

# Safety data sheet

according to 1907/2006/EC, Article 31

Revision: 12.08.2010

Printing date 01.07.2013

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Trade name

***tert-Butyllithium, 1.5M in n-pentane***

Stock number:

44125, 41251

CAS Number:

594-19-4

EC number:

209-831-5

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

Identified use:

SU24 Scientific research and development

**1.3 Details of the supplier of the safety data sheet**

Manufacturer/Supplier:

Alfa Aesar GmbH & Co.KG  
 A Johnson Matthey Company  
 Zeppelinstr. 7b  
 76185 Karlsruhe / Germany  
 Tel: +49 (0) 721 84007 280  
 Fax: +49 (0) 721 84007 300  
 Email: tech@alfa.com  
 www.alfa.com  
 Product safety Tel + +049 (0) 7275 988687-0  
 Carechem 24: +44 (0) 1235 239 670 (Multi-language emergency number)  
 Poison Information Center Mainz  
 www.giftinfo.uni-mainz.de Telephone: +49(0)6131/19240

Informing department:

1.4 Emergency telephone number:

**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008



GHS02 flame

Pyr. Liq. 1 H250 Catches fire spontaneously if exposed to air.

Water-react. 1 H260 In contact with water releases flammable gases which may ignite spontaneously.



GHS08 health hazard

Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.



GHS05 corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.



GHS09 environment

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.



GHS07

STOT SE 3 H336 May cause drowsiness or dizziness.

H401 Toxic to aquatic life.

**Classification according to Directive 67/548/EEC or Directive 1999/45/EC**

C; Corrosive

R34: Causes burns.



Xn; Harmful

R65: Harmful: may cause lung damage if swallowed.



F; Highly flammable

R11-14/15-17: Highly flammable. Reacts violently with water, liberating extremely flammable gases. Spontaneously flammable in air.



N; Dangerous for the environment

R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R66-67: Repeated exposure may cause skin dryness or cracking. Vapours may cause drowsiness and dizziness.

**Information concerning particular hazards for human and environment:**

At long or repeated contact with skin it may cause dermatitis due to the degreasing effect of the solvent.  
 Has a narcotizing effect.

**Other hazards that do not result in classification**

No information known.

**2.2 Label elements**

Labelling according to Regulation (EC) No 1272/2008

Hazard pictograms

Signal word

Hazard statements

The substance is classified and labelled according to the CLP regulation.

GHS02, GHS05, GHS07, GHS08, GHS09

Danger

H250 Catches fire spontaneously if exposed to air.

H260 In contact with water releases flammable gases which may ignite spontaneously.

H314 Causes severe skin burns and eye damage.

H336 May cause drowsiness or dizziness.

H304 May be fatal if swallowed and enters airways.

H401 Toxic to aquatic life.

H411 Toxic to aquatic life with long lasting effects.

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P405 Store locked up.

P422 Store contents under inert gas.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**Additional information:**

EUH014 Reacts violently with water.

EUH066 Repeated exposure may cause skin dryness or cracking.

**2.3 Other hazards**

Results of PBT and vPvB assessment

PBT:

Not applicable.

(Contd. on page 2)  
DE/E

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vPvB: Not applicable.

(Contd. of page 1)

**SECTION 3: Composition/information on ingredients**

**3.1 Substances**  
**CAS# Designation:** 594-19-4 tert-Butyllithium, 1.5M in n-pentane  
**Identification number(s):**  
**EC number:** 209-831-5

**SECTION 4: First aid measures****4.1 Description of first aid measures****General information****After inhalation**

Instantly remove any clothing soiled by the product.  
 Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

Seek immediate medical advice.

Instantly wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

Rinse opened eye for several minutes under running water. Then consult doctor.

Seek medical treatment.

**After skin contact****After eye contact****After swallowing****4.2 Most important symptoms and effects, both acute and delayed**

No further relevant information available.

**4.3 Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

**SECTION 5: Firefighting measures****5.1 Extinguishing media****Suitable extinguishing agents**

In case of fire, use sand, carbon dioxide or powdered extinguishing agent. Never use water.  
 In case of fire, use sand, carbon dioxide or powdered extinguishing agent. Never use water.

**For safety reasons unsuitable extinguishing agents**

Water.

**5.2 Special hazards arising from the substance or mixture**

Reacts violently with water

Spontaneously flammable in air.

If this product is involved in a fire, the following can be released:

Carbon monoxide and carbon dioxide

Lithium oxide

**5.3 Advice for firefighters****Protective equipment:**

Wear self-contained breathing apparatus.

Wear full protective suit.

**SECTION 6: Accidental release measures****6.1 Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources

Do not allow material to be released to the environment without proper governmental permits.

Do not allow product to reach sewage system or water bodies.

Do not allow to enter the ground/soil.

**6.3 Methods and material for containment and cleaning up:**

Keep away from ignition sources.

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Use neutralizing agent.

Dispose of contaminated material as waste according to item 13.

Ensure adequate ventilation.

Do not flush with water or aqueous cleansing agents

Keep away from ignition sources.

