

SAFETY DATA SHEET

Preparation Date: 11/17/2017

Revision Date: 11/17/2017

Revision Number: G1

1. IDENTIFICATION

Product identifier

Product code: M2449
Product Name: 3-METHYLBUTYRALDEHYDE

Other means of identification

Synonyms: Aldehyde isovalerianique (French)
 1-Butanal, 3-methyl-
 Isoamyl aldehyde
 Isopentaldehyde
 Isovaleral
 Isovaleraldehyde
 Isovaleric aldehyde
 2-Methylbutanal-4
 3-Methylbutanal

CAS #: 590-86-3
RTECS # ES3450000
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: For manufacturing or laboratory use only.
Uses advised against Not for food or drug use.

Supplier: Spectrum Chemical Mfg. Corp
 14422 South San Pedro St.
 Gardena, CA 90248
 (310) 516-8000

Order Online At: <https://www.spectrumchemical.com>
Emergency telephone number Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Specific target organ toxicity (single exposure)	Category 3
Flammable liquids	Category 2

Label elements

Product code: M2449

Product name:
 3-METHYLBUTYRALDEHYDE

Danger

Hazard statements

Causes serious eye irritation
Causes skin irritation
May cause respiratory irritation
Highly flammable liquid and vapor



Hazards not otherwise classified (HNOC)

Not Applicable

Other hazards

May be harmful if swallowed

Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling
Wear eye/face protection
Wear protective gloves
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/.../equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Keep cool

Precautionary Statements - Response

In case of fire: Use CO₂, dry chemical, or foam to extinguish.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
If skin irritation occurs: Get medical advice/attention
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Precautionary Statements - Storage

Store in a well-ventilated place. Keep container tightly closed
Store locked up

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %
3-Methylbutyraldehyde	590-86-3	100

4. FIRST AID MEASURES

First aid measures

General Advice:	National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222.
Skin Contact:	Wash off immediately with soap and plenty of water removing all contaminated clothing and shoes. Get medical attention. If skin irritation persists, call a physician.
Eye Contact:	Flush eyes with water for 15 minutes. Get medical attention.
Inhalation:	Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion:	Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Consult a physician if necessary.

Most important symptoms and effects, both acute and delayed

Symptoms	Moderately irritating to the eyes Mild to moderate skin irritation Irritating to respiratory system Dizziness Weakness Headache Somnolence Insomnia May cause anorexia Ingestion may cause nausea, vomiting, and diarrhea May cause nausea and vomiting May cause diarrhea Weak, rapid pulse or rapid heart rate (Tachycardia) Dyspnea (Difficulty breathing and shortness of breath) Chest tightness or pain Coughing
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Indication of any immediate medical attention and special treatment needed

Notes to Physician:	Treat symptomatically.
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Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media:	Carbon dioxide (CO ₂). Dry chemical. Alcohol-resistant foam. Water spray.
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Unsuitable Extinguishing Media:	Do not use a solid (straight) water stream as it may scatter and spread fire.
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Specific hazards arising from the chemical

Hazardous Combustion Products:	Carbon monoxide; Carbon dioxide
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Hazardous Combustion Products:	No information available.
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Specific hazards: Flammable. May be ignited by heat, sparks or flames. Vapor may travel considerable distance to source of ignition and flash back. Vapors may form explosive mixtures with air. Most vapors are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks). Container explosion may occur under fire conditions or when heated.

Special Protective Actions for Firefighters

Specific Methods: Water mist may be used to cool closed containers. For larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition. Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use spark-proof tools and explosion-proof equipment. In case of large spill, water spray or vapor suppressing foam may be used to reduce vapors, but may not prevent ignition in closed spaces.

Environmental precautions Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Prevent entry into waterways, sewers, basements or confined areas. In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Absorb spill with inert material (e.g. vermiculite, dry sand or earth).

Methods for cleaning up Use appropriate tools to put the spilled material in a suitable chemical waste disposal container. Use clean non-sparking tools to collect absorbed material. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:

Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep away from incompatible materials.

Safe Handling Advice

Wear personal protective equipment. Use only in well-ventilated areas. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Do not breathe vapors or spray mist. Do not ingest. When using do not smoke. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:

Keep container tightly closed. Keep in a well-ventilated place. Store at room temperature in the original container. Keep away from heat and sources of ignition. Store in a segregated and approved area. Store away from incompatible materials.

Incompatible Materials:

Oxidizing agents

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters**National occupational exposure limits****United States**

Components	CAS-No.	OSHA	NIOSH	ACGIH	AIHA WEEL
3-Methylbutyraldehyde	590-86-3	None	None	None	None

Canada

Components	CAS-No.	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec
3-Methylbutyraldehyde	590-86-3	None	None	None	None

Australia and Mexico

Components	CAS-No.	Australia	Mexico
3-Methylbutyraldehyde	590-86-3	None	None

Appropriate engineering controls**Engineering measures to reduce exposure:**

Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

Individual protection measures, such as personal protective equipment**Personal Protective Equipment****Eye protection:**

Goggles

Skin and body protection:

Chemical resistant apron
Long sleeved clothing
Gloves

Respiratory protection:

Vapor respirator. Be sure to use an approved/certified respirator or equivalent.

Hygiene measures:

Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:

Liquid

Appearance:

Clear.

Color:

Colorless. Light yellow.

Odor:**Taste****Formula:**

Product code: M2449

Product name:
3-METHYLBUTYRALDEHYDE

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Molecular/Formula weight: 86.13	Flammability: Highly Flammable	C5H10O Flashpoint (°C/°F): -3.0 to -1.0 °C/26.6 to 30 °F 9 °C/48 °F
Flash Point Tested according to: Closed cup Open cup	Autoignition Temperature (°C/°F): 207-240 °C/404.6-464 °F	Lower Explosion Limit (%): 1.7%
Upper Explosion Limit (%): 6.8%	Melting point/range(°C/°F): -51 °C/-60 °F	Decomposition temperature(°C/°F): No information available
Boiling point/range(°C/°F): 91-93 °C/196-199 °F	Bulk density: No information available	Density (g/cm3): 0.7977
Specific gravity: No information available	pH: No information available	Vapor pressure @ 20°C (kPa): 4.0-6.0
Evaporation rate: No information available	Vapor density: 2.96	VOC content (g/L): No information available
Odor threshold (ppm): 0.83	Partition coefficient (n-octanol/water): log Kow = 0.928-1.31	Viscosity: No information available
Miscibility: No information available	Solubility: Slightly soluble in water Soluble in Ethanol Soluble in Propylene glycol Soluble in Ether	

10. STABILITY AND REACTIVITY

Reactivity

No information available

Chemical stability

Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Heat. Ignition sources. Incompatible materials.

Incompatible Materials: Oxidizing agents

Hazardous decomposition products: Carbon monoxide. Carbon dioxide. When heated to decomposition it emits acrid smoke and irritating fumes.

Other Information

Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:

Ingestion. Inhalation.

Acute Toxicity**Component Information**

3-Methylbutyraldehyde	
CAS-No.	590-86-3

LD50/oral/rat = 5600 mg/kg Oral LD50 Rat**LD50/oral/mouse** = 4750 mg/kg (RTECS)**LD50/dermal/rabbit** = 2730 mg/kg Dermal LD50Rabbit(LOLI); 8180 ul/kg (RTECS)**LD50/dermal/rat** = No information available**LC50/inhalation/rat** = 42700 mg/m³ Inhalation LC50 Rat 4 h(LOLI); 90860 mg/m³ 4 h(RTECS)**LC50/inhalation/mouse** = No information available**Other LD50 or LC50 information** = 2950 mg/kg oral LD50 Guinea Pig; >8 gm/kg dermal LD50 Guinea Pig**Product Information****LD50/oral/rat** =**VALUE- Acute Tox Oral** = 5600 mg/kg**LD50/oral/mouse** =**Value - Acute Tox Oral** = 4500 mg/kg**LD50/dermal/rabbit****VALUE-Acute Tox Dermal** = 2730 mg/kg**LD50/dermal/rat****VALUE -Acute Tox Dermal** = No information available**LC50/inhalation/rat****VALUE-Vapor** = 42700 mg/m³ (4-hr)**VALUE-Gas** = No information available**VALUE-Dust/Mist** = No information available**LC50/Inhalation/mouse****VALUE-Vapor** = No information available**VALUE - Gas** = No information available**VALUE - Dust/Mist** = No information available**Symptoms****Skin Contact:**

Causes skin irritation. Mildly to moderately irritating to the skin.

Eye Contact:

Causes serious eye irritation. Moderately irritating to the eyes.

Inhalation

Irritating to respiratory system. May affect behavior/central nervous system (dizziness, lightheadedness, passing out). May affect respiration (respiratory depression). May affect behavior/central nervous system (excitement). May affect behavior/central nervous system (somnia). May cause dizziness and headache. May affect the kidneys. Symptoms include burning sensation, bronchial constriction, choking and coughing. Symptoms may include chest tightness, coughing. May cause dyspnea (difficulty breathing or shortness of breath). May cause nausea, vomiting. May cause diarrhea. May cause anorexia. May cause increased heart rate (tachycardia). May cause weakness. May cause profuse perspiration.

Ingestion Health injuries are not known or expected under normal use. May affect behavior/central nervous system (somnolence).

Aspiration hazard No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity No information available.

Sensitization: No information available.

Mutagenic Effects: No information available

Carcinogenic effects: Not considered carcinogenic.

Components	CAS-No.	IARC	ACGIH - Carcinogens	NTP	OSHA HCS - Carcinogens	Australia - Notifiable Carcinogenic Substances	Australia - Prohibited Carcinogenic Substances
3-Methylbutyraldehyde	590-86-3	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

ACGIH (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)

NTP (National Toxicology Program)

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

Reproductive toxicity No data is available

Reproductive Effects: No information available

Developmental Effects: No information available

Teratogenic Effects: No information available

Specific Target Organ Toxicity

STOT - single exposure Respiratory system.

STOT - repeated exposure No information available.

Target Organs: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: Aquatic environment.

3-Methylbutyraldehyde - 590-86-3

Freshwater Algae Data: 78 mg/L EC50 *Desmodesmus subspicatus* 96 h

80 mg/L EC50 *Desmodesmus subspicatus* 72 h

Freshwater Fish Species Data: 2.98-3.54 mg/L LC50 *Pimephales promelas* 96 h flow-through 1

53 mg/L LC50 *Leuciscus idus* 96 h static 1

Water Flea Data: 177 mg/L EC50 *Daphnia magna* 48 h

Persistence and degradability: No information available

Bioaccumulative potential: Potential for bioconcentration in aquatic organisms is low.

Mobility: It is expected to have high mobility in soil.

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:

Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:

Empty containers should be taken for local recycling, recovery or waste disposal

Components	CAS-No.	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
3-Methylbutyraldehyde	590-86-3	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: UN1989
Proper Shipping Name: Aldehydes, n.o.s.
Hazard Class: 3
Subsidiary Class: No information available
Packing group: II
Emergency Response Guide Number: 129
Marine Pollutant: No data available
DOT RQ (lbs): No information available
Special Provisions: IB2, T7, TP1, TP8, TP28
Symbol(s): No information available
Description: UN1989, Aldehydes, n.o.s., 3, II

TDG (Canada)

UN-No: UN1989
Proper Shipping Name: Aldehydes, n.o.s.
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: II
Marine Pollutant: No Information available
Description: UN1989, Aldehydes, n.o.s., 3, II

ADR

UN-No: UN1989
Proper Shipping Name: Aldehydes, n.o.s.
Hazard Class: 3
Packing Group: II
Subsidiary Risk: No information available
Special Provisions: 274, 640C
Description: UN1989, Aldehydes, n.o.s., 3, II

IMO / IMDG

UN-No: UN1989
Proper Shipping Name: Aldehydes, n.o.s.
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: II
Marine Pollutant: No information available
EMS: F-E

Special Provisions 274
Description UN1989, Aldehydes, n.o.s. (3-METHYLBUTYRALDEHYDE), 3, II

RID
UN-No: UN1989
Proper Shipping Name: Aldehydes, n.o.s.
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: II
Special Provisions 274, 640C
Description: UN1989, Aldehydes, n.o.s., 3, II

ICAO
UN-No: UN1989
Proper Shipping Name: Aldehydes, n.o.s.
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: II
Description: UN1989, Aldehydes, n.o.s., 3, II
Special Provisions A3

IATA
UN-No: UN1989
Proper Shipping Name: Aldehydes, n.o.s.
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: II
ERG Code: 3H
Special Provisions No information available
Description: UN1989, Aldehydes, n.o.s., 3, II

15. REGULATORY INFORMATION

International Inventories

Components	CAS-No.	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
3-Methylbutyraldehyde	590-86-3	Present	Present KE-23536	Present	Present (2)-494	Present	Present	Present 209-691-5

U.S. Regulations

3-Methylbutyraldehyde
 Massachusetts RTK: Present
 New Jersey RTK Hazardous Substance List: 4124
 Pennsylvania RTK: Present
 FDA - Direct Food Additives 21 CFR 172.515
 FDA - 21 CFR - Total Food Additives 172.515

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.

Chemicals Known to the State of California to Cause Cancer:
 This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
 This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	CAS-No.	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:

3-Methylbutyraldehyde	590-86-3	Not Listed	Not Listed	Not Listed	Not Listed
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CERCLA/SARA

Components	CAS-No.	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting de minimis
3-Methylbutyraldehyde	590-86-3	None	None	None	None	None

U.S. TSCA

Components	CAS-No.	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
3-Methylbutyraldehyde	590-86-3	Not Applicable	09/30/199106/30/1998

Canada

WHMIS 2015 - GHS Classifications

WHMIS 2015 Hazard Classification Information: The WHMIS 2015 classification of this product has not been validated or reviewed yet.

Canada Hazardous Products Regulation This product has been classified according to the hazard criteria of the HPR (Hazardous Products Regulation) and the SDS contains all of the information required by the HPR

WHMIS 1988 Hazard Class

B2 Flammable liquid
D2B Toxic materials

Canada Controlled Products Regulation:

This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Inventory

Components	CAS-No.	Canada (DSL)	Canada (NDSL)
3-Methylbutyraldehyde	590-86-3	Present	Not Listed

Components	CAS-No.	CEPA Schedule I - Toxic Substances
3-Methylbutyraldehyde	590-86-3	Not listed
Components	CAS-No.	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
3-Methylbutyraldehyde	590-86-3	Not listed

EU Classification

EU GHS - SV - CLP 1272/2008

Components	CAS-No.	EU GHS - SV - CLP (1272/2008)
3-Methylbutyraldehyde	590-86-3	No information for EU GHS - SV - CLP(1272/2008) For ECHA - Code of Practice 2012 - SV - GHS Classification of Hazardous Substances: Flammable liquids - Category 2; H225 Highly flammable liquid and vapor.; Acute toxicity - Oral -

		Category 5: H303 Maybe harmful if swallowed; Skin corrosion/irritation - Category 3: H316 Causes mild skin irritation.; Serious Eye Damage/Eye Irritation - Category 2A: H319 Causes serious eye irritation.; Skin sensitizers - Category 1: H317 May cause allergic skin reaction.; Specific target organ toxicity - Single exposure - Category 3: H335 May cause respiratory irritation.; Hazardous to aquatic environment - acute hazard - Category 2: H401 Toxic to aquatic life
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EU - CLP (1272/2008)

R-phrase(s)

R11 - Highly flammable.
R43 - May cause sensitization by skin contact.
R36/37 - Irritating to eyes and respiratory system.

S -phrase(s)

S 9 - Keep container in a well-ventilated place.
S16 - Keep away from sources of ignition - No smoking.
S24 - Avoid contact with skin.
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37 - Wear suitable gloves.

Components	CAS-No.	Classification	Concentration Limits:	Safety Phrases
3-Methylbutyraldehyde	590-86-3	No information for EU-CLP (12722008) For ECHA Code of Practice 2012: R(11). Xi; R36/37, Xi; R43	No information	No information for EU-CLP (1272/2008) For ECHA - Code of Practice 2012: S9-16-24-26-37

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:

F - Highly flammable.
Xi - Irritant.



16. OTHER INFORMATION

Preparation Date: 11/17/2017
Revision Date: 11/17/2017
Prepared by: Sonia Owen

Disclaimer:

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications.

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End of Safety Data Sheet