

**Safety Data Sheet**  
acc. to OSHA HCS

**1 Identification**

**Product identifier**

**Product name:** Di-tert-butyl dicarbonate

**Stock number:** A14708, L03289

**CAS Number:**

24424-99-5

**EC number:**

246-240-1

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

**Identified use:** SU24 Scientific research and development

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

**Manufacturer/Supplier:**

Alfa Aesar  
Thermo Fisher Scientific Chemicals, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Tel: 800-343-0660

Fax: 800-322-4757

Email: tech@alfa.com

www.alfa.com

**Information Department:** Health, Safety and Environmental Department

**Emergency telephone number:**

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

**2 Hazard(s) identification**

**Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)**

 GHS02 Flame

Flam. Sol. 2 H228 Flammable solid.

 GHS06 Skull and crossbones

Acute Tox. 2 H330 Fatal if inhaled.

 GHS05 Corrosion

Eye Dam. 1 H318 Causes serious eye damage.

 GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Skin Sens. 1 H317 May cause an allergic skin reaction.

STOT SE 3 H335 May cause respiratory irritation.

**Hazards not otherwise classified** No information known.

**Label elements**

**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

**Hazard pictograms**



GHS02 GHS05 GHS06

**Signal word** Danger

**Hazard statements**

H228 Flammable solid.

H330 Fatal if inhaled.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H317 May cause an allergic skin reaction.

H335 May cause respiratory irritation.

**Precautionary statements**

P280 Wear protective gloves/protective clothing/eye protection/face protection.

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

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P310 Immediately call a POISON CENTER/doctor.

P302+P352 IF ON SKIN: Wash with plenty of water.

**WHMIS classification**

B4 - Flammable solid

D1A - Very toxic material causing immediate and serious toxic effects

D2B - Toxic material causing other toxic effects



**Classification system**

**HMIS ratings (scale 0-4)**

**(Hazardous Materials Identification System)**

**HEALTH** 4 Health (acute effects) = 4

**FIRE** 3 Flammability = 3

**REACTIVITY** 1 Physical Hazard = 1

Product name: **Di-tert-butyl dicarbonate**

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**Other hazards**  
**Results of PBT and vPvB assessment**  
**PBT:** Not applicable.  
**vPvB:** Not applicable.

### 3 Composition/information on ingredients

**Chemical characterization: Substances**  
**CAS# Description:**  
24424-99-5 Di-tert-butyl dicarbonate  
**Concentration:** ≤100%  
**Identification number(s):**  
**EC number:** 246-240-1

### 4 First-aid measures

#### Description of first aid measures

##### General information

Immediately remove any clothing soiled by the product.  
Remove breathing apparatus only after contaminated clothing has been completely removed.  
In case of irregular breathing or respiratory arrest provide artificial respiration.

##### After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm.  
Seek immediate medical advice.

##### After skin contact

Immediately wash with water and soap and rinse thoroughly.  
Seek immediate medical advice.

**After eye contact** Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing** Seek medical treatment.

##### Information for doctor

#### Most important symptoms and effects, both acute and delayed

Causes skin irritation.  
Fatal if inhaled.  
Causes serious eye damage.  
May cause an allergic skin reaction.

**Indication of any immediate medical attention and special treatment needed** No further relevant information available.

### 5 Fire-fighting measures

#### Extinguishing media

**Suitable extinguishing agents** Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

#### Special hazards arising from the substance or mixture

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

Carbon monoxide and carbon dioxide

#### Advice for firefighters

##### Protective equipment:

Wear self-contained respirator.  
Wear fully protective impervious suit.

### 6 Accidental release measures

#### Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources

**Environmental precautions:** Do not allow product to reach sewage system or any water course.

#### Methods and material for containment and cleaning up:

Dispose of contaminated material as waste according to section 13.

Ensure adequate ventilation.

**Prevention of secondary hazards:** Keep away from ignition sources.

#### Reference to other sections

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

#### Protective Action Criteria for Chemicals

**PAC-1:** 0.067 mg/m<sup>3</sup>

**PAC-2:** 0.73 mg/m<sup>3</sup>

**PAC-3:** 4.4 mg/m<sup>3</sup>

### 7 Handling and storage

#### Handling

##### Precautions for safe handling

Handle under dry protective gas.

Keep container tightly sealed.

Ensure good ventilation at the workplace.

Open and handle container with care.

Only handle and refill product in closed systems.

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

Protect against electrostatic charges.

Keep ignition sources away.

