

# SAFETY DATA SHEET



Isovaleraldehyde  
10150

Version / Revision  
Supersedes Version

5.01  
5.00\*\*\*

Revision Date  
Issuing date

01-Dec-2020  
01-Dec-2020

## SECTION 1: Identification

### 1.1. Product identifier

Identification of the  
substance/preparation

# Isovaleraldehyde

Chemical Name  
CAS-No

3-Methylbutanal  
590-86-3

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

Use of the Substance /  
Preparation

Intermediate

Uses advised against

None

### 1.3. Details of the supplier of the safety data sheet

Supplier

**OQ Chemicals Corporation**  
15375 Memorial Drive  
West Memorial Place I  
Suite 300  
Houston, TX 77079  
USA  
Phone +1 346 378 7300

Product Information

Product Stewardship  
FAX: +49 (0)208 693 2053  
email: sc.psq@oq.com

### 1.4. Emergency telephone number

Emergency telephone number NCEC +1 202 464 2554  
available 24/7

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

This substance is classified in accordance with paragraph (d) of §1910.1200 (GHS-US classification).

Serious eye damage/eye irritation Category 2A, H319  
Skin sensitization Category 1, H317  
Target Organ Systemic Toxicant - Single exposure Category 3, H335  
Flammable liquid Category 2, H225

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Environmental hazard Aquatic Chronic 2; H411; Aquatic Acute 2; H401

**OSHA Specified Hazards** Not applicable.

## 2.2. Label elements

Labeling according to §1910.1200 (GHS-US labeling).

### Hazard symbol(s)



**Signal word**

**Danger**

### Hazard statements

H225: Highly flammable liquid and vapor.  
H319: Causes serious eye irritation.  
H317: May cause an allergic skin reaction.  
H335: May cause respiratory irritation.  
H401: Toxic to aquatic life  
H411: Toxic to aquatic life with long lasting effects.

### Precautionary statements

#### Prevention

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P233: Keep container tightly closed.  
P240: Ground and bond container and receiving equipment.  
P241: Use explosion-proof electrical/ ventilating/ lighting equipment.  
P242: Use non-sparking tools.  
P243: Take precautionary measures against static discharge.  
P280: Wear protective gloves/eye protection/face protection.  
P264: Wash hands thoroughly after handling.  
P261: Avoid breathing gas/mist/vapours.  
P271: Use only outdoors or in a well ventilated area.  
P272: Contaminated work clothing must not be allowed out of the workplace.  
P273: Avoid release to the environment.\*\*\*

#### Response

P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.  
P333 + P313: If skin irritation or rash occurs: Get medical advice/attention.  
P302 + P352: IF ON SKIN: Wash with plenty of soap and water.  
P363: Wash contaminated clothing before reuse.  
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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P337 + P313: If eye irritation persists: Get medical advice/ attention.  
P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P312: Call a POISON CENTRE/doctor if you feel unwell.  
P391: Collect spillage.

## Storage

P403 + P235: Store in a well ventilated place. Keep cool.  
P405: Store locked up.

## Disposal

P501: Dispose of contents/container in accordance with local regulation.

## 2.3. Other hazards

Vapours may form explosive mixture with air  
Vapour is heavier than air and can travel considerable distance to a source of ignition and flashback  
Components of the product may be absorbed into the body by inhalation, ingestion and through the skin

## SECTION 3: Composition / information on ingredients

### 3.1. Substances

Component	CAS-No	Concentration (%)
Isovaleraldehyde	590-86-3	> 99,0

#### Remarks

3-Methylbutanal.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

#### Inhalation

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

#### Skin

Wash off immediately with soap and plenty of water. 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. Obtain medical attention.

#### Ingestion

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

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

#### Main symptoms

shortness of breath, vomiting, headache, nausea.

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## Special hazard

Lung oedema, Lung irritation.

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

### General advice

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

Treat symptomatically. In case of lung irritation, first treatment with cortisone spray.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media

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

#### Unsuitable Extinguishing Media

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

### 5.2. Special hazards arising from the substance or mixture

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

Vapour is heavier than air and can travel considerable distance to a source of ignition and flashback

Vapours may form explosive mixture with air

### 5.3. Advice for firefighters

#### Special protective equipment for firefighters

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

#### Precautions for firefighting

Keep people away from and upwind of fire. Cool containers / tanks with water spray. Dike and collect water used to fight fire. Water run-off can cause environmental damage.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: For personal protective equipment see section 8. 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.

