



1,3-Butadiene, stabilized

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Reference number: EIGA013

Issue date: 16/01/2013 Revision date: 20/05/2026 Supersedes version of: 20/11/2024 Version: 2.2

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

1.1. Product identifier

Product form	: Substance
Name	: 1,3-Butadiene, stabilized
Trade name	: 1,3-Butadiene 2.3
EC Index-No.	: 601-013-00-X
EC-No.	: 203-450-8
CAS-No.	: 106-99-0
REACH registration No.	: 01-2119471988-16
Product code	: 000010021790
Formula	: C4H6

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

1.2.1. Relevant identified uses

Relevant identified uses	: See the list of identified uses and exposure scenarios in the annex of the safety data sheet. Perform risk assessment prior to use.
Use of the substance/mixture	: Formulation of mixtures with gas in pressure receptacles. Using gas as feedstock in chemical processes. Using gas alone or in mixtures for the calibration of analysis equipment. Industrial and professional use for chemical analysis, calibration, (routine) quality control, laboratory use. Under controlled conditions. Industrial and professional. Perform risk assessment prior to use.

Title	Life cycle stage	Use descriptors
Industrial uses, closed contained conditions (ES Ref.: EIGA013-1)		PROC1, PROC2, PROC3, PROC4, PROC8b, PROC9, ERC2

Full text of use descriptors: see section 16

1.2.2. Uses advised against

Uses advised against	: Consumer use. Uses other than those listed above are not supported, contact your supplier for more information on other uses.
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1.3. Details of the supplier of the safety data sheet

Linde Gas GmbH
Carl-von-Linde-Platz 1
A-4651 Stadl-Paura
Austria
T +43 50 4273
office@at.linde-gas.com

1.4. Emergency telephone number

Emergency number	: UMCO/NCEC: +44 1865 407333 (English); +49 89 220 61012 (German)
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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Physical hazards	Flammable gases, Category 1A Gases under pressure : Liquefied gas	H220 H280
Health hazards	Germ cell mutagenicity, Category 1B Carcinogenicity, Category 1A	H340 H350

Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



Signal word (CLP)

: Danger

Hazard statements (CLP)

: H220 - Extremely flammable gas.
H280 - Contains gas under pressure; may explode if heated.
H340 - May cause genetic defects.
H350 - May cause cancer.

Precautionary statements (CLP)

- Prevention

: P202 - Do not handle until all safety precautions have been read and understood.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.
No smoking.

- Response

: P308+P313 - IF exposed or concerned: Get medical advice/attention.
P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 - In case of leakage, eliminate all ignition sources.

- Storage

: P403 - Store in a well-ventilated place.

Supplemental information

: Restricted to professional users.

2.3. Other hazards

Other hazards

: Contact with liquid may cause cold burns/frostbite. The substance/mixture has no endocrine disrupting properties.

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP] ATE, EUH-statements, M-Factors
1,3-Butadiene, stabilized	CAS-No.: 106-99-0 EC-No.: 203-450-8 EC Index-No.: 601-013-00-X REACH-no.: 01-2119471988-16	100	Flam. Gas 1A, H220 Press. Gas (Liq.), H280 Muta. 1B, H340 Carc. 1A, H350

Full text of H- and EUH-statements: see section 16

Contains no other components or impurities which will influence the classification of the product.

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3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation	: Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped.
First-aid measures after skin contact	: In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.
First-aid measures after eye contact	: Immediately flush eyes thoroughly with water for at least 15 minutes.
First-aid measures after ingestion	: Ingestion is not considered a potential route of exposure.

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

Most important symptoms and effects, both acute and delayed	See section 11.
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4.3. Indication of any immediate medical attention and special treatment needed

None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Dry powder. Carbon dioxide. Shutting off the source of the gas is the preferred method of control. Water spray or fog. Be aware of the risk of formation of static electricity with the use of CO ₂ extinguishers. Do not use them in places where a flammable atmosphere may be present.
Unsuitable extinguishing media	: Do not use water jet to extinguish.

