

Trade name: R600 - n-Butane 2.5; Tegan®600, n-Butane 2.5 Product no.: R600

Current version : 2.0.0, issued: 26.06.2024

Replaced version: 1.0.0, issued: 14.12.2023

Region: GER

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

1.1 Product identifier

Trade name

EC no.

Index no.

R600 - n-Butane 2.5; Tegan®600, n-Butane 2.5

Substance name REACH registration no. butane 01-2119474691-32

Identification numbers CAS no.

106-97-8 203-448-7 601-004-00-0

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

Relevant identified uses of the substance or mixture

Industrial Use Professional use Formulation of mixtures

Pure chemical Aerosol Propellant Fuel Consumer use Refrigerant

Uses advised against No other use is recommended.

No other use is recommended.

1.3 Details of the supplier of the safety data sheet

Address

TEGA - Technische Gase und Gasetechnik GmbH Werner-von-Siemens-Straße 18 97076 Würzburg

 Telephone no.
 +49 931 2093-220

 Fax no.
 +49 931 2093-180

 e-mail
 kaeltemittel@tega.de

Advice on Safety Data Sheet

sdb_info@umco.de

1.4 Emergency telephone number

For medical advice (in German and English): +49 (0)551 192 40 (Giftinformationszentrum Nord)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification in accordance with Regulation (EC) No 1272/2008 (CLP) Flam. Gas 1A; H220

Press. Gas liq.; H280

Classification information

This product is assessed and classified using the methods and criteria below referred to in Article 9 of Regulation (EC) n° 1272/2008:

Physical hazards: determined through assessment data based on the methods or standards referred to in part 2 of Annex I to CLP

Health hazards and environmental hazards: determined through toxicological and ecotoxicological assessment data based on the methods or standards referred to in Part 3 and 4 of Annex I to CLP.

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2.2 Label elements

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

Extremely flammable gas.

Product identifier 106-97-8 (butane)

Hazard pictograms



Signal word Danger

Hazard statement(s)

H220 H280

30

Precautionary statement(s)

· · · · · · · · · · · · · · · · · · ·	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No
	smoking.
P377	Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381	In case of leakage, eliminate all ignition sources.
P403	Store in a well-ventilated place.

Contains gas under pressure; may explode if heated.

2.3 Other hazards

Contact with the liquid can cause cold burns or frostbite.

PBT assessment

The product is not considered to be a PBT.

vPvB assessment

The product is not considered to be a vPvB.

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical characterization

Substance name	butane
Formula	C4H10
Molecular weight	58,12
Identification numbers	
identification numbers	
CAS no.	106-97-8

•	
EC no.	203-448-7
Index no.	601-004-00-0

Other information

Note	Specific concentration limits	M-factor (acute)	M-factor (chronic)
C, U	-	-	-

Full text for the notes: pls. see section 16 "Notes relating to the identification, classification and labelling of substances ((EC) No 1272/2008, Annex VI)".

3.2 Mixtures

Not applicable. The product is not a mixture.

SECTION 4: First aid measures

4.1 Description of first aid measures



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General information

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Remove affected person from danger area, lay him down. Seek medical advice immediately.

After inhalation

Remove affected persons from dangerous area by observing suitable respiratory protection measures. Ensure supply of fresh air. Irregular breathing/no breathing: artificial respiration. Call a doctor immediately.

After skin contact

In case of contact with skin wash off immediately with soap and water. In case of frostbite, rinse with plenty of water. Do not remove clothing.

After eye contact

Remove contact lenses. Rinse eye thoroughly under running water keeping eyelids wide open and protecting the unaffected eye (at least 10 to 15 minutes).

After ingestion

Rinse the mouth thoroughly with water. Do not induce vomiting. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms

Shortness of breath; Frostbite; respiratory arrest. Unconsciousness

4.3 Indication of any immediate medical attention and special treatment needed Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Extinguishing powder; Water spray jet; Water mist; Foam

Unsuitable extinguishing media

High power water jet; Carbon dioxide

5.2 Special hazards arising from the substance or mixture

In the event of fire, the following can be released: Carbon monoxide and carbon dioxide; May explode if exposed to heat. Liquefied gas: Spilled liquid can cause cold burns. This gas is heavier than air and may accumulate in low areas.

5.3 Advice for firefighters

Use self-contained breathing apparatus. Wear full protective suit. Containers close to fire should be transferred to a safe place. Cool closed containers exposed to fire with water. Pressure increase, bursting and explosion hazard during heating. Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Refer to protective measures listed in sections 7 and 8. Ensure adequate ventilation. Keep away from ignition sources. Do not breathe gas. Cordon and mark contaminated area. Remove persons to safety. Risk of explosion.

For emergency responders

No data available. Personal protective equipment (PPE) - see Section 8.

6.2 Environmental precautions

Avoid release in the environment. Suppress gases/vapours/mists with water spray jet.

6.3 Methods and material for containment and cleaning up

Ensure adequate ventilation. Dispose of absorbed material in accordance with the regulations.

6.4 Reference to other sections



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Information regarding safe handling, see section 7. Information regarding personal protective measures, see section 8. Information regarding waste disposal, see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Only qualified and trained persons are authorised to handle. Provide good ventilation at the work area (local exhaust ventilation, if necessary). To be used only according to instructions for use. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose containers heat or sources of ignition. In case of accidental release: danger due to low temperature of the liquid product. The product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentration higher than the occupational exposure limits. Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use. Comply with the health and safety at work laws.

General protective and hygiene measures

Wash hands before breaks and after work. Do not inhale gases. Do not eat, drink or smoke during work time. Keep away from foodstuffs and beverages. Have emergency shower available.

Advice on protection against fire and explosion

Vapours can form an explosive mixture with air. Isolate from sources of heat, sparks and open flame. Take precautionary measures against electrostatic loading (earthing necessary during loading operations). Use explosion-proof equipment/fittings and non-sparking tools. Electrical equipment should be protected to the appropriate standard.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions

Keep container tightly closed in a cool, well-ventilated place, open and handle carefully. Protect from heat and direct sunlight.

Recommended storage temperature

Value < 50 °C

Requirements for storage rooms and vessels

Containers which are opened must be carefully closed and kept upright to prevent leakage. Always keep in containers of same material as the original.

Incompatible products

Do not store together with: combustible materials; oxidizing agents; oxidizing substances; spontaneously combusting substances; explosive substances

Stoarge Class according TRGS 510

Gases (except aerosol dispensers and lighters)

7.3 Specific end use(s)

2A

No data available.

SECTION 8: Exposure controls/personal protection

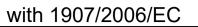
8.1 Control parameters

Occupational exposure limit values

No	Substance name	CAS no.		EC no.	
1	butane	106-97-8		203-448-7	
	TRGS 900				
	Butan				
	WEL long-term (8-hr TWA reference period)	2400	mg/m³	1000	ml/m³
	Ceiling Limit	4(II)			

8.2 Exposure controls

Appropriate engineering controls



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Ensure adequate ventilation, local exhaust at the work station if necessary. If these are not sufficient to maintain concentrations of particulates and solvent vapour below the OEL, suitable respiratory protection must be worn.

Personal protective equipment

Respiratory protection

Self-contained breathing apparatus. In case of insufficient ventilation or long-term effect use breathing apparatus. Respiratory filter (gas) : AX

Eye / face protection

Tightly fitting safety glasses (EN 166).

Hand protection

Low-temperature-resistant gloves (EN 511). Sufficient protection is given wearing suitable protective gloves checked according to i.e. EN 374, in the event of risk of skin contact with the product. Before use, the protective gloves should be tested in any case for its specific work-station suitability (i.e. mechanical resistance, product compatibility and antistatic properties). Adhere to the manufacturer's instructions and information relating to the use, storage, care and replacement of protective gloves. Protective gloves shall be replaced immediately when physically damaged or worn. Design operations thus to avoid permanent use of protective gloves. Appropriate Material Leather

Other

Chemical-resistant work clothes. Fire-resistant antistatic protective clothing. Protective shoes.

Environmental exposure controls No data available.

no dala avaliable.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

State of aggregation		
gas		
Form		
liquified gas		
Colour		
colourless		
Odour		
petrol-like		
pH value		
No data available		
Boiling point / boiling range		
Value	-0,5	°C
Melting point/freezing point		
Value	-138,2	°C
Decomposition temperature		
Value	435	°C
Flash point		
No data available		
Ignition temperature		
No data available		
Auto-ignition temperature		
Value	365	° C
Explosive properties		
May form explosive gas-air mixtures.		



