substances (G.N.R 452)**  
not listed

## National regulatory information United Arab Emirates

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## Prohibited and restricted imports (Ministry of Environment and Water)

not listed

For details and further information please refer to the original regulation.

## 16. Other information

### Full text of H-Statements referred to under section 3

H312: Harmful in contact with skin  
H314: Causes severe skin burns and eye damage  
H318: Causes serious eye damage

### Full text of R-phrases referred to under sections 2 and 3

R21 - Harmful in contact with skin  
R34 - Causes burns

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### Training advice

For effective first-aid, special training / education is needed.

### Sources of key data used to compile the datasheet

Information contained in this safety data sheet is based on Oxea owned data and public sources deemed valid or acceptable. The absence of data elements required by ANSI or Annex II, Regulation 1907/2006/EC indicates, that no data meeting these requirements is available.

### Further information for the safety data sheet

Changes against the previous version are marked by \*\*\*. Observe national and local legal requirements. For more information, other material safety data sheets or technical data sheets please consult the Oxea homepage ([www.oxea-chemicals.com](http://www.oxea-chemicals.com)).

The annex is not required because the substance is registered as an intermediate under REACH\*\*\*

### Disclaimer

**For industrial use only.** The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. Oxea makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards.