

SAFETY DATA SHEET



Isononanal
10300

Version / Revision
Supersedes Version

4.02
4.01***

Revision Date
Issuing date

10-Feb-2021
10-Feb-2021

SECTION 1: Identification

1.1. Product identifier

Identification of the
substance/preparation

Isononanal

Chemical Name
CAS-No

3,5,5-Trimethylhexanal
5435-64-3

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).

Skin corrosion/irritation Category 2, H315
Serious eye damage/eye irritation Category 2B, H320
Skin sensitization Category 1, H317
Flammable liquid Category 3, H226

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Environmental hazard Aquatic Chronic 3; H412; Aquatic Acute 3; H402

OSHA Specified Hazards Not applicable.

2.2. Label elements

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

Hazard symbol(s)



Signal word

Warning

Hazard statements

H226: Flammable liquid and vapor.
H315: Causes skin irritation.
H320: Causes eye irritation
H317: May cause an allergic skin reaction.
H402: Harmful to aquatic life
H412: Harmful 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.
P272: Contaminated work clothing must not be allowed out of the workplace.
P273: Avoid release to the environment.

Response

P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
P333 + P313: If skin irritation or rash occurs: Get medical advice/attention.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313: If eye irritation persists: Get medical advice/ attention.
P361: Take off immediately all contaminated clothing and wash it before reuse.

Storage

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

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

2.3. Other hazards

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

SECTION 3: Composition / information on ingredients

3.1. Substances

Component	CAS-No	Concentration (%)
3,5,5-Trimethylhexanal	5435-64-3	> 90

Remarks

Mixture of isomeric Nonanals with > 90% 3,5,5-Trimethylhexanal.

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.

Special hazard

Lung oedema.

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.

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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

alcohol-resistant foam, dry chemical, carbon dioxide (CO₂), 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 (CO₂)

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

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

Cool containers / tanks with water spray. Dike and collect water used to fight fire. Keep people away from and upwind of 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.

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

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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.

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.

Technical measures/Storage conditions

Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care. Handle under nitrogen, protect from moisture. Keep at temperatures between 15 and 30 °C (59 and 86 °F).

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.

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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.

Suitable material	nitrile rubber
Evaluation	according to EN 374: level 4
Glove thickness	approx 0,55 mm
Break through time	approx 90 min

Suitable material	polyvinylchloride
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

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9.1. Information on basic physical and chemical properties

Appearance	liquid
Colour	colourless
Odour	slight
Odour threshold	No data available
pH	3,8 - 4,3 (0,3 % in water @ 20 °C (68 °F)) OECD 105
Melting point/range	< -148 °F (< -100 °C) @ 1013 hPa
Boiling point/range	336,2 °F (169 °C) @ 1 atm (101,3 kPa)
Method	OECD 103
Flash point	93,2 °F (34 °C) @ 1013 hPa
Method	EU A.9
Evaporation rate	No data available
Flammability (solid, gas)	Does not apply, the substance is a liquid
Lower explosion limit	0,7 Vol %
Upper explosion limit	No data available

Vapour pressure

Values [hPa]	Values [kPa]	Values [atm]	@ °C	@ °F	Method
9	0,9	0,009	20	68	OECD 104

Vapour density No data available

Relative density

Values	@ °C	@ °F	Method
0,82	20	68	OECD 109

Solubility ~ 0,3 g/l @ 20 °C (68 °F), in water, OECD 105

log Pow ~ 3,3 @ 26 °C (78,8 °F) OECD 117

Autoignition temperature 401 °F (205 °C) @ 1024 hPa

Method EU A.15

Decomposition temperature No data available

Viscosity 1,72 mm²/s @ 68 °F (20 °C)

Method OECD 114, kinematic

9.2. Other information

Molecular weight 142,23

Molecular formula C₉H₁₈O

log Koc 1,7921 calculated

Oxidizing properties Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties

Refractive Index 1,419 - 1,423 @ 68 °F (20 °C)

Explosive properties Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties

Surface tension 45,6 mN/m (0,265 g/l @ 20°C (68°F)), OECD 115

SECTION 10: Stability and Reactivity

10.1. Reactivity

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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 reactions occur in the presence of acids, base or oxidizing agents. This reaction is exothermic and may create heat. When finely distributed, self-ignition is possible. May form explosive peroxides.***

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

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

3,5,5-Trimethylhexanal, CAS: 5435-64-3

Main symptoms

shortness of breath.

