SAFETY DATA SHEET

n-Nonanol
11620

Version / Revision	3.01	**Revision Date**	04-Dec-2020
Supersedes Version	3.00***	**Issuing date**	04-Dec-2020

SECTION 1: Identification

1.1. Product identifier

Identification of the substance/preparation **n-Nonanol**

Chemical Name Nonan-1-ol
CAS-No 143-08-8

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

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	H319: Causes serious eye irritation. H402: Harmful to aquatic life H412: Harmful to aquatic life with long lasting effects.
Precautionary statements	
Prevention	P264: Wash hands thoroughly after handling. P280: Wear eye protection/face protection. P273: Avoid release to the environment.
Response	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.
Disposal	P501: Dispose of contents/container in accordance with local regulation.

2.3. Other hazards

None known

SECTION 3: Composition / information on ingredients

3.1. Substances

Component	CAS-No	Concentration (%)
Nonan-1-ol	143-08-8	> 93

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. Immediate medical attention is required.

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

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

Main symptoms
cough, nausea, gastrointestinal discomfort, vomiting.

Special hazard
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. If ingested, irrigate the stomach using activated charcoal.

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
Vapours are heavier than air and may spread along floors
Vapour/air-mixtures are explosive at intense warming

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. Water run-off can cause environmental damage. Dike and collect water used to fight fire. Keep people away from and upwind of fire.

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
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).

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.

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
strong acids
strong 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/air-mixtures are explosive at intense warming.

Technical measures/Storage conditions
Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care.

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.
Engineering and risk Management measures should maintain strictly controlled conditions. This also applies to environmental exposure controls.

Individual protection measures, such as personal protective equipment

General industrial hygiene practice
Avoid contact with skin, eyes and clothing. Do not breathe dust or 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
Reference substance	2-Ethylhexanol
Evaluation	according to EN 374: level 6
Glove thickness	approx 0,55 mm
Break through time	> 480 min

Suitable material	polyvinylchloride / nitrile rubber
Reference substance	2-Ethylhexanol
Evaluation	according to EN 374: level 6
Glove thickness	approx 0,9 mm
Break through time	> 480 min

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. 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.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	liquid
Colour	colourless
Odour	alcoholic
Odour threshold	No data available
pH	No data available
Melting point/range	26,6 °F (-3 °C) (Pour point) @ 1013 hPa***
Method	ASTM D 97-08-8***
Boiling point/range	413,6 °F (212 °C) @ 1 atm (101,3 kPa)
Method	ASTM E 537
Flash point	209,75 °F (98,75 °C) @ 1023 hPa
Method	ASTM D-93
Evaporation rate	No data available
Flammability (solid, gas)	Does not apply, the substance is a liquid
Lower explosion limit	No data available
Upper explosion limit	No data available

Vapour pressure

Values [hPa]	Values [kPa]	Values [atm]	@ °C	@ °F	Method
0,017***	0,0017***	<0,001***	20	68	NFT 20-048***
0,345***	0,0345***	<0,001***	50	122	NFT 20-048***

Vapour density No data available

Relative density

Values	@ °C	@ °F	Method
0,828	20	68	ASTM D 4052

Solubility 69,54 mg/l @ 68 °F (20 °C), in water, OECD 105
log Pow 4,1 (measured) OECD 117
Autoignition temperature 536 °F (280 °C) @ 1015 hPa***
Method ASTM E 659
Decomposition temperature No data available
Viscosity 12,97 mm²/s @ 68 °F (20 °C)
Method kinematic, ASTM D 446

9.2. Other information

Molecular weight 144,26
Molecular formula C9 H20 O
log Koc 2,32 OECD 121***
Dissociation constant pKa 15,76 @ 25 °C (77 °F)***
Oxidizing properties Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties
Refractive Index 1,4338 @ 68 °F (20 °C)
Explosive properties Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties
Surface tension 17,8 mN/m @ 22,5 °C (72,5 °F) @ 102,4 mg/l

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

Vapour/air-mixtures are explosive at intense warming. 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

strong acids, strong oxidizing agents.