##### Conditions for safe storage, including any incompatibilities

#### Storage

**Requirements to be met by storerooms and receptacles:** Refrigerate

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

Protect from heat.

Store away from water/moisture.

Store away from oxidizing agents.

##### Further information about storage conditions:

Store under dry inert gas.

This product is moisture sensitive.

Keep container tightly sealed.

Protect from humidity and water.

Refrigerate

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**Product name: Di-tert-butyl dicarbonate**

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**Specific end use(s)** No further relevant information available.

### 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.

**Control parameters**

**Components with limit values that require monitoring at the workplace:**

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

**Additional information:** No data

**Exposure controls**

**Personal protective equipment**

**General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Avoid contact with the eyes and skin.

Maintain an ergonomically appropriate working environment.

**Breathing equipment:** Use self-contained respiratory protective device in emergency situations.

**Recommended filter device for short term use:**

Use a respirator with multi-purpose combination (US) or type ABEK (EN 14387) as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards such as NIOSH (USA) or CEN (EU).

**Protection of hands:**

Impervious gloves

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

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

**Material of gloves** Nitrile rubber, NBR

**Penetration time of glove material (in minutes)** 120

**Glove thickness:** 0.4 mm

**Eye protection:**

Tightly sealed goggles

Safety glasses with side shields / NIOSH (US) or EN 166(EU)

**Body protection:** Protective work clothing.

### 9 Physical and chemical properties

**Information on basic physical and chemical properties**

**General Information**

**Appearance:**

**Form:** Low melting solid

**Odor:** Mild

**Odor threshold:** Not determined.

**pH-value:** Not applicable.

**Change in condition**

**Melting point/Melting range:** 21-24 °C (70-75 °F)

**Boiling point/Boiling range:** 56-57 °C (133-135 °F) (0.5mm)

**Sublimation temperature / start:** Not determined

**Flash point:** 37 °C (99 °F)

**Flammability (solid, gaseous)** Highly flammable.

**Ignition temperature:** 460 °C (860 °F)

**Decomposition temperature:** Not determined

**Auto igniting:** Not determined.

**Danger of explosion:** Not determined.

**Explosion limits:**

**Lower:** Not determined

**Upper:** Not determined

**Vapor pressure:** Not applicable.

**Density at 20 °C (68 °F):** 0.95 g/cm<sup>3</sup> (7.928 lbs/gal)

**Relative density** Not determined.

**Vapor density** Not applicable.

**Evaporation rate** Not applicable.

**Solubility in / Miscibility with**

**Water:** Not determined

**Partition coefficient (n-octanol/water):** Not determined.

**Viscosity:**

**dynamic at 25 °C (77 °F):** 6.43 mPas

**kinematic:** Not applicable.

**Other information** No further relevant information available.

### 10 Stability and reactivity

**Reactivity** No information known.

**Chemical stability** Stable under recommended storage conditions.

**Thermal decomposition / conditions to be avoided:** Decomposition will not occur if used and stored according to specifications.

**Possibility of hazardous reactions** Reacts with strong oxidizing agents

**Conditions to avoid** No further relevant information available.

**Incompatible materials:**

Oxidizing agents

Heat

Water/moisture

**Hazardous decomposition products:** Carbon monoxide and carbon dioxide

**Product name: Di-tert-butyl dicarbonate**

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**11 Toxicological information**

**Information on toxicological effects**

**Acute toxicity:**  
Fatal if inhaled.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.

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

Inhalative LC50/4H 100 mg/m<sup>3</sup>/4H (rat)

**Skin irritation or corrosion:** Causes skin irritation.

**Eye irritation or corrosion:** Causes serious eye damage.

**Sensitization:** May cause an allergic skin reaction.

**Germ cell mutagenicity:** No effects known.

**Carcinogenicity:** No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

**Reproductive toxicity:** No effects known.

**Specific target organ system toxicity - repeated exposure:** No effects known.

**Specific target organ system toxicity - single exposure:** May cause respiratory irritation.

**Aspiration hazard:** No effects known.

**Subacute to chronic toxicity:** No effects known.

**Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

**12 Ecological information**

**Toxicity**

**Aquatic toxicity:** No further relevant information available.

**Persistence and degradability:** No further relevant information available.

**Bioaccumulative potential:** No further relevant information available.

**Mobility in soil:** No further relevant information available.

**Additional ecological information:**

**General notes:**

Do not allow undiluted product or large quantities to reach ground water, water course or sewage system.

Avoid transfer into the environment.

