

# Safety data sheet

## 4-tert.-Butylcyclohexyl chloroformate

Revision date : 2006/02/01  
Version: 2.0

Page: 1/7  
(30037061/MDS\_GEN\_US/EN)

### 1. Substance/preparation and company identification

Company  
BASF CORPORATION  
100 Campus Drive  
Florham Park, NJ 07932

24 Hour Emergency Response Information  
CHEMTREC: (800) 424-9300  
BASF HOTLINE: (800) 832-HELP

Molecular formula: C(11)H(19)O(2)CL  
Synonyms: Carbonochloridic Acid, 4-(1,1-dimethylethyl)cyclohexyl Ester

### 2. Composition/information on ingredients

<u>CAS Number</u>	<u>Content (W/W)</u>	<u>Chemical name</u>
42125-46-2	>= 97.0 %	4-tert-butylcyclohexyl chloroformate

### 3. Hazard identification

#### Emergency overview

WARNING: HARMFUL IF INHALED.  
MAY BE HARMFUL IF SWALLOWED.  
INGESTION MAY CAUSE GASTRIC DISTURBANCES.  
CAUSES EYE, SKIN AND RESPIRATORY TRACT IRRITATION.  
PROLONGED OR REPEATED CONTACT MAY RESULT IN DERMATITIS.  
Avoid contact with the skin, eyes and clothing.  
Avoid inhalation of gases.  
Use with local exhaust ventilation.  
Wear a NIOSH-certified (or equivalent) organic vapour/particulate respirator.  
Wear NIOSH-certified chemical goggles.  
Wear chemical resistant protective gloves.  
Wear protective clothing.  
Eye wash fountains and safety showers must be easily accessible.

#### Potential health effects

##### **Primary routes of exposure**

Routes of entry for solids and liquids include eye and skin contact, ingestion and inhalation. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquified gases.

##### **Acute toxicity:**

Virtually nontoxic after a single ingestion. Virtually nontoxic after a single skin contact. Toxic by inhalation.

##### **Irritation:**

Irritating to eyes and skin.

##### **Medical conditions aggravated by overexposure:**

Data available do not indicate that there are medical conditions that are generally recognized as being aggravated by exposure to this substance/product.  
See MSDS section 11 - Toxicological information.

# Safety data sheet

## 4-tert.-Butylcyclohexyl chloroformate

Revision date : 2006/02/01  
Version: 2.0

Page: 2/7  
(30037061/MDS\_GEN\_US/EN)

### Potential environmental effects

#### **Aquatic toxicity:**

Acutely harmful for aquatic organisms.

The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

---

## 4. First-aid measures

#### **General advice:**

Remove contaminated clothing.

#### **If inhaled:**

Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary. Immediate medical attention required.

#### **If on skin:**

Wash affected areas thoroughly with soap and water. Remove contaminated clothing. Wash soiled clothing immediately. If irritation develops, seek medical attention.

#### **If in eyes:**

In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. Seek medical attention.

#### **If swallowed:**

Rinse mouth and then drink plenty of water. Induce vomiting. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Immediate medical attention required.

---

## 5. Fire-fighting measures

Flash point:	> 55 °C	Not determinable.
Autoignition:	380 °C	(DIN 51794)

#### **Suitable extinguishing media:**

foam, carbon dioxide, dry extinguishing media

#### **Unsuitable extinguishing media for safety reasons:**

water

#### **Hazards during fire-fighting:**

No particular hazards known.

#### **Protective equipment for fire-fighting:**

Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

#### **NFPA Hazard codes:**

Health : 2      Fire: 2      Reactivity: 1      Special:

# Safety data sheet

## 4-tert.-Butylcyclohexyl chloroformate

Revision date : 2006/02/01  
Version: 2.0

Page: 3/7  
(30037061/MDS\_GEN\_US/EN)

---

### 6. Accidental release measures

**Personal precautions:**

Breathing protection required. Avoid contact with the skin, eyes and clothing.

**Environmental precautions:**

Substance/product is RCRA hazardous due to its properties.

**Cleanup:**

Spills should be contained, solidified, and placed in suitable containers for disposal.

---

### 7. Handling and storage

**Handling****General advice:**

See MSDS section 10 - Stability and reactivity. See MSDS section 5 - Fire fighting measures.