5.2. Special hazards arising from the substance or mixture

Reactivity in case of fire	: No reactivity hazard other than the effects described in sub-sections below.
Specific hazards	: Exposure to fire may cause containers to rupture/explode.
Hazardous combustion products	: Carbon monoxide.

5.3. Advice for firefighters

Specific methods	: Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire. Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems. If possible, stop flow of product. Use water spray or fog to knock down fire fumes if possible. Move containers away from the fire area if this can be done without risk.
Special protective equipment for fire fighters	: Wear gas tight chemically protective clothing in combination with self contained breathing apparatus. Standard EN 943-2: Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Gas-tight chemical protective suits for emergency teams. Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Act in accordance with local emergency plan. Try to stop release. Evacuate area. Eliminate ignition sources. Ensure adequate air ventilation. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Stay upwind. See section 8 of the SDS for more information on personal protective equipment.

6.1.2. For emergency responders

Emergency procedures : Monitor concentration of released product. Consider the risk of potentially explosive atmospheres. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. See section 5.3 of the SDS for more information.

6.2. Environmental precautions

Try to stop release.

6.3. Methods and material for containment and cleaning up

Methods and material for containment and cleaning up : Ventilate area.

6.4. Reference to other sections

See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Safe use of the product : Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment.
Purge air from system before introducing gas.
Take precautionary measures against static discharge.
Keep away from ignition sources (including static discharges).
Consider the use of only non-sparking tools.
Ensure equipment is adequately earthed.
Avoid exposure, obtain special instructions before use.
The product must be handled in accordance with good industrial hygiene and safety procedures.
Only experienced and properly instructed persons should handle gases under pressure.
Consider pressure relief device(s) in gas installations.
Ensure the complete gas system was (or is regularly) checked for leaks before use.
Do not smoke while handling product.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Avoid suck back of water, acid and alkalis.
Do not breathe gas.
Avoid release of product into work area.

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Safe handling of the gas receptacle

- : Refer to supplier's container handling instructions.
- Do not allow backfeed into the container.
- Protect containers from physical damage; do not drag, roll, slide or drop.
- When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.
- Leave valve protection caps, when provided, in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.
- If user experiences any difficulty operating valve discontinue use and contact supplier.
- Never attempt to repair or modify container valves or safety relief devices.
- Damaged valves should be reported immediately to the supplier.
- Keep container valve outlets clean and free from contaminants particularly oil and water.
- Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
- Close container valve after each use and when empty, even if still connected to equipment.
- Never attempt to transfer gases from one cylinder/container to another.
- Never use direct flame or electrical heating devices to raise the pressure of a container.
- Do not remove or deface labels provided by the supplier for the identification of the content of the container.
- Suck back of water into the container must be prevented.
- Open valve slowly to avoid pressure shock.

7.2. Conditions for safe storage, including any incompatibilities

Conditions for safe storage, including any incompatibilities

- : Segregate from oxidant gases and other oxidants in store.
- All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere.
- Observe all regulations and local requirements regarding storage of containers.
- Containers should not be stored in conditions likely to encourage corrosion.
- Container valve guards or caps, when provided, should be in place.
- Containers should be stored in the vertical position and properly secured to prevent them from falling over.
- Stored containers should be periodically checked for general condition and leakage.
- Keep container below 50°C in a well ventilated place.
- Store containers in location free from fire risk and away from sources of heat and ignition.
- Keep away from combustible materials.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

1,3-Butadiene, stabilized (106-99-0)	
EU - Binding Occupational Exposure Limit (BOEL)	
Local name	1,3-Butadiene
BOEL TWA	2.2 mg/m ³
	1 ppm
Regulatory reference	DIRECTIVE (EU) 2019/130 (amending Directive 2004/37/EC)
Austria - Occupational Exposure Limits	
Local name	1,3-Butadien
TRK (OEL TWA)	2.2 mg/m ³
	1 ppm
TRK (OEL STEL)	17 mg/m ³ (4x 15(Miw) min)

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1,3-Butadiene, stabilized (106-99-0)	
	8 ppm (4x 15(Miw) min)
Remark	Krebserzeugend: 1A
Regulatory reference	BGBl. II Nr. 339/2025

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

DNEL and PNEC

1,3-Butadiene, stabilized (106-99-0)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, inhalation	2.21 mg/m ³
PNEC (additional information)	
Additional information	None established.

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Provide adequate general and local exhaust ventilation. Gas detectors should be used when flammable gases/vapours may be released. Consider the use of a work permit system e.g. for maintenance activities. Product to be handled in a closed system and under strictly controlled conditions. Preferably use permanent leak-tight installations (e.g. welded pipes). Systems under pressure should be regularly checked for leakages. Ensure exposure is below occupational exposure limits (where available).

8.2.2. Personal protection equipment

Personal protective equipment:

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered: PPE compliant to the recommended EN/ISO standards should be selected.

8.2.2.1. Eye and face protection

Eye protection:

Wear goggles when transfilling or breaking transfer connections. Standard EN 166 - Personal eye-protection - specifications, or Standard EN ISO 16321-1 Eye and face protection for occupational use Part 1 : General requirements

8.2.2.2. Skin protection

Hand protection:

Wear working gloves when handling gas containers. Standard EN 388 - Protective gloves against mechanical risks, performance level 1 or higher. Recommended types include wrist gloves from leather or synthetic material with equivalent performance, fabric gloves, fabric gloves with leather palms. Wear cold insulating gloves when transfilling or breaking transfer connections. Standard EN 511 - Cold insulating gloves, performance level 1 or higher. Recommended types include insulated gauntlets or gloves specifically selected to prevent liquid penetration and ingress of cryogenic liquids and to provide mechanical resistance. Permeation time: minimum >30min short term exposure: material / thickness Butyl rubber (IIR) / [mm]. Permeation time: minimum >480min long term exposure : material / thickness Fluoroelastomer (Viton®) (FKM) / [mm]

Other skin protection

Consider the use of flame resistant anti-static safety clothing. Standard EN ISO 14116 - Limited flame spread materials. Standard EN 1149-5 - Protective clothing: Electrostatic properties. Wear safety shoes while handling containers. Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

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8.2.2.3. Respiratory protection

Respiratory protection:

Recommended: Filter AX (brown). Keep self contained breathing apparatus readily available for emergency use. Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems. Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known. Use gas filters with full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers. Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask. Gas filters do not protect against oxygen deficiency. Standard EN 14387 - Gas filter(s), combined filter(s) and standard EN136, full face masks .

8.2.2.4. Thermal hazards

Thermal hazard protection:

None in addition to the above sections.

8.2.3. Environmental exposure controls

Environmental exposure controls:

Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Colour	: Colourless.
Form	: Liquefied gas
Odour	: Mildly aromatic. Poor warning properties at low concentrations.
Odour threshold	: Odour threshold is subjective and inadequate to warn of overexposure.
Melting point	: -109 °C
Freezing point	: Not applicable
Boiling point	: -4.5 °C
Flammability	: Extremely flammable gas.
Oxidising properties	: No oxidising properties.
Lower explosion limit	: 1.4 Vol-%
Upper explosion limit	: 16.3 Vol-%
Flash point	: Not applicable for gases and gas mixtures.
Auto-ignition temperature	: 415 °C
Decomposition temperature	: Not applicable.
pH	: Not applicable for gases and gas mixtures.
Viscosity, kinematic	: 0.013 mm ² /s
Viscosity, dynamic	: 0.008 mPa·s
Solubility in water	: 1025 mg/l
Partition coefficient n-octanol/water (Log K _{ow})	: 1.99
Partition coefficient n-octanol/water (Log P _{ow})	: Not applicable for gas mixtures.
Vapour pressure	: 2.4 bar(a)
Vapour pressure at 50°C	: 5.7 bar(a)
Critical pressure	: 4330 kPa
Density	: 0.621 g/cm ³
Relative density	: 0.65
Relative vapour density at 20°C	: Not applicable.
Relative gas density	: 1.9
Particle characteristics	: Not applicable Not applicable for gases and gas mixtures. Nanoforms are not relevant for gases and gas mixtures.

9.2. Other information

9.2.1. Information with regard to physical hazard classes

T _{ci}	: 2 %
Critical temperature	: 152 °C

9.2.2. Other safety characteristics

Molecular mass	: 54 g/mol
Gas group	: Press. Gas (Liq.)

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Additional information : Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10: Stability and reactivity

10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

Stable under normal conditions. May polymerise. Inhibitor usually added.

10.3. Possibility of hazardous reactions

Can form explosive mixture with air. May react violently with oxidants.

10.4. Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Avoid moisture in installation systems.

10.5. Incompatible materials

Air, Oxidisers. For additional information on compatibility refer to ISO 11114.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity	: Toxicological effects not expected by inhalation from this product if occupational exposure limit values are not exceeded.
Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified
Skin corrosion/irritation	: No known effects from this product. pH: Not applicable for gases and gas mixtures.
Serious eye damage/irritation	: No known effects from this product. pH: Not applicable for gases and gas mixtures.
Respiratory or skin sensitisation	: No known effects from this product.
Germ cell mutagenicity	: May cause genetic defects.
Carcinogenicity	: May cause cancer.
Reproductive toxicity	: Not classified
Toxic for reproduction : Fertility	: No known effects from this product.
Toxic for reproduction : unborn child	: No known effects from this product.
STOT-single exposure	: No known effects from this product.
STOT-repeated exposure	: No known effects from this product.
Aspiration hazard	: Not applicable for gases and gas mixtures.

1,3-Butadiene, stabilized (106-99-0)	
Viscosity, kinematic	0.013 mm ² /s
Hydrocarbon	Yes

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

No additional information available

Other information

Other information : The substance/mixture has no endocrine disrupting properties.

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SECTION 12: Ecological information

12.1. Toxicity

Assessment : Classification criteria are not met.
Hazardous to the aquatic environment, short-term (acute) : Not classified
Hazardous to the aquatic environment, long-term (chronic) : Not classified

1,3-Butadiene, stabilized (106-99-0)

LC50 96 h - Fish [mg/l]	43 mg/l
EC50 48h - Daphnia magna [mg/l]	24 mg/l
EC50 72h - Algae [mg/l]	11 mg/l

12.2. Persistence and degradability

1,3-Butadiene, stabilized (106-99-0)

Assessment : Not readily biodegradable.

12.3. Bioaccumulative potential

1,3-Butadiene, stabilized (106-99-0)

Partition coefficient n-octanol/water (Log Pow)	Not applicable for gas mixtures.
Partition coefficient n-octanol/water (Log Kow)	1.99

12.4. Mobility in soil

1,3-Butadiene, stabilized (106-99-0)

Assessment : Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.

12.5. Results of PBT and vPvB assessment

Assessment : Not classified as PBT or vPvB.

12.6. Endocrine disrupting properties

Assessment : The substance/mixture has no endocrine disrupting properties.

12.7. Other adverse effects

Other adverse effects : No known effects from this product.
Effect on the ozone layer : No effect on the ozone layer.
Effect on global warming : No known effects from this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Contact supplier if guidance is required. Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor. Ensure that the emission levels from local regulations or operating permits are not exceeded. Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at <http://www.eiga.eu> for more guidance on suitable disposal methods. Must not be discharged to atmosphere. Return unused product in original container to supplier.

List of hazardous waste codes (from Commission Decision 2000/532/EC as amended) : 16 05 04 *: Gases in pressure containers (including halons) containing hazardous substances.

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Additional information : External treatment and disposal of waste should comply with applicable local and/or national regulations.






HP Code : HP7 - "Carcinogenic:" waste which induces cancer or increases its incidence
HP11 - "Mutagenic:" waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell.

13.2. Additional information

External treatment and disposal of waste should comply with applicable local and/or national regulations.