**Results of PBT and vPvB assessment**

**PBT:** Not applicable.

**vPvB:** Not applicable.

**Other adverse effects:** No further relevant information available.

**13 Disposal considerations**

**Waste treatment methods**

**Recommendation:** Consult state, local or national regulations to ensure proper disposal.

**Uncleaned packagings:**

**Recommendation:** Disposal must be made according to official regulations.

**14 Transport information**

**UN-Number**

DOT, IMDG, IATA

UN2930

**UN proper shipping name**

DOT

ADR

IMDG, IATA

Toxic solids, flammable, organic, n.o.s. (Di-tert-butyl dicarbonate)  
2930 Toxic solids, flammable, organic, n.o.s. (Di-tert-butyl dicarbonate)  
TOXIC SOLID, FLAMMABLE, ORGANIC, N.O.S. (Di-tert-butyl dicarbonate)

**Transport hazard class(es)**

DOT



Class

Label

ADR

6.1 Toxic substances  
6.1, 4.1



Class

Label

IMDG

6.1 (TF3) Toxic substances  
6.1+4.1



Class

Label

IATA

6.1 Toxic substances  
6.1/4.1



Class

Label

6.1 Toxic substances  
6.1 (4.1)

**Packing group**

DOT, ADR, IMDG, IATA

II

**Environmental hazards:**

Not applicable.

**Special precautions for user**

EMS Number:

Stowage Category

Warning: Toxic substances  
F-A,S-G  
B

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USA

**Product name: Di-tert-butyl dicarbonate**

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**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.**

**Transport/Additional information:**

**DOT**  
**Quantity limitations** On passenger aircraft/rail: 15 kg  
On cargo aircraft only: 50 kg

**Marine Pollutant (DOT):** No

**IMDG**  
**Limited quantities (LQ)** 500 g  
**Excepted quantities (EQ)** Code: E4  
Maximum net quantity per inner packaging: 1 g  
Maximum net quantity per outer packaging: 500 g

**UN "Model Regulation":** UN 2930 TOXIC SOLIDS, FLAMMABLE, ORGANIC, N.O.S. (DI-TERT-BUTYL DICARBONATE), 6.1 (4.1), II

**15 Regulatory information**

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

**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

**Hazard pictograms**



GHS02 GHS05 GHS06

**Signal word** Danger

**Hazard statements**

H228 Flammable solid.  
H330 Fatal if inhaled.  
H315 Causes skin irritation.  
H318 Causes serious eye damage.  
H317 May cause an allergic skin reaction.  
H335 May cause respiratory irritation.

**Precautionary statements**

P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P310 Immediately call a POISON CENTER/doctor.  
P302+P352 IF ON SKIN: Wash with plenty of water.

**National regulations**

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.  
All components of this product are listed on the Canadian Domestic Substances List (DSL).

**SARA Section 313 (specific toxic chemical listings)** Substance is not listed.

**California Proposition 65**

**Prop 65 - Chemicals known to cause cancer** Substance is not listed.

**Prop 65 - Developmental toxicity** Substance is not listed.

**Prop 65 - Developmental toxicity, female** Substance is not listed.

**Prop 65 - Developmental toxicity, male** Substance is not listed.

**Information about limitation of use:** For use only by technically qualified individuals.

**Other regulations, limitations and prohibitive regulations**

**Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.** Substance is not listed.

**The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.**

Substance is not listed.

**Annex XIV of the REACH Regulations (requiring Authorisation for use)** Substance is not listed.

**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

**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 Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing SDS:** Global Marketing Department

**Date of preparation/Revision:** Print date, revision date and version number are in the header of each page.

**Abbreviations and acronyms:**

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

DOT: US Department of Transportation

IATA: International Air Transport Association

EINECS: European Inventory of Existing Commercial Chemical Substances

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

HMIS: Hazardous Materials Identification System (USA)

WHMIS: Workplace Hazardous Materials Information System (Canada)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

SVHC: Substances of Very High Concern

vPvB: very Persistent and very Bioaccumulative

ACGIH: American Conference of Governmental Industrial Hygienists (USA)

OSHA: Occupational Safety and Health Administration (USA)

NTP: National Toxicology Program (USA)

IARC: International Agency for Research on Cancer

EPA: Environmental Protection Agency (USA)

Flam. Sol. 2: Flammable solids - Category 2

Acute Tox. 2: Acute toxicity - Category 2

Skin Irrit. 2: Skin corrosion/irritation - Category 2

Eye Dam. 1: Serious eye damage/eye irritation - Category 1

Skin Sens. 1: Skin sensitisation - Category 1

STOT SE 3: Specific target organ toxicity (single exposure) - Category 3