

SAFETY DATA SHEET



Tri-n-butylamine
10710

Version / Revision
Supersedes Version

3.02
3.01***

Revision Date
Issuing date

08-Feb-2022
08-Feb-2022

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

1.1. Product identifier

Identification of the
substance/preparation

Tri-n-butylamine

CAS-No 102-82-9
EC No. 203-058-7
Registration number (REACH) 01-2119474898-14

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

Identified uses Intermediate
Formulation
Distribution of substance
catalyst
coatings
laboratory chemicals

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 +65 3158 1198 (available 24/7)
000800 100 7479 (for domestic shipments only)

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)

Acute oral toxicity Category 4, H302
Acute dermal toxicity Category 2, H310
Acute inhalation toxicity Category 1, H330
Skin corrosion/irritation Category 2, H315

Additional information

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

SAFETY DATA SHEET



10710
Tri-n-butylamine

Revision Date
Version / Revision

08-Feb-2022
3.02

2.2. Label elements

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

Hazard pictograms



Signal word

Danger

Hazard statements

H302: Harmful if swallowed.
H310: Fatal in contact with skin.
H330: Fatal if inhaled.
H315: Causes skin irritation.

Precautionary statements

P280: Wear protective gloves/protective clothing/eye protection/face protection.
P260: Do not breathe gas/mist/vapours.
P301 + P330: IF SWALLOWED: Rinse mouth
P321: Specific treatment: IF ON SKIN: Wash off with 3% acetic acid followed by large amounts of plain water for at least 5 min as a final step.
P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P310: Immediately call a POISON CENTER/doctor.
P361: Take off immediately all contaminated clothing.
P403 + P233: Store in a well ventilated place. Keep container tightly closed.

2.3. Other hazards

Vapour/air-mixtures are explosive at intense warming

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

PBT and vPvB assessment

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

SECTION 3: Composition / information on ingredients

3.1. Substances

Component	CAS-No	REACH-No	1272/2008/EC	Concentration (%)
Tributylamine	102-82-9	01-2119474898-14	Acute Tox. 4; H302 Acute Tox. 2; H310 Acute Tox. 1; H330 Skin Irrit. 2; H315	> 98,0

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

SECTION 4: First aid measures

SAFETY DATA SHEET



10710
Tri-n-butylamine

Revision Date
Version / Revision

08-Feb-2022
3.02

4.1. Description of first aid measures

Inhalation

Keep at rest. Breathe with fresh air. Call a physician immediately. Symptoms of poisoning may develop many hours after exposure.

Eyes

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Immediate medical attention is required.

Skin

Wash off with 3% acetic acid followed by large amounts of plain water for at least 5 min as a final step. Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.

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

shortness of breath, convulsions, cough, hypertensive effect.

Special hazard

Stomach perforation, 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 as an alkaline substance (similar to ammonia). If ingested, irrigate the stomach. Treat skin and mucous membranes with antihistamine and corticoids. In case of lung irritation, first treatment with cortisone spray. Symptoms may be delayed. Later control for pneumonia and lung oedema.

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)

nitrogen oxides (NO_x)

Combustion gases of organic materials must in principle be graded as inhalation poisons

Vapour/air-mixtures are explosive at intense warming

Vapours are heavier than air and may spread along floors

5.3. Advice for firefighters

SAFETY DATA SHEET



10710
Tri-n-butylamine

Revision Date
Version / Revision

08-Feb-2022
3.02

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. 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. 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

SAFETY DATA SHEET



10710
Tri-n-butylamine

Revision Date
Version / Revision

08-Feb-2022
3.02

acids
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. Handle under nitrogen, protect from moisture. Keep at temperatures between -18 and 38 °C (0 and 100 °F).

Unsuitable material

brass, copper, Aluminium, zinc, bronze

Temperature class

T3

7.3. Specific end use(s)

Intermediate
Formulation
Distribution of substance
catalyst
coatings
laboratory chemicals

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

Exposure limits India

No exposure limits established.

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.

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.

SAFETY DATA SHEET



10710
Tri-n-butylamine

Revision Date
Version / Revision

08-Feb-2022
3.02

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.

