SAFETY DATA SHEET

n-Valeraldehyde
10610

Version / Revision	2.02	**Revision Date**	10-Feb-2021
Supersedes Version	2.01***	**Issuing date**	10-Feb-2021

SECTION 1: Identification of the substance / mixture and of the company / undertaking

1.1. Product identifier

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

CAS-No 110-62-3
EC No. 203-784-4
Registration number (REACh) 01-2119474892-26

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

Identified uses Transported isolated intermediate (1907/2006)
Uses advised against None

1.3. Details of the supplier of the safety data sheet

Company/Undertaking Identification
OQ Chemicals GmbH
Rheinpromenade 4A
D-40789 Monheim
Germany

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

1.4. Emergency telephone number

Emergency telephone number +44 (0) 1235 239 670 (UK)
available 24/7

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

This substance is classified based on Directive 1272/2008/EC and its amendments (CLP Regulation)

Flammable liquid Category 2, H225
Acute inhalation toxicity Category 4, H332
Serious eye damage/eye irritation Category 2, H319
Skin sensitization Category 1, H317
Target Organ Systemic Toxicant - Single exposure Category 3, H335

Additional information
For full text of Hazard- and EU Hazard-statements see SECTION 16.

2.2. Label elements

Labelling according to Regulation 1272/2008/EC and its amendments (CLP Regulation).

Hazard pictograms

Signal word **Danger**

Hazard statements
H225: Highly flammable liquid and vapour.
H332: Harmful if inhaled.
H319: Causes serious eye irritation.
H317: May cause an allergic skin reaction.
H335: May cause respiratory irritation.

Precautionary statements
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233: Keep container tightly closed.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P304 + P340: IF INHALED: Remove person to fresh air and keep 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.
P312: Call a POISON CENTRE/doctor if you feel unwell.
P403 + P235: Store in a well ventilated place. Keep cool.

2.3. Other hazards

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

PBT and vPvB assessment Not required

SECTION 3: Composition / information on ingredients

3.1. Substances

Component	CAS-No	REACh-No	1272/2008/EC	Concentration (%)
Valeraldehyde	110-62-3	01-2119474892-26	Flam. Liq. 2; H225 Acute Tox. 4; H332 Eye Irrit. 2; H319 Skin Sens. 1; H317 STOT SE 3; H335	> 99,0

For full text of Hazard- and EU Hazard-statements see SECTION 16.

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, gastrointestinal discomfort, nausea.

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 (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
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
Cool containers / tanks with water spray. 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).

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
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

Temperature class
T3

7.3. Specific end use(s)

Transported isolated intermediate (1907/2006)

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

Exposure limits European Union

No exposure limits established

Exposure limits UK

No exposure limits established.

DNEL & PNEC

This substance is registered as intermediate under strictly controlled conditions.

8.2. Exposure controls

Special adaptations (REACh)
The substance has been registered as an transported isolated intermediate and must be handled throughout its life cycle under strictly controlled conditions in accordance with Article 18.4, REACH.

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.

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.
Equipment should conform to EN 166

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	butyl-rubber
Evaluation	according to EN 374: level 3
Glove thickness	approx 0.3 mm
Break through time	approx 50 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 A filter. Full mask with above mentioned filter according to producers using requirements or self-contained breathing apparatus. Equipment should conform to EN 136 or EN 140 and EN 143.

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.

Additional advice
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 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	liquid
Colour	colourless
Odour	strong
Odour threshold	1 - 42 ppb
pH	2,9 (18 g/l in water @ 20 °C (68 °F)) OECD 105

Melting point/range	-85 °C (Pour point)
Method	DIN ISO 3016
Boiling point/range	104 °C @ 1013 hPa
Method	OECD 103
Flash point	6,5 °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	1,4 Vol %
Upper explosion limit	7,2 Vol %

Vapour pressure

Values [hPa]	Values [kPa]	Values [atm]	@ °C	@ °F	Method
50	5	0,049	20	68	DIN EN 13016-2
174	17,4	0,172	50	122	DIN EN 13016-2