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
UN 1010	UN 1010	UN 1010	UN 1010	UN 1010
14.2. UN proper shipping name				
BUTADIENES, STABILIZED	BUTADIENES, STABILIZED	Butadienes, stabilized	BUTADIENES, STABILIZED	BUTADIENES, STABILIZED
Transport document description				
UN 1010 BUTADIENES, STABILIZED, 2.1, (B/D)	UN 1010 BUTADIENES, STABILIZED, 2.1	UN 1010 Butadienes, stabilized, 2.1	UN 1010 BUTADIENES, STABILIZED, 2.1	UN 1010 BUTADIENES, STABILIZED, 2.1
14.3. Transport hazard class(es)				
2.1	2.1	2.1	2.1	2.1
				
14.4. Packing group				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards				
Dangerous for the environment: No	Dangerous for the environment: No Marine pollutant: No EmS-No. (Fire): F-D EmS-No. (Spillage): S-U	Dangerous for the environment: No	Dangerous for the environment: No	Dangerous for the environment: No
No supplementary information available				

14.6. Special precautions for user

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment, Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency, Before transporting product containers: - Ensure there is adequate ventilation, - Ensure that containers are firmly secured, - Ensure valve is closed and not leaking, - Ensure valve outlet cap nut or plug (where provided) is correctly fitted, - Ensure valve protection device (where provided) is correctly fitted.

Overland transport

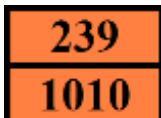
Classification code (ADR) : 2F
Special provisions (ADR) : 386, 618, 662
Limited quantities (ADR) : 0

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Excepted quantities (ADR) : E0
Packing instructions (ADR) : P200
Mixed packing provisions (ADR) : MP9
Portable tank and bulk container instructions (ADR) : (M), T50
Tank code (ADR) : PxBN(M)
Tank special provisions (ADR) : TA4, TT9
Vehicle for tank carriage : FL
Transport category (ADR) : 2
Special provisions for carriage - Packages (ADR) : V8
Special provisions for carriage - Loading, unloading and handling (ADR) : CV9, CV10, CV36
Special provisions for carriage - Operation (ADR) : S2, S4, S20
Hazard identification number (Kemler No.) : 239
Orange plates :



Tunnel restriction code (ADR) : B/D

Transport by sea

Special provisions (IMDG) : 386
Limited quantities (IMDG) : 0
Excepted quantities (IMDG) : E0
Packing instructions (IMDG) : P200
Tank instructions (IMDG) : T50
Stowage category (IMDG) : B
Stowage and handling (IMDG) : SW1, SW2
Properties and observations (IMDG) : Liquefied, flammable gas with an unpleasant odour. Explosive limits: 2% to 12%. Heavier than air (1.84).

Air transport

PCA Excepted quantities (IATA) : E0
PCA Limited quantities (IATA) : FORBIDDEN
PCA limited quantity max net quantity (IATA) : FORBIDDEN
PCA packing instructions (IATA) : FORBIDDEN
PCA max net quantity (IATA) : FORBIDDEN
CAO packing instructions (IATA) : 200
CAO max net quantity (IATA) : 150kg
Special provisions (IATA) : A1
ERG code (IATA) : 10L

Inland waterway transport

Classification code (ADN) : 2F
Special provisions (ADN) : 386, 618, 662
Limited quantities (ADN) : 0
Excepted quantities (ADN) : E0
Carriage permitted (ADN) : T
Equipment required (ADN) : PP, EX, A
Ventilation (ADN) : VE01
Number of blue cones/lights (ADN) : 1

Rail transport

Classification code (RID) : 2F
Special provisions (RID) : 386, 618, 662
Limited quantities (RID) : 0
Excepted quantities (RID) : E0
Packing instructions (RID) : P200
Mixed packing provisions (RID) : MP9
Portable tank and bulk container instructions (RID) : T50(M)
Tank codes for RID tanks (RID) : PxBN(M)
Special provisions for RID tanks (RID) : TU38, TE22, TA4, TT9, TM6
Transport category (RID) : 2

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Special provisions for carriage - Loading, unloading and handling (RID) : CW9, CW10, CW36

Colis express (express parcels) (RID) : CE3

Hazard identification number (RID) : 239

14.7. Maritime transport in bulk according to IMO instruments

IBC code : Not applicable.