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## 6.2. Environmental precautions

Prevent further leakage or spillage. Do not discharge product into the aquatic environment without pretreatment (biological treatment plant). Water runoff can cause environmental damage.

## 6.3. Methods and material for containment and cleaning up

### Methods for containment

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

### Methods for cleaning up

Soak up with inert absorbent material. DO NOT use combustible materials such as sawdust. Keep in suitable, closed containers for disposal. If liquid has been spilt in large quantities clean up promptly by scoop or vacuum. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).

## 6.4. Reference to other sections

For personal protective equipment see section 8.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe 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. Refill and handle product only in closed system. Do not use compressed air for filling, discharging or handling.

#### 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.

#### Advice on the protection of the environment

See Section 8: Environmental exposure controls.

#### Incompatible products

acids and bases  
amines  
oxidizing agents

### 7.2. Conditions for safe storage, including any incompatibilities

#### 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 is heavier than air and can travel considerable distance to a source of ignition and flashback. Vapours may form explosive mixture with air.

#### Technical measures/Storage conditions

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Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care. Handle under nitrogen, protect from moisture. Store at temperatures not exceeding 38 °C/ 100 °F.

**Suitable material**  
stainless steel

**Unsuitable material**  
mild steel

## SECTION 8: Exposure controls / personal protection

### 8.1. Control parameters

#### Exposure limits United States of America

No exposure limits established regarding ACGIH, OSHA Z-1 and OSHA Z-2.

### 8.2. Exposure controls

#### Appropriate Engineering controls

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.

#### Individual protection measures, such as 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.

##### 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.

##### 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.

<b>Suitable material</b>	butyl-rubber
<b>Evaluation</b>	according to EN 374: level 3
<b>Glove thickness</b>	approx 0.3 mm
<b>Break through time</b>	approx 60 min

<b>Suitable material</b>	polyvinylchloride
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**Evaluation** Information derived from practical experience  
**Glove thickness** approx 0.8 mm

## Skin and body protection

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

## 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 (vapor or mist). Equipment should conform to NIOSH.\*\*\*

## 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. 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.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

<b>Appearance</b>	liquid
<b>Colour</b>	colourless
<b>Odour</b>	strong
<b>Odour threshold</b>	0,1 - 2 ppb
<b>pH</b>	3,1 (15 g/l in water @ 20 °C (68 °F))
<b>Melting point/range</b>	< -130 °F (< -90 °C) (Pour point)
<b>Method</b>	DIN ISO 3016***
<b>Boiling point/range</b>	197,6 °F (92 °C) @ 1 atm (101,3 kPa)
<b>Method</b>	OECD 103***
<b>Flash point</b>	32,9 °F (0,5 °C) @ 1 atm (101,3 kPa)***
<b>Method</b>	EU A.9
<b>Evaporation rate</b>	No data available
<b>Flammability (solid, gas)</b>	Does not apply, the substance is a liquid
<b>Lower explosion limit</b>	No data available
<b>Upper explosion limit</b>	No data available

#### Vapour pressure

Values [hPa]	Values [kPa]	Values [atm]	@ °C	@ °F	Method
75	7,5	0,074	20	68	DIN EN 13016-2***
255	25,5	0,252	50	122	DIN EN 13016-2***

**Vapour density** 2,96 (Air = 1) @ 20 °C (68 °F)

#### Relative density

Values	@ °C	@ °F	Method
0,797	20	68	DIN 51757
<b>Solubility</b>	15 g/l @ 20 °C (68 °F), in water, OECD 105		
<b>log Pow</b>	1,5 @ 25 °C (77 °F) OECD 117***		

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Autoignition temperature	410 °F (210 °C)
Method	DIN 51794
Decomposition temperature	No data available
Viscosity	0,69 mm <sup>2</sup> /s @ 68 °F (20 °C)
Method	OECD 114, kinematic

## 9.2. Other information

Molecular weight	86,13
Molecular formula	C <sub>5</sub> H <sub>10</sub> O
Oxidizing properties	Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties
Refractive Index	1,387 @ 68 °F (20 °C)
Explosive properties	Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties
Surface tension	46,1 mN/m (1 g/l @ 20°C (68°F)), OECD 115

## SECTION 10: Stability and Reactivity

### 10.1. Reactivity

The reactivity of the product corresponds to the typical reactivity shown by the substance group as described in any text book on organic chemistry.