Vapour density 3,0 (Air = 1) @ 20 °C (68 °F)

Relative density

Values	@ °C	@ °F	Method
0,809	20	68	DIN 51757

Solubility	18 g/l @ 20 °C, in water, OECD 105
log Pow	1,5 @ 25 °C (77 °F), OECD 117
Autoignition temperature	205 °C @ 1005 hPa
Method	DIN 51794
Decomposition temperature	No data available
Viscosity	0,543 mPa*s @ 20 °C
Method	OECD 114, dynamic
Explosive properties	Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties
Oxidizing properties	Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties

9.2. Other information

Molecular weight	86,13
Molecular formula	C5 H10 O
log Koc	no data available
Dissociation constant	No data available
Refractive index	1,393 @ 20 °C
Surface tension	47,3 mN/m (1 g/l @ 20°C (68°F))

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 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

Acute toxicity				
Valeraldehyde (110-62-3)				
Routes of Exposure	Endpoint	Values	Species	Method
Oral	LD50	6490 mg/kg	rat, male/female	OECD 401
Dermal	LD50	4857 mg/kg	rabbit male	OECD 402
Inhalative	LC50	14,3 mg/l (4h)	rat	OECD 403 (vapour)

Valeraldehyde, CAS: 110-62-3
Assessment
The available data lead to the classification given in section 2
Based on available data, the classification criteria are not met for:
Acute oral toxicity
Acute dermal toxicity

Irritation and corrosion				
Valeraldehyde (110-62-3)				
Target Organ Effects	Species	Result	Method	
Skin	rabbit	irritating	OECD 404	4h
Eyes	rabbit	irritating		
Respiratory tract	mouse	RD50: 1120 ppm		10 min

Valeraldehyde, CAS: 110-62-3
Assessment
The available data lead to the classification given in section 2

Sensitization				
Valeraldehyde (110-62-3)				
Target Organ Effects	Species	Evaluation	Method	
Skin	mouse guinea pig	mildly sensitizing	Weight of evidence	read across

Valeraldehyde, CAS: 110-62-3
Assessment
The available data lead to a classification as skin sensitizer (see section 2)

Subacute, subchronic and prolonged toxicity				
Valeraldehyde (110-62-3)				
Type	Dose	Species	Method	
Subacute toxicity	NOEL: 1000 mg/kg/d (28d)	rat, male/female	OECD 407	Oral

Carcinogenicity, Mutagenicity, Reproductive toxicity					
Valeraldehyde (110-62-3)					
Type	Dose	Species	Evaluation	Method	
Mutagenicity		Salmonella typhimurium	negative	OECD 471 (Ames)	In vitro study
Mutagenicity		human hepatocytes	negative	OECD 482 UDS test	In vitro study
Mutagenicity		rat, hepatocytes	weakly positive	OECD 482 UDS test	In vitro study
Mutagenicity		V79 cells, Chinese hamster	positive (without metabolic activation)	OECD 476 (Mammalian Gene Mutation)	In vitro study
Carcinogenicity		rat, male/female	negative	OECD 451, Inhalative	in vivo read across
Carcinogenicity		mouse	negative	OECD 451, Inhalative	in vivo read across
Mutagenicity		mouse	negative	OECD 474 micronucleus test	in vivo read across
Reproductive toxicity	No data available				
Reproductive toxicity	No data available				

Valeraldehyde, CAS: 110-62-3
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