See Section 7 for information on safe handling

See section 8 for information on personal protection equipment.

See Section 13 for information on disposal.

**Prevention of secondary hazards:****6.4 Reference to other sections****SECTION 7: Handling and storage****7.1 Precautions for safe handling**

Handle under dry protective gas.

Keep containers tightly sealed.

Ensure good ventilation/exhaustion at the workplace.

**Information about protection against explosions and fires:**

Protect against electrostatic charges.

Fumes can combine with air to form an explosive mixture.

Substance/product is auto-flammable.

**7.2 Conditions for safe storage, including any incompatibilities****Storage****Requirements to be met by storerooms and containers:**

Store in freezer (-20°C).

**Information about storage in one common storage facility:**

Store away from air.

Protect from heat.

Store away from water.

**Further information about storage conditions:**

Store under dry inert gas.

This product is moisture sensitive.

This product is air sensitive.

Store in freezer (-20°C).

Protect from humidity and keep away from water.

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

Store in a locked cabinet or with access restricted to technical experts or their assistants.

**7.3 Specific end use(s)**

No further relevant information available.

**SECTION 8: Exposure controls/personal protection****Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

**8.1 Control parameters****Components with critical values that require monitoring at the workplace:**

Pentane (all isomers)

(Contd. on page 3)  
DE/E

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(Contd. of page 2)

	ppm
ACGIH TLV	600
Austria MAK	600
Belgium TWA	600; 750-STEL
Denmark TWA	500
Finland TWA	500; 625-STEL
France VME	600
Germany MAK	1000
Hungary TWA	500 mg.m3; 1500 mg/m3-STEL
Japan OEL	300
Korea TLV	600
Netherlands MAC-TGG	600
Poland TWA	1800 mg/m3; 2300 mg/m3-STEL
Russia TWA	300; 300 mg/m3-STEL
Sweden NGV	600; 750-KTV
Switzerland MAK-W	600
United Kingdom	600-LTEL; 750-STEL
USA PEL	1000
No data	

**Additional information:****8.2 Exposure controls****Personal protective equipment****General protective and hygienic measures**

The usual precautionary measures should be adhered to in handling the chemicals.

Keep away from foodstuffs, beverages and food.

Instantly remove any soiled and impregnated garments.

Wash hands during breaks and at the end of the work.

Do not inhale gases / fumes / aerosols.

Avoid contact with the eyes and skin.

Maintain an ergonomically appropriate working environment.

Use breathing protection with high concentrations.

Check protective gloves prior to each use for their proper condition.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Impervious gloves

Not determined

Tightly sealed safety glasses.

Full face protection

Protective work clothing.

**Breathing equipment:****Protection of hands:****Material of gloves****Penetration time of glove material****Eye protection:****Body protection:****SECTION 9: Physical and chemical properties****9.1 Information on basic physical and chemical properties****General Information****Appearance:**

Solution

Yellow

Characteristic

Not determined.

**Odour threshold:**

pH-value: Not determined.

**Change in condition**

Melting point/Melting range: Not determined

Boiling point/Boiling range: 36-40 °C

Sublimation temperature / start: Not determined

**Flash point:**

-59 °C

**Inflammability (solid, gaseous)**

Not determined.

**Ignition temperature:**

Not determined

**Decomposition temperature:**

Not determined

**Self-inflammability:**

Spontaneously flammable in air.

**Critical values for explosion:**

Lower: Not determined

Upper: Not determined

Not determined

**Steam pressure:**0,66 g/cm<sup>3</sup>**Density at 20 °C**

Not determined.

**Relative density**

Not determined.

**Vapour density**

Not determined.

**Evaporation rate**

Not determined.

**Solubility in / Miscibility with**

Water:

Reacts violently

Contact with water releases flammable gases

Not determined.

**Partition coefficient (n-octanol/water):****Viscosity:**

Not determined.

**dynamic:**

Not determined.

**kinematic:**

Not determined.

**9.2 Other information**

No further relevant information available.

**SECTION 10: Stability and reactivity****10.1 Reactivity**

Reacts violently with water.

In contact with water releases flammable gases which may ignite spontaneously.

Catches fire spontaneously if exposed to air.

Stable under recommended storage conditions.

**10.2 Chemical stability****Thermal decomposition / conditions to be avoided:**

No decomposition if used and stored according to specifications.

**10.3 Possibility of hazardous reactions**

Spontaneously flammable in air.

Contact with water releases flammable gases

Reacts violently with water

**10.5 Incompatible materials:**

Air

Water/moisture

Heat

**10.6 Hazardous decomposition products:**

Carbon monoxide and carbon dioxide

Lithium oxide

**SECTION 11: Toxicological information****11.1 Information on toxicological effects****Acute toxicity:**

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

**LD/LC50 values that are relevant for classification:**

No data

(Contd. on page 4)  
DE/E

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Trade name **tert-Butyllithium, 1.5M in n-pentane**

(Contd. of page 3)

<b>Skin irritation or corrosion:</b>	Causes severe skin burns. Repeated exposure may cause skin dryness or cracking.
<b>Eye irritation or corrosion:</b>	Causes serious eye damage.
<b>Sensitization:</b>	No sensitizing effect known.
<b>Germ cell mutagenicity:</b>	No effects known.
<b>Carcinogenicity:</b>	No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.
<b>Reproductive toxicity:</b>	No effects known.
<b>Specific target organ system toxicity - repeated exposure:</b>	No effects known.
<b>Specific target organ system toxicity - single exposure:</b>	May cause drowsiness or dizziness.
<b>Aspiration hazard:</b>	May be fatal if swallowed and enters airways.
<b>Additional toxicological information:</b>	To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.