### 10.2. Chemical stability

Stable under recommended storage conditions.

### 10.3. Possibility of hazardous reactions

Hazardous polymerisation does not occur.\*\*\*

### 10.4. Conditions to avoid

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

### 10.5. Incompatible materials

bases, amines, acids, oxidizing agents.

### 10.6. Hazardous decomposition products

No decomposition if stored and applied as directed.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects



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**Likely routes of exposure** Inhalation, Eye contact, Skin contact, Ingestion

## **Isovaleraldehyde, CAS: 590-86-3**

### **Main symptoms**

shortness of breath, vomiting, nausea, headache.

### **Target Organ Systemic Toxicant - Single exposure**

The available data lead to the classification given in section 2

### **Target Organ Systemic Toxicant - Repeated exposure**

Based on available data, the classification criteria are not met for:

STOT RE

<b>Acute toxicity</b>				
<b>Isovaleraldehyde (590-86-3)</b>				
Routes of Exposure	Endpoint	Values	Species	Method
Oral	LD50	~ 5740 mg/kg	rat, male/female	OECD 401
Dermal	LD50	2534 mg/kg	rabbit male***	OECD 402
Inhalative	LC50	42,7 mg/l (4h)	rat	OECD 403

## **Isovaleraldehyde, CAS: 590-86-3**

### **Assessment**

Based on available data, the classification criteria are not met for:

Acute oral toxicity

Acute dermal toxicity

Acute inhalation toxicity

<b>Irritation and corrosion</b>				
<b>Isovaleraldehyde (590-86-3)</b>				
Target Organ Effects	Species	Result	Method	
Skin	rabbit	Mild skin irritation	OECD 404	4h in vivo***
Eyes	rabbit	irritating		in vivo***
Respiratory tract	mouse	RD50: 757-1008 ppm		10 min in vivo***

## **Isovaleraldehyde, CAS: 590-86-3**

### **Assessment**

The available data lead to the classification given in section 2

<b>Sensitization</b>				
<b>Isovaleraldehyde (590-86-3)</b>				
Target Organ Effects	Species	Evaluation	Method	
Skin	mouse guinea pig	sensitizing	Weight of evidence***	read across

## **Isovaleraldehyde, CAS: 590-86-3**

### **Assessment**

The available data lead to a classification as skin sensitizer (see section 2)

For respiratory sensitization, no data are available

## **Subacute, subchronic and prolonged toxicity**

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<b>Isovaleraldehyde (590-86-3)</b>				
Type	Dose	Species	Method	
no data available				

<b>Carcinogenicity, Mutagenicity, Reproductive toxicity</b>					
<b>Isovaleraldehyde (590-86-3)</b>					
Type	Dose	Species	Evaluation	Method	
Mutagenicity		human lymphocytes	positive (without metabolic activation)	Similar to: OECD 479 (SCE)	In vitro study
Mutagenicity		Salmonella typhimurium	negative	OECD 471 (Ames)	In vitro study read across***
Mutagenicity		mouse	negative	OECD 474 Chromosomal Aberration	in vivo***
Carcinogenicity	LOAEC: 500 ppm	rat, male/female	negative	OECD 451, Inhalative	read across
Carcinogenicity	LOAEC: 500 ppm	mouse male/female	negative	OECD 451, Inhalative	read across
Reproductive toxicity	No data available				

## **Isovaleraldehyde, CAS: 590-86-3**

### **CMR Classification**

The available data on CMR properties are summarized in the table above. They do not indicate a classification into categories 1A or 1B

### **Evaluation**

Did not show carcinogenic or mutagenic effects in animal experiments

## **Isovaleraldehyde, CAS: 590-86-3**

### **Aspiration toxicity**

According to experience not expected

### **Other adverse effects**

Components of the product may be absorbed into the body by inhalation, ingestion and through the skin.

### **Note**

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://echa.europa.eu/information-on-chemicals/registered-substances>.