SECTION 15: Regulatory information

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

EU-Regulations

REACH Annex XVII (Restriction List)

EU restriction list (REACH Annex XVII)		
Reference code	Applicable on	Entry title or description
29.	1,3-Butadiene, stabilized	Substances which are classified as germ cell mutagen category 1A or 1B in Part 3 of Annex VI to Regulation (EC) No 1272/2008 and are listed in Appendix 3 or Appendix 4, respectively.
28.	1,3-Butadiene, stabilized	Substances which are classified as carcinogen category 1A or 1B in Part 3 of Annex VI to Regulation (EC) No 1272/2008 and are listed in Appendix 1 or Appendix 2, respectively.
40.	1,3-Butadiene, stabilized	Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not.

REACH Annex XIV (Authorisation List)

Not listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Contains no substance(s) listed on the REACH Candidate List

PIC Regulation (Prior Informed Consent)

Not listed on the PIC list (Regulation EU 649/2012)

Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)

POP Regulation (Persistent Organic Pollutants)

Not listed on the POP list (Regulation EU 2019/1021)

Ozone Regulation (2024/590)

Not listed on the Ozone Depletion list (Regulation EU 2024/590)

Council Regulation (EC) for the control of dual-use items

Not listed on the COUNCIL REGULATION (EC) of dual-use items.

VOC Directive (2004/42)

Restrictions on use : Restricted to professional users (Annex XVII REACH).

Seveso Directive (Disaster Risk Reduction)

Seveso Directive : 2012/18/EU (Seveso III) : Listed.

Seveso III Part II (Named dangerous substances)	Qualifying quantity (tonnes)	
	Lower-tier	Upper-tier
Liquefied flammable gases, Category 1 or 2 (including LPG) and natural gas	50	200

Explosives Precursors Regulation (EU 2019/1148)

Not listed on the Explosives Precursors list (EU)

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Please see https://home-affairs.ec.europa.eu/policies/internal-security/counter-terrorism-and-radicalisation/protection/legislation-chemicals-used-home-made-explosives_en

Drug Precursors Regulation (EC 273/2004)

Not applicable.

15.1.2. National regulations

Ensure all national/local regulations are observed.

Safety data sheet in accordance with commission regulation (EU) No 2020/878.

Council Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work

Directive 2016/425/EEC on personal protective equipment

Directive 2014/34/EU on equipment and protective systems intended for use in potentially explosive atmospheres (ATEX)

Only products that comply with the food regulations (EC) No. 1333/2008 and (EU) No. 231/2012 and are labelled as such may be used as food additives.

This Safety Data Sheet has been produced to comply with Regulation (EU) 2015/830.

15.2. Chemical safety assessment

A CSA has been carried out.

SECTION 16: Other information

Indication of changes:

Safety data sheet in accordance with commission regulation (EU) No 2020/878.

Abbreviations and acronyms:	
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	ADR - Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	ATE - Acute Toxicity Estimate
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
CAO	Cargo Aircraft only / Cargo Aircraft only
CAS-No.	Chemical Abstracts Service number
CLP	CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
COD	Chemical oxygen demand (COD)
CSA	CSA - Chemical Safety Assessment
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC50	Median effective concentration
EC	European Inventory of Existing Commercial Chemical Substances
ED	Endocrine disruptor
EINECS	EINECS - European Inventory of Existing Commercial Chemical Substances
EN	European Standard
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
IOELV	Indicative Occupational Exposure Limit Value
LC50	Median lethal concentration
LD50	Median lethal dose

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Abbreviations and acronyms:	
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
N.O.S.	Not Otherwise Specified
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PCA	Passenger and Cargo Aircraft / Passenger and Cargo Aircraft
PNEC	Predicted No-Effect Concentration
PPE	PPE - Personal Protection Equipment
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
RMM	RMM - Risk Management Measures
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
TRGS	Technical Rules for Hazardous Substances
STOT-RE	Specific Target Organ Toxicity-Repeated Exposure
STOT-SE	Specific Target Organ Toxicity-Single Exposure
UFI	Unique Formula Identifier
UN	UN - United Nations
VOC	Volatile Organic Compounds
vPvB	Very Persistent and Very Bioaccumulative
WGK	Water Hazard Class

Training advice

: Ensure operators understand the flammability hazard.