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Flammability highly flammable				
* /				
Lower explosion limit Value		1,4	% vol	
value		1,4	% VOI	
Upper explosion limit				
Value		9,5	% vol	
Vapour pressure				
Value		242,65	kPa	
Reference temperature		25	°C	
Relative vapour density				
Value		2,07		
Reference temperature		0	°C	
Comments	Air = 1			
Relative density				
Value		0,6012		
Reference temperature		0	°C	
Density				
No data available				
Solubility in water				
Value		88	mg/l	
Solubility			•	
No data available				
Partition coefficient n-octanol/wate				
No data available	i (log value)			
Kinematic viscosity Value		0,007	mPa*s	
Reference temperature		20	°C	
Туре	dynamic	20	0	
Particle characteristics No data available				
2 Other information				
Other information				
NT 1 1 1 1 1 1				

No data available.

SECTION 10: Stability and reactivity

10.1 Reactivity

Dangerous reactions are not expected if the product is handled according to its intended use.

10.2 **Chemical stability**

Stable under recommended storage and handling conditions (See section 7).

Possibility of hazardous reactions 10.3

May ignite when exposed to strong oxydising agents. Risk of formation of explosive gas mixtures in air.

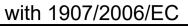
10.4 Conditions to avoid

T > 48 °C; Heat, naked flames and other ignition sources.

10.5 Incompatible materials

Oxidizing agents; humidity

10.6 Hazardous decomposition products



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None, if handled according to intended use.

SECTION 11: Toxicological information

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

Acute oral toxicity					
No data available					
Acute dermal toxicity No data available					
No data avallable					
Acute inhalational toxicity					
No data available					
Skin corrosion/irritation					
No data available					
Serious eye damage/irritation					
No data available					
Peopiratory or skin consistention					
Respiratory or skin sensitisation No data available					
Germ cell mutagenicity	010	F0 m2			
No Substance name 1 butane	CAS no. 106-97-8	EC no. 203-448-7			
Type of examination	In vitro Mammalian Chromosoma				
Species	Human Lymphocyte	a Aberration Test			
Method	OECD 473				
Source	ECHA				
Evaluation/classification	Based on available data, the clas	sification criteria are not met.			
Type of examination	in vitro gene mutation study in ba				
Species	Salmonella typhimurium				
Method	OECD 471				
Source	ECHA				
Evaluation/classification	Based on available data, the clas	sification criteria are not met.			
Reproduction toxicity					
No Substance name	CAS no.	EC no.			
1 butane	106-97-8	203-448-7			
Route of exposure	inhalational				
Species Method	rat OECD 422				
Source	ECHA				
Evaluation/classification	Based on available data, the class	sification criteria are not met.			
	· · · · · · · · · · · · · · · · · · ·				
Carcinogenicity No data available					
STOT - single exposure					
No data available					
STOT - repeated exposure					
No Substance name	CAS no.	EC no.			
1 butane	106-97-8	203-448-7			
Route of exposure	inhalational				
Species rat					
Method OECD 422					
Source ECHA Evaluation/classification Based on available data, the classification criteria are not met.					
Aspiration hazard No data available					





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11.2 Information on other hazards

Endocrine disrupting properties No data available.

Other information No data available.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish (acute)
No data available
Toxicity to fish (chronic)
No data available
Toxicity to Daphnia (acute)
No data available
Toxicity to Daphnia (chronic)
No data available
Toxicity to algae (acute)
No data available
Toxicity to algae (chronic)
No data available
Bacteria toxicity
No data available

12.2 Persistence and degradability

Biod	Biodegradability					
No	Substance name		CAS no.	EC no.		
1	butane		106-97-8	203-448-7		
Туре)	aerobic biodeo	radation			
Valu			50	%		
Dura	ition		3,46	d		
Meth	nod	QSAR				
Sour	ce	ECHA				

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

Results of PBT and vPvB assessment				
PBT assessment	The product is not considered to be a PBT.			
vPvB assessment	The product is not considered to be a vPvB.			

12.6 Endocrine disrupting properties No data available.

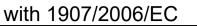
12.7 Other adverse effects

Other adverse effects

Global warming potential within 100 years: 0

12.8 Other information

Other information



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Do not discharge product unmonitored into the environment.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

dispose of in accordance with local regulation.

