

Creation Date 22-Sep-2009

Revision Date 14-Mar-2026

Revision Number 6

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1. Product identifier

**Product Description:** Boron trichloride, 1M solution in hexanes, mixed isomers  
**Cat No. :** H32833  
**Synonyms** Boron chloride in hexane.

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

**Recommended Use** Laboratory chemicals  
**Uses advised against** No Information available

### 1.3. Details of the supplier of the safety data sheet

**Company**  
 Avocado Research Chemicals Ltd.  
 (Part of Thermo Fisher Scientific)  
 Shore Road, Heysham  
 Lancashire, LA3 2XY,  
 United Kingdom  
 Office Tel: +44 (0) 1524 850506  
 Office Fax: +44 (0) 1524 850608

**E-mail address** begel.sdsdesk@thermofisher.com

### 1.4. Emergency telephone number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11  
 Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99  
**CHEMTREC** Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

**Poison Centre - Emergency information services**  
**Ireland** : National Poisons Information Centre (NPIC) -  
**01 809 2166** (8am-10pm, 7 days a week)  
**Malta** : +356 2395 2000  
**Cyprus** : +357 2240 5611

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

GHS Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

#### Physical hazards

Flammable liquids

Category 2 (H225)

#### Health hazards

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Aspiration Toxicity  
Acute oral toxicity  
Acute Inhalation Toxicity - Vapors  
Skin Corrosion/Irritation  
Reproductive Toxicity  
Specific target organ toxicity - (single exposure)  
Specific target organ toxicity - (repeated exposure)

Category 1 (H304)  
Category 2 (H300)  
Category 2 (H330)  
Category 1 B (H314)  
Category 2 (H361f)  
Category 3 (H336)  
Category 1 (H372)

## Environmental hazards

Chronic aquatic toxicity

Category 2 (H411)

Full text of Hazard Statements: see section 16

## 2.2. Label elements



Signal Word

Danger

## Hazard Statements

H225 - Highly flammable liquid and vapor  
H300 + H330 - Fatal if swallowed or if inhaled  
H304 - May be fatal if swallowed and enters airways  
H314 - Causes severe skin burns and eye damage  
H336 - May cause drowsiness or dizziness  
H361f - Suspected of damaging fertility  
H411 - Toxic to aquatic life with long lasting effects  
H372 - Causes damage to organs through prolonged or repeated exposure  
EUH014 - Reacts violently with water

## Precautionary Statements

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking  
P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting  
P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P402 + P404 - Store in a dry place. Store in a closed container

## 2.3. Other hazards

This product does not contain any known or suspected endocrine disruptors

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.2. Mixtures

| Component | CAS No | EC No | Weight % | GHS Classification - According to |
|-----------|--------|-------|----------|-----------------------------------|
|-----------|--------|-------|----------|-----------------------------------|

ALFAAH32833

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|                   |            |                   |    | GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567                                                                                                    |
|-------------------|------------|-------------------|----|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hexane            | 110-54-3   | EEC No. 203-777-6 | 88 | Flam. Liq. 2 (H225)<br>Asp. Tox. 1 (H304)<br>Skin Irrit. 2 (H315)<br>STOT SE 3 (H336)<br>Repr. 2 (H361f)<br>STOT RE 1 (H372)<br>Aquatic Chronic 2 (H411) |
| Boron trichloride | 10294-34-5 | EEC No. 233-658-4 | 12 | Acute Tox. 2 (H300)<br>Acute Tox. 2 (H330)<br>Skin Corr. 1B (H314)<br>Eye Dam. 1 (H318)<br>Press. Gas (H280)<br>EUH014                                   |

Full text of Hazard Statements: see section 16

## SECTION 4: FIRST AID MEASURES

### 4.1. Description of first aid measures

|                                           |                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General Advice</b>                     | Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.                                                                                                                                                                                                                                                                                   |
| <b>Eye Contact</b>                        | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.                                                                                                                                                                                          |
| <b>Skin Contact</b>                       | Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.                                                                                                                                                                                                                                                                         |
| <b>Ingestion</b>                          | Do NOT induce vomiting. Call a physician or poison control center immediately. If vomiting occurs naturally, have victim lean forward.                                                                                                                                                                                                                                              |
| <b>Inhalation</b>                         | If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Remove to fresh air. Immediate medical attention is required. Risk of serious damage to the lungs (by aspiration). |
| <b>Self-Protection of the First Aider</b> | Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.                                                                                                                                                                                                                                    |