Other information

: Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP). Key literature references and sources of data are maintained in EIGA Doc 169 : 'Classification and Labelling Guide', downloadable at <http://www.Eiga.eu>.

Full text of H- and EUH-statements:	
Carc. 1A	Carcinogenicity, Category 1A
Flam. Gas 1A	Flammable gases, Category 1A
Muta. 1B	Germ cell mutagenicity, Category 1B
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.
H340	May cause genetic defects.
H350	May cause cancer.

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Full text of use descriptors	
ERC2	Formulation into mixture
PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

The classification complies with
DISCLAIMER OF LIABILITY

- : ATP 12
- : Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out. Details given in this document are believed to be correct at the time of going to press. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

Safety Data Sheet (SDS), EU AT

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

Annex to the safety data sheet

This Annex documents the Exposure Scenarios (ESs) related to the identified uses of the registered substance. The ESs detail protective measures for workers and the environment in addition to those described in sections 7, 8, 11, 12 and 13 of the SDS that are required to ensure that the potential exposure to workers and the environment remains within acceptable levels for each of the identified uses.

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Annex to the safety data sheet: Exposure scenario

Reference number: EIGA013 CAS-No.: 106-99-0 Product form: Substance Physical state: Gas

1. EIGA013-1: Industrial uses, closed contained conditions

1.1. Title section

Industrial uses, closed contained conditions

ES Ref.: EIGA013-1
Revision date: 10/1/2016

Processes, tasks, activities covered	Industrial uses, including product transfers and associated laboratory activities within different closed or contained systems
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Environment	Use descriptors
CS1	ERC2

Worker	Use descriptors
CS2	PROC1
CS3	PROC2, PROC3, PROC4
CS4	PROC8b, PROC9

Assessment method	ECETOC TRA 2.0
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1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: ERC2

ERC2	Formulation into mixture
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Product (article) characteristics	
Physical form of product	See section 9 of the SDS, No additional information
Concentration of substance in product	≤ 100 %

Amount used, frequency and duration of use (or from service life)	
The actual tonnage handled per site is not considered to influence the immissions as such for this scenario as there is practically no release	

Technical and organisational conditions and measures	
Wastewater emission controls are not applicable as there is no direct release to wastewater	
Soil emission controls are not applicable as there is no direct release to soil	
Ensure operatives are trained to minimise releases	

Conditions and measures related to sewage treatment plant	
Not applicable as there is no release to wastewater	

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Annex to the safety data sheet: Exposure scenario

Reference number: EIGA013 CAS-No.: 106-99-0 Product form: Substance Physical state: Gas

Conditions and measures related to treatment of waste (including article waste)	
See section 13 of the SDS	

Other conditions affecting environmental exposure	
No additional information	

1.2.2. Control of worker exposure: PROC1

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Product (article) characteristics	
Physical form of product	See section 9 of the SDS, No additional information
Concentration of substance in product	≤ 100 %

Amount used (or contained in articles), frequency and duration of use/exposure	
The actual tonnage handled per shift is not considered to influence the exposure as such for this scenario. Instead, the combination of the scale of operation and level of containment/automation (as reflected in the technical conditions) is the main determinant of the process-intrinsic emission potential.	
Exposure duration	≤ 8 h/day
Covers frequency up to:	5 days/week

Technical and organisational conditions and measures	
Handle product within a closed system	
Apply a good standard of general or controlled ventilation when maintenance activities are carried out.	
Ensure operatives are trained to minimise exposure	
Ensure supervision is in place to check that the RMMs are in place and are being used correctly and that the OCs are being followed	

Conditions and measures related to personal protection, hygiene and health evaluation	
See section 8 of the SDS.	