10.6. Hazardous decomposition products

No decomposition if used as directed.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

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

Nonan-1-ol, CAS: 143-08-8
Main symptoms
cough, nausea, gastrointestinal discomfort, vomiting.
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				
Nonan-1-ol (143-08-8)				
Routes of Exposure	Endpoint	Values	Species	Method
Oral	LD50	> 5000 mg/kg	rat female	OPPTS 870.1100 read across***
Dermal	LD50	> 5000 mg/kg	rat, male/female	OPPTS 870.1200 read across***
Inhalative	LC50	> 71 mg/l (1 h)	rat, male/female	read across (mist)

Nonan-1-ol, CAS: 143-08-8
Assessment
Based on available data, the classification criteria are not met for:
Acute oral toxicity
Acute dermal toxicity
Acute inhalation toxicity
STOT SE

Irritation and corrosion				
Nonan-1-ol (143-08-8)				
Target Organ Effects	Species	Result	Method	
Skin	rabbit	Mild skin irritation	OECD 404	
Eyes	rabbit	Moderate eye	EPA OPPTS	read across

		irritation	870.2400	

Nonan-1-ol, CAS: 143-08-8

Assessment

The available data lead to the classification given in section 2
Based on available data, the classification criteria are not met for:
skin irritation/corrosion
For respiratory irritation, no data are available

Sensitization				
Nonan-1-ol (143-08-8)				
Target Organ Effects	Species	Evaluation	Method	
Skin	guinea pig male/female***	not sensitizing	Draize Test	read across

Nonan-1-ol, CAS: 143-08-8

Assessment

Based on available data, the classification criteria are not met for:
Skin sensitization
For respiratory sensitization, no data are available

Subacute, subchronic and prolonged toxicity				
Nonan-1-ol (143-08-8)				
Type	Dose	Species	Method	
Subchronic toxicity	NOAEL: 2000 mg/kg/d	rat, male/female	OECD 422 Oral	read across
Subchronic toxicity	NOAEL: 1127 mg/kg/d (90d)	rat, male	Oral	read across
Subchronic toxicity	NOAEL: 1243 mg/kg/d (90d)	rat, female	Oral	read across

Nonan-1-ol, CAS: 143-08-8

Assessment

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

Carcinogenicity, Mutagenicity, Reproductive toxicity					
Nonan-1-ol (143-08-8)					
Type	Dose	Species	Evaluation	Method	
Mutagenicity		mouse lymphoma cells	negative	OECD 476 (Mammalian Gene Mutation)	In vitro study read across
Mutagenicity		Salmonella typhimurium	negative	OECD 471 (Ames)	In vitro study read across
Mutagenicity		mouse male/female***	negative	OECD 474	in vivo read across
Reproductive toxicity	NOAEL: 1127 mg/kg/d (90 d)	rat, parental, male		Oral	read across

Reproductive toxicity	NOAEL: 1243 mg/kg/d (90 d)	rat, parental, female		Oral	read across
Reproductive toxicity	NOAEL >= 2000 mg/kg/d	Rat, prenatal, female rat, 1. Generation, male/female***		OECD 422, Oral	read across
Developmental Toxicity	NOAEL 1300 mg/kg/d	rat		OECD 414, Oral	Teratogenicity read across***
Developmental Toxicity	NOAEC: 0,15 mg/l	rat, female***		Inhalation	Maternal toxicity Teratogenicity
Reproductive toxicity Developmental Toxicity***	NOAEL 130 mg/kg/d***	rat***		OECD 414***	Maternal toxicity read across***

Nonan-1-ol, CAS: 143-08-8
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
In vitro tests did not show mutagenic effects