**SECTION 12: Ecological information**

<b>12.1 Toxicity</b>	
<b>Aquatic toxicity:</b>	No further relevant information available.
<b>12.2 Persistence and degradability</b>	No further relevant information available.
<b>12.3 Bioaccumulative potential</b>	No further relevant information available.
<b>12.4 Mobility in soil</b>	No further relevant information available.
<b>Ecotoxicological effects:</b>	
<b>Remark:</b>	Toxic for fish
<b>Additional ecological information:</b>	Do not allow product to reach ground water, water bodies or sewage system. Do not allow material to be released to the environment without proper governmental permits. Toxic for aquatic organisms Water hazard class 2 (Self-assessment): hazardous for water. Danger to drinking water if even small quantities leak into soil. Also poisonous for fish and plankton in water bodies. Toxic to aquatic life. May cause long lasting harmful effects to aquatic life. Avoid transfer into the environment.
<b>General notes:</b>	
<b>12.5 Results of PBT and vPvB assessment</b>	
<b>PBT:</b>	Not applicable.
<b>vPvB:</b>	Not applicable.
<b>12.6 Other adverse effects</b>	No further relevant information available.

**SECTION 13: Disposal considerations**

<b>13.1 Waste treatment methods</b>	
<b>Recommendation</b>	Hand over to disposers of hazardous waste. Must be specially treated under adherence to official regulations. Consult state, local or national regulations for proper disposal.
<b>Uncleaned packagings:</b>	
<b>Recommendation:</b>	Disposal must be made according to official regulations.

**SECTION 14: Transport information**

<b>UN-Number</b>	UN3394
<b>ADR, IMDG, IATA</b>	
<b>14.2 UN proper shipping name</b>	3394 ORGANOMETALLIC SUBSTANCE, LIQUID, PYROPHORIC, WATER-REACTIVE (tert-Butyllithium/n-pentane)
<b>ADR</b>	ORGANOMETALLIC SUBSTANCE, LIQUID, PYROPHORIC, WATER-REACTIVE (tert-Butyllithium/n-pentane)
<b>IMDG</b>	ORGANOMETALLIC SUBSTANCE, LIQUID, PYROPHORIC, WATER-REACTIVE
<b>IATA</b>	
<b>14.3 Transport hazard class(es)</b>	
<b>ADR</b>	
	
<b>Class</b>	4.2 (SW) Substances liable to spontaneous combustion.
<b>Label</b>	4.2+4.3
<b>IMDG, IATA</b>	
	
<b>Class</b>	4.2 Substances liable to spontaneous combustion.
<b>Label</b>	4.2+4.3
<b>Packing group</b>	
<b>ADR, IMDG, IATA</b>	I
<b>14.5 Environmental hazards:</b>	Environmentally hazardous substance, liquid
<b>14.6 Special precautions for user</b>	Warning: Substances liable to spontaneous combustion.
<b>Kemler Number:</b>	x333
<b>EMS Number:</b>	F-G,S-M
<b>14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.
<b>Transport/Additional information:</b>	
<b>ADR</b>	
<b>Excepted quantities (EQ):</b>	E0
<b>Limited quantities (LQ)</b>	0
<b>Transport category</b>	0
<b>Tunnel restriction code</b>	B/E
<b>UN "Model Regulation":</b>	UN3394, ORGANOMETALLIC SUBSTANCE, LIQUID, PYROPHORIC, WATER- REACTIVE (tert-Butyllithium/n-pentane), 4.2 (4.3), I

DE/E

(Contd. on page 5)

**Safety data sheet**  
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(Contd. of page 4)

**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****Australian Inventory of Chemical**

Substance is listed.

**Substances****Standard for the Uniform Scheduling of**

Substance is not listed.

**Drugs and Poisons****National regulations****Information about limitation of use:**Employment restrictions concerning young persons must be observed.  
For use only by technically qualified individuals.**Water hazard class:**

Water hazard class 2 (Self-assessment): hazardous for water.

**Other regulations, limitations and prohibitive****regulations****ELINCS (European List of Notified Chemical****Substances)**

Substance is not listed.

**Substances of very high concern (SVHC)****according to REACH, Article 57**

Substance is not listed.

**REACH - Pre-registered substances**

Substance is listed.

**15.2 Chemical safety assessment:**

A Chemical Safety Assessment has not been carried out.

**SECTION 16: Other information**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing data specification sheet:** Health, Safety and Environmental Department.**Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International

Transport of Dangerous Goods by Rail)

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of

Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

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