Allocation of a waste code number, according to the European Waste Catalogue, should be carried out in agreement with the regional waste disposal company.

Packaging

Compressed gas packaging under pressure. Do not open by force. Do not heat above 50°C. Dispose of compressed gas packagings only if completely discharged. Do not burn empty compressed gas packagings. Do not pierce, cut or weld uncleaned containers.

SECTION 14: Transport information

14.1	UN number or ID number ADR/RID/ADN IMDG ICAO-TI / IATA	UN1011 UN1011 UN1011
14.2	UN proper shipping name ADR/RID/ADN	BUTANE
	IMDG	BUTANE
	ICAO-TI / IATA	Butane
14.3	Transport hazard class(es) ADR/RID/ADN - Class Label Classification code Tunnel restriction code Hazard identification no.	2 2.1 RID:(+13) 2F B/D 23
	IMDG - Class Label	2.1 2.1
	ICAO-TI / IATA - Class Label	2.1 2.1

14.4 Packing group

Not classified as dangerous in the meaning of transport regulations.

14.5Environmental hazards
EmSF-D, S-U

14.6 Special precautions for user

To be transported always in closed, upright and safe containers. Make sure that persons handling these containers are aware of the rules of conduct in case of incident or spillage.

14.7 Maritime transport in bulk according to IMO instruments Not relevant

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture <u>EU regulations</u>

Regulation (EC) No 1907/2006 (REACH) Annex XIV (List of substances subject to authorisation)

In accordance with the REACH regulation (EC) 1907/2006, the product does not contain any substances that are considered as subject to listing in annex XIV, inventory of substances requiring authorisation.

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REACH candidate list of substances of very high concern (SVHC) for authorisation

In accordance with article 57 and article 59 of the Reach regulation (EC) 1907/2006, this substance is not considered as subject to listing in annex XIV, inventory of substances requiring authorisation ("Authorization list")

Regulation (EC) No 1907/2006 (REACH) Annex XVII: RESTRICTIONS ON THE MANUFACTURE, PLACING ON THE MARKET AND USE OF CERTAIN DANGEROUS SUBSTANCES, MIXTURES AND ARTICLES The product is considered being subject to REACH regulation (EC) 1907/2006 annex XVII. No 40

Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances This product is subject to Part I of Annex I, risk category: P2

Other regulations

Adhere to the national sanitary and occupational safety regulations when using this product

National regulations

Water Hazard Class (Germany)

Class Identification number Source

561 Classification according to AwSV (Regulation on facilities for handling substances that are hazardous to water).

Other regulations

Take into account: TRGS 510 "Storage of hazardous substances in non-stationary containers"

15.2 Chemical safety assessment

A chemical safety assessment has been carried out for this substance.

nwg

SECTION 16: Other information

Sources of key data used to compile the data sheet:

Regulation (EC) No 1907/2006 (REACH), 1272/2008 (CLP) as amended in each case.

Directives 2000/39/EC, 2006/15/EC, 2009/161/EU, (EU) 2017/164.

National Threshold Limit Values of the corresponding countries as amended in each case.

Transport regulations according to ADR, RID, IMDG, IATA as amended in each case.

The data sources used to determine physical, toxic and ecotoxic data, are indicated directly in the corresponding section.

Notes relating to the identification, classification and labelling of substances and mixtures ((EC) No 1272/2008, Annex VI)

С

U

Some organic substances may be marketed either in a specific isomeric form or as a mixture of several isomers. In this case the supplier must state on the label whether the substance is a specific isomer or a mixture of isomers.

When put on the market gases have to be classified as 'Gases under pressure', in one of the groups compressed gas, liquefied gas, refrigerated liquefied gas or dissolved gas. The group depends on the physical state in which the gas is packaged and therefore has to be assigned case by case.

Creation of the safety data sheet UMCO GmbH

This information is based on our present knowledge and experience.

The safety data sheet describes products with a view to safety requirements.

It does not however, constitute a guarantee for any specific product properties and shall not establish a legally valid contractual relationship.

Alterations/supplements:

Alterations to the previous edition are marked in the left-hand margin.

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Prod-ID 754029