Other conditions affecting workers exposure	
Indoor or outdoor use	

1.2.3. Control of worker exposure: PROC2, PROC3, PROC4

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises

1,3-Butadiene, stabilized

Annex to the safety data sheet: Exposure scenario

Reference number: EIGA013 CAS-No.: 106-99-0 Product form: Substance Physical state: Gas

Product (article) characteristics	
Physical form of product	See section 9 of the SDS, No additional information
Concentration of substance in product	≤ 100 %

Amount used (or contained in articles), frequency and duration of use/exposure	
The actual tonnage handled per shift is not considered to influence the exposure as such for this scenario. Instead, the combination of the scale of operation and level of containment/automation (as reflected in the technical conditions) is the main determinant of the process-intrinsic emission potential.	
Exposure duration	≤ 1 h/day
Covers frequency up to:	5 days/week

Technical and organisational conditions and measures	
Handle product within a closed system	
During indoor processes or in cases where natural ventilation is not sufficient, LEV should be in place at points where emissions could occur. Outdoor, LEV is not generally required.	
Ensure samples are obtained under containment or extract ventilation.	
Drain down and flush system prior to equipment break-in or maintenance.	
Apply a good standard of general or controlled ventilation when maintenance activities are carried out.	
Ensure operatives are trained to minimise exposure	
Ensure supervision is in place to check that the RMMs are in place and are being used correctly and that the OCs are being followed	

Conditions and measures related to personal protection, hygiene and health evaluation	
Personal protection measures have to be applied in case of potential exposure only.	
See section 8 of the SDS.	

Other conditions affecting workers exposure	
Indoor or outdoor use	

1.2.4. Control of worker exposure: PROC8b, PROC9

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Product (article) characteristics	
Physical form of product	See section 9 of the SDS, No additional information
Concentration of substance in product	≤ 100 %

1,3-Butadiene, stabilized

Annex to the safety data sheet: Exposure scenario

Reference number: EIGA013 CAS-No.: 106-99-0 Product form: Substance Physical state: Gas

Amount used (or contained in articles), frequency and duration of use/exposure	
The actual tonnage handled per shift is not considered to influence the exposure as such for this scenario. Instead, the combination of the scale of operation and level of containment/automation (as reflected in the technical conditions) is the main determinant of the process-intrinsic emission potential.	
Exposure duration	≤ 4 h/day
Covers frequency up to:	5 days/week

Technical and organisational conditions and measures	
Handle product within a closed system	
During indoor processes or in cases where natural ventilation is not sufficient, LEV should be in place at points where emissions could occur. Outdoor, LEV is not generally required.	
Ensure samples are obtained under containment or extract ventilation.	
Fill containers at dedicated fill points supplied with local extract ventilation.	
Drain down and flush system prior to equipment break-in or maintenance.	
Apply a good standard of general or controlled ventilation when maintenance activities are carried out.	
Ensure operatives are trained to minimise exposure	
Ensure supervision is in place to check that the RMMs are in place and are being used correctly and that the OCs are being followed	

Conditions and measures related to personal protection, hygiene and health evaluation	
Personal protection measures have to be applied in case of potential exposure only.	
See section 8 of the SDS.	

Other conditions affecting workers exposure	
Indoor or outdoor use	

1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure: ERC2

The exposure of aquatic, terrestrial, sediment and sewage treatment microorganisms is considered to be negligible because the substance partitions primarily to air when released to the environment. Emission of the substance to the air compartment is regulated. The limits in place would also limit exposure to ecological receptors. Hence the risks are considered to be controlled for ecological receptors.

1.3.2. Worker exposure: PROC1

When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

1.3.3. Worker exposure: PROC2, PROC3, PROC4

When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

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Annex to the safety data sheet: Exposure scenario

Reference number: EIGA013 CAS-No.: 106-99-0 Product form: Substance Physical state: Gas

1.3.4. Worker exposure: PROC8b, PROC9

When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposure of workers and indirect human exposure via the environment is not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

1.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

1.4.1. Environment

Guidance - Environment

Check that RMMs and OCs are as described above or of equivalent efficiency

1.4.2. Health

Guidance - Health

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. For scaling see : <http://www.ecetoc.org/tra>

End of document