**Protection against fire and explosion:**

See MSDS section 5 - Fire fighting measures.

**Storage****General advice:**

Formation of CO<sub>2</sub> and build up of pressure possible. Danger of bursting when sealed gastight. Keep container tightly closed.

**Storage stability:**

Storage temperature: ≤ 8 °C

Storage duration: 3 Months

---

### 8. Exposure controls and personal protection

**Advice on system design:**

Provide local exhaust ventilation to control vapours/mists.

**Personal protective equipment****Respiratory protection:**

Wear a NIOSH-certified (or equivalent) organic vapour/particulate respirator. Do not exceed the maximum use concentration for the respirator facepiece/cartridge combination. For emergency or non-routine, high exposure situations, use a NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied-air respirator (SAR) with escape provisions. Observe OSHA regulations for respirator use (29 CFR 1910.134).

**Hand protection:**

Chemical resistant protective gloves, Consult with glove manufacturer for testing data.

# Safety data sheet

## 4-tert.-Butylcyclohexyl chloroformate

Revision date : 2006/02/01  
Version: 2.0

Page: 4/7  
(30037061/MDS\_GEN\_US/EN)

**Eye protection:**

Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

**Body protection:**

Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

**General safety and hygiene measures:**

Wear protective clothing as necessary to prevent contact.

---

## 9. Physical and chemical properties

Form:	liquid	
Odour:	pungent	
	pungent odour	
Colour:	colourless to yellow	
pH value:		No data available.
freezing range:	-20 - -10 °C	
Boiling range:	90 - 100 °C	( 5 mbar)
Vapour pressure:	2 mbar	( 20 °C)
Partitioning coefficient	4.185	(calculated)
n-octanol/water (log Pow):		
Viscosity, dynamic:	9.69 mPa.s	( 20 °C)
Solubility in water:		hydrolyzes, slow decomposition

---

## 10. Stability and reactivity

**Substances to avoid:**

water, nucleophilic substances

**Hazardous reactions:**

Reacts with bases. Reacts with water. Reacts with amines. Exothermic reaction.

The product is chemically stable.

Risk of polymerization.

**Decomposition products:**

Hazardous decomposition products:

Hazardous decomposition products: Hydrogen chloride

**Corrosion to metals:**

Corrosive effects to metal are not anticipated.

---

## 11. Toxicological information

**Acute toxicity****Oral:**

LD50/rat: > 5,000 mg/kg

Slightly toxic to practically nontoxic.

**Inhalation:**

LC50/rat: > 0.72 - < 0.88 mg/l / 4 h(BASF-Test)

# Safety data sheet

## 4-tert.-Butylcyclohexyl chloroformate

Revision date : 2006/02/01  
Version: 2.0

Page: 5/7  
(30037061/MDS\_GEN\_US/EN)

rat: / 3 h(IRT)

No Mortality within the stated exposition time as shown in animal studies, however, deaths occurred after longer exposure.

### Dermal:

LD50/rat: > 2,000 mg/kg (BASF-Test)

The value meets the highest applied test concentration.

### Skin irritation:

rabbit: Irritant. (BASF-Test)

### Eye irritation :

rabbit: Irritating.

### Chronic toxicity

### Genetic toxicity:

The substance was not mutagenic in bacteria.

---

## 12. Ecological information

### Environmental fate and transport

#### Biodegradation:

Test method: OECD 301B; ISO 9439; 92/69/EEC, C.4-C (aerobic), activated sludge, domestic

Method of analysis: CO<sub>2</sub> formation relative to the theoretical value

Degree of elimination: 50 - 60 % (28 d)

Evaluation: Moderately/partially biodegradable.

#### Bioaccumulation:

Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is possible.

### Environmental toxicity

#### Acute and prolonged toxicity to fish:

DIN 38412 Part 15 static

golden orfe/LC50 (96 h): approx. 10 mg/l

Nominal concentration.

#### Acute toxicity to aquatic invertebrates:

OECD Guideline 202, part 1 static

Daphnia magna/EC50 (48 h): > 30.9 mg/l

The product has low solubility in the test medium. An eluate has been tested. The statement of the toxic effect relates to the analytically determined concentration.