Valeraldehyde, CAS: 110-62-3
Main symptoms
gastrointestinal discomfort, nausea, shortness of breath.
Target Organ Systemic Toxicant - Single exposure
STOT SE
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
Aspiration toxicity
Due to the viscosity, this product does not present an aspiration hazard
Other adverse effects
Components of the product may be absorbed into the body by inhalation.
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			
Valeraldehyde (110-62-3)			
Species	Exposure time	Dose	Method
Daphnia magna (Water flea)	48h	EC50: 31,5 mg/l	OECD 202
Pseudokirchneriella subcapitata	72h	EC50: 68,7 mg/l (Growth rate)	OECD 201
Pimephales promelas (fathead minnow)	96h	LC50: 12,4 mg/l	OECD 203
Activated sludge (domestic)	30 min	EC20: 600 mg/l	ISO 8192
Pseudomonas putida	30 min	EC50: 850 mg/l	DIN 38412, part 27
Desmodesmus subspicatus	72h	EC50: 20 mg/l (Growth rate)	79/831/EEC

Long term toxicity				
Valeraldehyde (110-62-3)				
Type	Species	Dose	Method	
Reproductive toxicity	Daphnia magna (Water flea)	NOEC: 2,5 mg/l	OECD 211	21 d
Aquatic toxicity	Desmodesmus subspicatus	EC10: 3,3 mg/l (72 h) Growth rate	79/831/EEC	3 d
Aquatic toxicity	Pseudokirchneriella subcapitata	NOEC: 18,8 mg/l (3d)	OECD 201	3 d
Aquatic toxicity	Poecilia retiaculata (guppy)	LC50: 13 mg/l/14d	OECD 204	14 d

12.2. Persistence and degradability

Valeraldehyde, CAS: 110-62-3
Biodegradation
64,1 % (28 d), Sewage, aerobic, OECD 301 D.

Abiotic Degradation		
Valeraldehyde (110-62-3)		
Type	Result	Method
Hydrolysis	No data available	
Photolysis	No data available	

12.3. Bioaccumulative potential

Valeraldehyde (110-62-3)		
Type	Result	Method
log Pow	1,5 @ 25 °C (77 °F)	OECD 117
BCF	No data available	

12.4. Mobility in soil

Valeraldehyde (110-62-3)		
Type	Result	Method
Surface tension	47,3 mN/m (1 g/l @ 20°C (68°F))	
Distribution to environmental compartments	no data available	
Adsorption/Desorption	no data available	

12.5. Results of PBT and vPvB assessment
Not required

12.6. Other adverse effects

Valeraldehyde, CAS: 110-62-3
No data available

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.
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.

SECTION 14: Transport information

ADR/RID

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	
ADR Tunnel restriction code	(D/E)
Classification Code	F1
Hazard Number	33

ADN ADN Container

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	
Classification Code	F1
Hazard Number	33

ADN

ADN Tanker
forbidden

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

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

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Regulation 1272/2008, Annex VI
not listed

DI 2012/18/EU (Seveso III)

Category	Annex I, part 1: P5a - c; depending on conditions

DI 1999/13/EC (VOC Guideline)

Component	Status
Valeraldehyde CAS: 110-62-3	regulated

International Inventories

Valeraldehyde, CAS: 110-62-3
AICS (AU)
DSL (CA)
IECSC (CN)
EC-No. 2037844 (EU)
ENCS (2)-494 (JP)
ISHL (2)-494 (JP)
KECI KE-27967 (KR)
INSQ (MX)
PICCS (PH)
TSCA (US)
NZIoC (NZ)
TCSI (TW)

National regulatory information Great Britain

Releases to air (Pollution Inventory Substances)
not subject

Releases to water (Pollution Inventory Substances)
not subject

Releases to sewer (Pollution Inventory Substances)
not subject
For details and further information please refer to the original regulation

15.2. Chemical safety assessment

The Chemical Safety Report (CSR) is not required.

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3
H225: Highly flammable liquid and vapour.
H317: May cause an allergic skin reaction.
H319: Causes serious eye irritation.
H332: Harmful if inhaled.
H335: May cause respiratory irritation.

Abbreviations
A table of terms and abbreviations can be found under the following link:
http://echa.europa.eu/documents/10162/13632/information_requirements_r20_en.pdf

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 annex is not required because the substance is registered as an intermediate under REACh

Disclaimer
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End of Safety Data Sheet