## **SECTION 12: Ecological information**

### **12.1. Toxicity**

<b>Acute aquatic toxicity</b>			
<b>Isovaleraldehyde (590-86-3)</b>			
Species	Exposure time	Dose	Method
Daphnia magna (Water flea)	48h	EC50: 177 mg/l	84/449/EEC C.2
Pimephales promelas (fathead)	96h	LC50: 3,25 mg/l	OECD 203

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minnow)			
Desmodesmus subspicatus	72h	EC50: 80 mg/l (Biomass)	DIN 38412, part 9
Desmodesmus subspicatus	72h	EC50: 112,78 mg/l (Growth rate)	DIN 38412, part 9

## Long term toxicity

### Isovaleraldehyde (590-86-3)

Type	Species	Dose	Method	
Aquatic toxicity	Desmodesmus subspicatus	EC10: 32.62 mg/l (72 h) Biomass	DIN 38412 / part 9	
Aquatic toxicity	Desmodesmus subspicatus	EC10: 71,89 mg/l (72 h) Growth inhibition	DIN 38412 / part 9	

## 12.2. Persistence and degradability

### Isovaleraldehyde, CAS: 590-86-3

#### Biodegradation

50 % (28 d), Sewage, aerobic, OECD 301 D.

#### Abiotic Degradation

### Isovaleraldehyde (590-86-3)

Type	Result	Method
Hydrolysis	No data available	
Photolysis	No data available	

## 12.3. Bioaccumulative potential

### Isovaleraldehyde (590-86-3)

Type	Result	Method
log Pow	1,5 @ 25 °C (77 °F)***	OECD 117
BCF	No data available	

## 12.4. Mobility in soil

### Isovaleraldehyde (590-86-3)

Type	Result	Method
Surface tension	46,1 mN/m (1 g/l @ 20°C (68°F))	OECD 115***
Adsorption/Desorption	no data available	
Distribution to environmental compartments	no data available	

## 12.5. Results of PBT and vPvB assessment

### Isovaleraldehyde, CAS: 590-86-3

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**PBT and vPvB assessment**  
Not required

## 12.6. Other adverse effects

Isovaleraldehyde, CAS: 590-86-3  
No data available

**Note**  
Avoid release to the environment.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

#### 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.

#### Uncleaned empty packaging

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

## SECTION 14: Transport information

### D.O.T. (49CFR)

14.1. UN number	UN 2058
14.2. UN proper shipping name	Valeraldehyde
14.3. Transport hazard class(es)	3
14.4. Packing group	II
14.5. Environmental hazards	no
14.6. Special precautions for user	
Emergency Response Guide	129

### ICAO-TI / IATA-DGR

14.1. UN number	UN 2058
14.2. UN proper shipping name	Valeraldehyde
14.3. Transport hazard class(es)	3
14.4. Packing group	II
14.5. Environmental hazards	no
14.6. Special precautions for user	no data available

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## IMDG

14.1. UN number	UN 2058
14.2. UN proper shipping name	Valeraldehyde
14.3. Transport hazard class(es)	3
14.4. Packing group	II
14.5. Environmental hazards	no
14.6. Special precautions for user	
EmS	F-E, S-D
14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code	
Product name	Valeraldehyde
Ship type	3
Pollution category	Y

## **SECTION 15: Regulatory information**

### **Federal and State Regulations**

Components of the product are listed in the quoted regulations. For details please refer to the regulations directly. This list is not exhaustive, please check for other applicable regulations.

#### **Federal Regulations**

This product is listed on the TSCA inventory

#### **Isovaleraldehyde, CAS: 590-86-3**

CERCLA Hazardous Substance  
CERCLA RQ 100 LBS

#### **State Regulations**

#### **Isovaleraldehyde, CAS: 590-86-3**

MA RTK List  
NY RTK List  
PA RTK List

#### **International Inventories**

#### **Isovaleraldehyde, CAS: 590-86-3**

AICS (AU)  
DSL (CA)  
IECSC (CN)  
EC-No. 2096915 (EU)  
ENCS (2)-494 (JP)

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ISHL (2)-494 (JP)  
KECI KE-23536 (KR)  
INSQ (MX)  
PICCS (PH)  
TSCA (US)  
NZIoC (NZ)  
TCSI (TW)

## SECTION 16: Other information

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### Hazard Rating Systems

#### **NFPA (National Fire Protection Association)**

Health Hazard	1
Fire Hazard	3
Reactivity	0

#### **HMIS (Hazardous Material Information System)**

Health Hazard	1
Flammability	3
Physical Hazard	0

### **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 OQ owned data and public sources deemed valid or acceptable. The absence of data elements required by OSHA, 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 OQ homepage ([www.chemicals.oq.com](http://www.chemicals.oq.com)).

The use of a comma in section 3 and section 7 to 12 is the same as a period.

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**End of Safety Data Sheet**