Nonan-1-ol, CAS: 143-08-8
Aspiration toxicity
no data available
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			
Nonan-1-ol (143-08-8)			
Species	Exposure time	Dose	Method
Pimephales promelas (fathead minnow)	96h	LC50: 5,7 mg/l	OECD 203
Nitocra spinipes	96h	LC50: 25 mg/l	OECD 202
Algae	72h	EC50: 5,1 mg/l (Growth rate)***	QSAR***
Pseudomonas putida***	16 h***	EC3: > 50 mg/l***	ISO 10712***

Long term toxicity				
Nonan-1-ol (143-08-8)				
Type	Species	Dose	Method	
Reproductive toxicity	Daphnia magna (Water flea)	NOEC: 0,4 - 0,7 mg/l (21d)	QSAR	

Aquatic toxicity***	Algae***	EC10: 2,1 mg/l (72 h)***	QSAR***	
Aquatic toxicity***	Pimephales promelas (fathead minnow)***	NOEC: 0,26 mg/l (33d)***		

Sediment toxicity				
Nonan-1-ol (143-08-8)				
Species	Exposure time	Dose	Type	Method
Heterocypris incongruens***	6 d***	EC50: 150 mg/kg sediment dw***	Reproduction and survival***	EPA OPPTS 850.1735 read across***

Terrestrial toxicity				
Nonan-1-ol (143-08-8)				
Species	Exposure time	Dose	Type	Method
Anas platyrhynchos (mallard duck)***	14 d***	LD50: >4640 mg/kg bw***	Mortality***	read across***
Gallus domesticus (chicken)***	21 d***	NOEC: 200000 ppm***	Mortality***	OECD 223 read across***

12.2. Persistence and degradability

Nonan-1-ol, CAS: 143-08-8
Biodegradation
92 % (28 d), activated sludge (domestic), aerobic, OECD 310, read across, Weight of evidence.***

Abiotic Degradation		
Nonan-1-ol (143-08-8)		
Type	Result	Method
Hydrolysis***	not expected***	
Photolysis***	Half-life (DT50): 27,6 h***	calculated***

12.3. Bioaccumulative potential

Nonan-1-ol (143-08-8)		
Type	Result	Method
log Pow	4,1 @ 25 °C (77 °F)***	measured, OECD 117
BCF***	15 l/kg***	

12.4. Mobility in soil

Nonan-1-ol (143-08-8)		
Type	Result	Method
Surface tension	17,8 mN/m @ 22,5 °C (72,5 °F) @ 102,4 mg/l	

Adsorption/Desorption***	Koc: 211***	OECD 121***
Distribution to environmental compartments***	no data available***	

12.5. Results of PBT and vPvB assessment

Nonan-1-ol, CAS: 143-08-8
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

Nonan-1-ol, CAS: 143-08-8
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

Section 14.1 - 14.6

D.O.T. (49CFR) Not restricted

ICAO-TI / IATA-DGR Not restricted

IMDG Not restricted

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Product name	Nonyl alcohol
Ship type	2
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

State Regulations

Nonan-1-ol, CAS: 143-08-8

NJ RTK List

International Inventories

Nonan-1-ol, CAS: 143-08-8

AICS (AU)
DSL (CA)
IECSC (CN)
EC-No. 2055837 (EU)
ENCS (2)-217 (JP)
ISHL (2)-217 (JP)
KECI KE-26184 (KR)
INSQ (MX)
PICCS (PH)
TSCA (US)
NZIoC (NZ)
TCSI (TW)

SECTION 16: Other information

Revision Date	04-Dec-2020
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Hazard Rating Systems

NFPA (National Fire Protection Association)

Health Hazard	2
Fire Hazard	2

Reactivity	0

HMIS (Hazardous Material Information System)

Health Hazard	2
Flammability	2
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
Observe national and local legal requirements. Changes against the previous version are marked by ***.
The use of a comma in section 3 and section 7 to 12 is the same as a period.

Disclaimer
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End of Safety Data Sheet