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 6
Glove thickness	approx 0,55 mm
Break through time	> 480 min
Suitable material	polyvinylchloride
Evaluation	Information derived from practical experience
Glove thickness	approx 0,8 mm

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

Skin and body protection

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

Environmental exposure controls

Use product only in closed system. 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

Appearance	liquid
Colour	colourless
Odour	ammonia-like
Odour threshold	0,07 ppm
pH	10,2 (0,1 g/l in water @ 25 °C (77 °F)) DIN 19268
Melting point/range	< -90 °C (Pour point)
Boiling point/range	208 °C @ 1013 hPa
Flash point	75 °C @ 1013 hPa
Method	ISO 2719
Evaporation rate	No data available
Flammability (solid, gas)	Does not apply, the substance is a liquid
Lower explosion limit	0,6 Vol %
Upper explosion limit	11,5 Vol %

Vapour pressure

Values [hPa]	Values [kPa]	Values [atm]	@ °C	@ °F	Method
0,18	0,018	< 0,001	20	68	OECD 104
2	0,2	< 0,001	53,8	128,8	OECD 104

SAFETY DATA SHEET



10710
Tri-n-butylamine

Revision Date
Version / Revision

08-Feb-2022
3.02

Vapour density	6,4 (Air = 1) @ 20 °C (68 °F)		
Relative density			
Values	@ °C	@ °F	Method
0,777	20	68	DIN 51757
Solubility	0,08 g/l @ 20 °C, in water, OECD 105		
log Pow	3,34 @ 25 °C (77 °F) OECD 123		
Autoignition temperature	210 °C @ 1015 hPa		
Method	DIN 51794		
Decomposition temperature	No data available		
Viscosity	1,393 mPa*s @ 20 °C		
Method	DIN 51562, dynamic		
Oxidizing properties	Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties		
Explosive properties	Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties		

9.2. Other information

Molecular weight	185,35
Molecular formula	C ₁₂ H ₂₇ N
log K_{oc}	4,65 @ 20°C (68 °F) calculated
Dissociation constant	pKa 11 @ 20 °C (68 °F) OECD 112
Refractive index	1,429 @ 20 °C
Surface tension	55 ,7 mN/m (0,07 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

strong acids, oxidizing agents.

10.6. Hazardous decomposition products

No decomposition if stored and applied as directed. If heated to thermal decomposition the following decomposition products may occur depending on the conditions. carbon monoxide (CO). nitrogen oxides (NO_x). cyanides. nitric acid. nitriles.

SAFETY DATA SHEET



10710
Tri-n-butylamine

Revision Date
Version / Revision

08-Feb-2022
3.02

SECTION 11: Toxicological information

11.1. Information on toxicological effects

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

Acute toxicity				
Tributylamine (102-82-9)				
Routes of Exposure	Endpoint	Values	Species	Method
Oral	LD50	420 mg/kg	rat, male	
Dermal	LD50	195 mg/kg	rabbit male	
Inhalative	LC50	0,5 mg/l (4h)	rat, male/female	OECD 403

Tributylamine, CAS: 102-82-9

Assessment

The available data lead to the classification given in section 2

Irritation and corrosion				
Tributylamine (102-82-9)				
Target Organ Effects	Species	Result	Method	
Eyes	rabbit	not irritating	OECD 405	72h
Skin	rabbit	irritating	OECD 404	4h
Respiratory tract	mouse	RD50: 96 ppm		

Tributylamine, CAS: 102-82-9

Assessment

The available data lead to the classification given in section 2

Sensitization				
Tributylamine (102-82-9)				
Target Organ Effects	Species	Evaluation	Method	
Skin	guinea pig	not sensitizing	EPA OTS 798.4100	4 %, in Ethanol

Tributylamine, CAS: 102-82-9

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				
Tributylamine (102-82-9)				
Type	Dose	Species	Method	
Subchronic toxicity***	NOAEL: 75 mg/kg/d (90d)***	rat, male/female***	OECD 408***	Oral***

Tributylamine, CAS: 102-82-9

Assessment

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

STOT RE

Carcinogenicity, Mutagenicity, Reproductive toxicity				
Tributylamine (102-82-9)				

SAFETY DATA SHEET



10710
Tri-n-butylamine

Revision Date
Version / Revision

08-Feb-2022
3.02

Type	Dose	Species	Evaluation	Method	
Developmental Toxicity	NOAEL 45 mg/kg/d	rat		OECD 414, Oral	Maternal toxicity
Developmental Toxicity	NOAEL 135 mg/kg/d	rat		OECD 414, Oral	Teratogenicity
Developmental Toxicity	NOAEL 135 mg/kg/d	rat		OECD 414, Oral	Fetal toxicity
Mutagenicity		mouse	negative	OECD 474	in vivo
Mutagenicity		Salmonella typhimurium	negative	OECD 471 (Ames)	In vitro study
Mutagenicity		mouse lymphoma cells	negative	OECD 476 (Mammalian Gene Mutation)	In vitro study
Reproductive toxicity	LOAEL: 50 mg/kg/d (90 d)	rat, male/female		OECD 413	read across
Reproductive toxicity	LOAEL 50 - 200 mg/kg/d	rat, parental		OECD 421	read across
Reproductive toxicity	NOAEL 200 mg/kg/d	rat, 1. Generation, male/female		OECD 421	read across
Mutagenicity		Salmonella typhimurium	positive (without metabolic activation)	OECD 471 (Ames)	In vitro study

Tributylamine, CAS: 102-82-9

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
Did not show mutagenic effects in animal experiments
In the absence of specific alerts no cancer testing is required

Tributylamine, CAS: 102-82-9

Main symptoms

shortness of breath, convulsions, cough, hypertensive effect.