Target Organ Systemic Toxicant - Single exposure

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

Target Organ Systemic Toxicant - Repeated exposure

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

Acute toxicity

3,5,5-Trimethylhexanal (5435-64-3)

Routes of Exposure	Endpoint	Values	Species	Method
Oral	LD50	> 2000 mg/kg	rat, male/female	OECD 401
Dermal	LD50	> 2000 mg/kg	rat, male/female	OECD 402

3,5,5-Trimethylhexanal, CAS: 5435-64-3

Assessment

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

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Acute oral toxicity
Acute dermal toxicity
For acute inhalation toxicity, no data are available

Irritation and corrosion				
3,5,5-Trimethylhexanal (5435-64-3)				
Target Organ Effects	Species	Result	Method	
Skin	rabbit	irritating	OECD 404	4h
Eyes	rabbit	Mild eye irritation	OECD 405	24h

3,5,5-Trimethylhexanal, CAS: 5435-64-3

Assessment

The available data lead to the classification given in section 2

Sensitization				
3,5,5-Trimethylhexanal (5435-64-3)				
Target Organ Effects	Species	Evaluation	Method	
Skin	guinea pig	sensitizing	OECD 406	

3,5,5-Trimethylhexanal, CAS: 5435-64-3

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				
3,5,5-Trimethylhexanal (5435-64-3)				
Type	Dose	Species	Method	
Subacute toxicity	NOAEL: ~ 250 mg/kg/d (28d)	rat, male/female	OECD 407 Oral	

3,5,5-Trimethylhexanal, CAS: 5435-64-3

Assessment

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

STOT RE

Carcinogenicity, Mutagenicity, Reproductive toxicity					
3,5,5-Trimethylhexanal (5435-64-3)					
Type	Dose	Species	Evaluation	Method	
Mutagenicity		Salmonella typhimurium	negative	OECD 471 (Ames)	In vitro study
Mutagenicity		mouse	negative	EU B12 micronucleus test	Oral in vivo

3,5,5-Trimethylhexanal, CAS: 5435-64-3

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

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In vitro tests did not show mutagenic effects

3,5,5-Trimethylhexanal, CAS: 5435-64-3

Aspiration toxicity

Due to the viscosity, this product does not present an aspiration hazard

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

Acute aquatic toxicity			
3,5,5-Trimethylhexanal (5435-64-3)			
Species	Exposure time	Dose	Method
Cyprinus carpio (Carp)	96h	LC50: 45 mg/l	OECD 203
Daphnia magna (Water flea)	48h	EC50: ~ 10,1 mg/l	OECD 202
Desmodesmus subspicatus	72h	EC50: > 47,6 mg/l (Growth rate)	OECD 201

Long term toxicity				
3,5,5-Trimethylhexanal (5435-64-3)				
Type	Species	Dose	Method	
Aquatic toxicity	Desmodesmus subspicatus	EC10: 30,4 mg/l (72 h)	OECD 201	

12.2. Persistence and degradability

3,5,5-Trimethylhexanal, CAS: 5435-64-3

Biodegradation

~ 33 % (28 d), activated sludge, non-adapted, aerobic, OECD 301 B.

Abiotic Degradation			
3,5,5-Trimethylhexanal (5435-64-3)			
Type	Result	Method	
Hydrolysis	No data available		
Photolysis	No data available		

12.3. Bioaccumulative potential

3,5,5-Trimethylhexanal (5435-64-3)		
Type	Result	Method
log Pow	~ 3,3 @ 26 °C (78,8 °F)	measured, OECD 117
BCF	No data available	

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12.4. Mobility in soil

3,5,5-Trimethylhexanal (5435-64-3)		
Type	Result	Method
Surface tension	45,6 mN/m (0,265 g/l @ 20°C (68°F))	OECD 115
Adsorption/Desorption	Koc: 61,95	calculated
Distribution to environmental compartments	Air: 98,72% Soil: 0,06% Water: 1,16% Sediment: 0,06% Suspended sediment: 0% Biota: 0%	Calculation according Mackay, Level I

12.5. Results of PBT and vPvB assessment

3,5,5-Trimethylhexanal, CAS: 5435-64-3

PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB)

12.6. Other adverse effects

3,5,5-Trimethylhexanal, CAS: 5435-64-3

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 1989

Emergency telephone number
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14.2. UN proper shipping name	Aldehydes, n.o.s. (3,5,5-Trimethylhexanal)
14.3. Transport hazard class(es)	3
14.4. Packing group	III
14.5. Environmental hazards	no
14.6. Special precautions for user	
Emergency Response Guide	129

ICAO-TI / IATA-DGR

14.1. UN number	UN 1989
14.2. UN proper shipping name	Aldehydes, n.o.s. (3,5,5-Trimethylhexanal)
14.3. Transport hazard class(es)	3
14.4. Packing group	III
14.5. Environmental hazards	no
14.6. Special precautions for user	no data available

IMDG

14.1. UN number	UN 1989
14.2. UN proper shipping name	Aldehydes, n.o.s. (3,5,5-Trimethylhexanal)
14.3. Transport hazard class(es)	3
14.4. Packing group	III
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	not applicable

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

International Inventories

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AICS (AU)
DSL (CA)
IECSC (CN)
EC-No. 2266030 (EU)
ENCS (2)-494 (JP)
ISHL (2)-494 (JP)
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 2
Fire Hazard 2
Reactivity 1

HMIS (Hazardous Material Information System)

Health Hazard 2
Flammability 2
Physical Hazard 1

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).

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

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. OQ 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.

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End of Safety Data Sheet