#### Toxicity to microorganisms:

OECD Guideline 209 activated sludge, domestic/EC20 (180 min): approx. 160 mg/l

Nominal concentration.

# Safety data sheet

## 4-tert.-Butylcyclohexyl chloroformate

Revision date : 2006/02/01  
Version: 2.0

Page: 6/7  
(30037061/MDS\_GEN\_US/EN)

**Other ecotoxicological advice:**

Do not release untreated into natural waters.

### 13. Disposal considerations

**Waste disposal of substance:**

Dispose of in a RCRA-licensed facility.  
Do not discharge into waterways or sewer systems without proper authorization.  
Dispose of in accordance with national, state and local regulations.

**Container disposal:**

Empty containers with less than 1 inch of residue may be landfilled at a licensed facility. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers. If containers are not empty, they must be disposed of in a RCRA-licensed facility.

**RCRA:** D001

### 14. Transport information

**Land transport**

*USDOT*

Proper shipping name:	TERT-BUTYLCYCLOHEXYL CHLOROFORMATE
Hazard class:	6.1
ID-number:	UN 2747
Packing group:	III

**Sea transport**

*IMDG*

Proper shipping name:	TERT-BUTYLCYCLOHEXYL CHLOROFORMATE
Hazard class:	6.1
ID-number:	UN 2747
Packing group:	III
Marine pollutant:	NO

**Air transport**

*IATA/ICAO*

Proper shipping name:	TERT-BUTYLCYCLOHEXYL CHLOROFORMATE
Hazard class:	6.1
ID-number:	UN 2747
Packing group:	III

# Safety data sheet

## 4-tert.-Butylcyclohexyl chloroformate

Revision date : 2006/02/01  
Version: 2.0

Page: 7/7  
(30037061/MDS\_GEN\_US/EN)

### 15. Regulatory information

#### Federal Regulations

**Registration status:**

TSCA, US

released / listed

**OSHA hazard category:**

eye irritant

Highly toxic - inhalation, Acute target organ effects reported, Skin and/or

**CERCLA RQ**

5,000 LBS

10 LBS

**CAS Number**

7647-01-0

75-44-5

**Chemical name**

Hydrogen chloride

carbonyl chloride

**SARA hazard categories (EPCRA 311/312):** Acute

### 16. Other information

**HMIS III rating**

Health: 2

Flammability: 2

Physical hazard: 1

HMIS uses a numbering scale ranging from 0 to 4 to indicate the degree of hazard. A value of zero means that the substance possesses essentially no hazard; a rating of four indicates high hazard.

**Local contact information**

prod\_reg@basf.com

IMPORTANT: WHILE THE DESCRIPTIONS, DESIGNS, DATA AND INFORMATION CONTAINED HEREIN ARE PRESENTED IN GOOD FAITH AND BELIEVED TO BE ACCURATE, IT IS PROVIDED FOR YOUR GUIDANCE ONLY. BECAUSE MANY FACTORS MAY AFFECT PROCESSING OR APPLICATION/USE, WE RECOMMEND THAT YOU MAKE TESTS TO DETERMINE THE SUITABILITY OF A PRODUCT FOR YOUR PARTICULAR PURPOSE PRIOR TO USE. NO WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING PRODUCTS DESCRIBED OR DESIGNS, DATA OR INFORMATION SET FORTH, OR THAT THE PRODUCTS, DESIGNS, DATA OR INFORMATION MAY BE USED WITHOUT INFRINGING THE INTELLECTUAL PROPERTY RIGHTS OF OTHERS. IN NO CASE SHALL THE DESCRIPTIONS, INFORMATION, DATA OR DESIGNS PROVIDED BE CONSIDERED A PART OF OUR TERMS AND CONDITIONS OF SALE. FURTHER, YOU EXPRESSLY UNDERSTAND AND AGREE THAT THE DESCRIPTIONS, DESIGNS, DATA, AND INFORMATION FURNISHED BY BASF HEREUNDER ARE GIVEN GRATIS AND BASF ASSUMES NO OBLIGATION OR LIABILITY FOR THE DESCRIPTION, DESIGNS, DATA AND INFORMATION GIVEN OR RESULTS OBTAINED, ALL SUCH BEING GIVEN AND ACCEPTED AT YOUR RISK.

END OF DATA SHEET