Aspiration toxicity

no data available

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

Acute aquatic toxicity			
Tributylamine (102-82-9)			
Species	Exposure time	Dose	Method
Daphnia magna (Water flea)	48h	EC50: 8 mg/l	OECD 202

SAFETY DATA SHEET



10710
Tri-n-butylamine

Revision Date
Version / Revision

08-Feb-2022
3.02

Pseudokirchneriella subcapitata	72h	EC50: 10,1 mg/l	OECD 201
Danio rerio (Zebra fish)	28 d	LC50: > 10 mg/l	OECD 204
Oryzias latipes (Medaka)	96h	LC50: 16,3 mg/l	OECD 203
Activated sludge (domestic)	7 d	EC5 : 100 mg/l	read across
Bacteria / Sewage	2 h	NOEC: 100 mg/l	

Long term toxicity

Tributylamine (102-82-9)

Type	Species	Dose	Method
Aquatic toxicity	Pseudokirchneriella subcapitata	NOEC: 1,65 mg/l (3d)	OECD 201

Terrestrial toxicity

Tributylamine (102-82-9)

Species	Exposure time	Dose	Type	Method
Lucilia Sericata (Fleshfly)	4 - 5 d	LC100: 1250 mg/kg		Oral

12.2. Persistence and degradability

Tributylamine, CAS: 102-82-9

Biodegradation

88 % (28*** d), aerobic, activated sludge, domestic, non-adapted, OECD 301 B.

Abiotic Degradation

Tributylamine (102-82-9)

Type	Result	Method
Photolysis	Half-life (DT50): 3,624 h	calculated SRC AOP v1.92
Hydrolysis	not expected	

12.3. Bioaccumulative potential

Tributylamine (102-82-9)

Type	Result	Method
log Pow	3,34 @ 25 °C (77 °F)	OECD 123
BCF	7,3	OECD 305***

12.4. Mobility in soil

Tributylamine (102-82-9)

Type	Result	Method
Surface tension	55,7 mN/m (0,07 g/l @ 20°C (68°F))	OECD 115
Adsorption/Desorption	log koc: 4,65 @ 20 °C (68 °F)	calculated
Distribution to environmental compartments	Air: 0,7 % Soil: 74,6 % Water: 23,7 % Sediment: 1 %	Fugacity Model Level III

12.5. Results of PBT and vPvB assessment

Tributylamine, CAS: 102-82-9

SAFETY DATA SHEET



10710
Tri-n-butylamine

Revision Date
Version / Revision

08-Feb-2022
3.02

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

Tributylamine, CAS: 102-82-9

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

ICAO-TI / IATA-DGR

14.1. UN number	UN 2542
14.2. UN proper shipping name	Tributylamine
14.3. Transport hazard class(es)	6.1
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 2542
14.2. UN proper shipping name	Tributylamine
14.3. Transport hazard class(es)	6.1
14.4. Packing group	II
14.5. Environmental hazards	no
14.6. Special precautions for user	
EmS	F-A, S-A
14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code	not applicable

SECTION 15: Regulatory information

SAFETY DATA SHEET



10710
Tri-n-butylamine

Revision Date
Version / Revision

08-Feb-2022
3.02

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

Regulation 1272/2008, Annex VI

not listed

International Inventories

Tributylamine, CAS: 102-82-9

AICS (AU)
DSL (CA)
IECSC (CN)
EC-No. 2030587 (EU)
ENCS (2)-142 (JP)
ISHL (2)-142 (JP)
KECI 98-1-480 (KR)
KECI KE-09973 (KR)
INSQ (MX)
PICCS (PH)
TSCA (US)
NZIoC (NZ)
TCSI (TW)

National regulatory information India

Hazardous Chemicals, Schedule 2: Threshold Quantities at an Isolated Storage

not listed

Hazardous Chemicals, Schedule 3: Threshold Quantities in an Industrial Installation

not listed

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3

H302: Harmful if swallowed.
H310: Fatal in contact with skin.
H330: Fatal if inhaled.
H315: Causes skin 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

SAFETY DATA SHEET



10710
Tri-n-butylamine

Revision Date 08-Feb-2022
Version / Revision 3.02

information, other material safety data sheets or technical data sheets please consult the OQ homepage (www.chemicals.oq.com).

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End of Safety Data Sheet