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

Causes burns by all exposure routes. Difficulty in breathing. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

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

|                           |                                                 |
|---------------------------|-------------------------------------------------|
| <b>Notes to Physician</b> | Treat symptomatically. Symptoms may be delayed. |
|---------------------------|-------------------------------------------------|

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## SECTION 5: FIREFIGHTING MEASURES

### 5.1. Extinguishing media

#### **Suitable Extinguishing Media**

CO<sub>2</sub>, dry chemical, dry sand, alcohol-resistant foam. Water mist may be used to cool closed containers.

#### **Extinguishing media which must not be used for safety reasons**

Water.

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

Thermal decomposition can lead to release of irritating gases and vapors. The product causes burns of eyes, skin and mucous membranes. Reacts violently with water. Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

#### **Hazardous Combustion Products**

Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>), Oxides of boron, Hydrogen chloride gas.

### 5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

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

Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Remove all sources of ignition. Take precautionary measures against static discharges.

### 6.2. Environmental precautions

Do not flush into surface water or sanitary sewer system.

### 6.3. Methods and material for containment and cleaning up

Keep in suitable, closed containers for disposal. Soak up with inert absorbent material. Do not expose spill to water. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

### 6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

## SECTION 7: HANDLING AND STORAGE

### 7.1. Precautions for safe handling

Do not get in eyes, on skin, or on clothing. Wear personal protective equipment/face protection. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance. Do not allow contact with water. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges.

#### **Hygiene Measures**

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Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

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

Keep refrigerated. Keep container tightly closed. Keep away from heat, sparks and flame. Keep away from water or moist air.

Technical Rules for Hazardous Substances (TRGS) 510 Class 3  
Storage Class (LGK) (Germany)

## 7.3. Specific end use(s)

Use in laboratories

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

#### Exposure limits

List source(s): **EU** - Commission Directive (EU) 2019/1831 of 24 October 2019 establishing a fifth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC and amending Commission Directive 2000/39/EC **UK** - EH40/2005 Work Exposure Limits, Fourth edition. Published 2020. **IRE** - 2021 Code of Practice for the Chemical Agents Regulations, Schedule 1. Published by the Health and Safety Authority

| Component | The United Kingdom                                                                      | European Union                                       | Ireland                                                                                                                   |
|-----------|-----------------------------------------------------------------------------------------|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Hexane    | TWA: 72 mg/m <sup>3</sup><br>TWA: 20 ppm<br>STEL: 60 ppm<br>STEL: 216 mg/m <sup>3</sup> | TWA: 20 ppm (8hr)<br>TWA: 72 mg/m <sup>3</sup> (8hr) | TWA: 20 ppm 8 hr.<br>TWA: 72 mg/m <sup>3</sup> 8 hr.<br>STEL: 60 ppm 15 min<br>STEL: 216 mg/m <sup>3</sup> 15 min<br>Skin |

#### Biological limit values

List source(s):

#### Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)

See table for values

| Component                 | Acute effects local (Dermal) | Acute effects systemic (Dermal) | Chronic effects local (Dermal) | Chronic effects systemic (Dermal) |
|---------------------------|------------------------------|---------------------------------|--------------------------------|-----------------------------------|
| Hexane<br>110-54-3 ( 88 ) |                              |                                 |                                | DNEL = 11mg/kg<br>bw/day          |

| Component                 | Acute effects local (Inhalation) | Acute effects systemic (Inhalation) | Chronic effects local (Inhalation) | Chronic effects systemic (Inhalation) |
|---------------------------|----------------------------------|-------------------------------------|------------------------------------|---------------------------------------|
| Hexane<br>110-54-3 ( 88 ) |                                  |                                     |                                    | DNEL = 75mg/m <sup>3</sup>            |

#### Predicted No Effect Concentration (PNEC)

See values below.

| Component                              | Fresh water   | Fresh water sediment          | Water Intermittent | Microorganisms in sewage treatment | Soil (Agriculture)        |
|----------------------------------------|---------------|-------------------------------|--------------------|------------------------------------|---------------------------|
| Boron trichloride<br>10294-34-5 ( 12 ) | PNEC = 39µg/L | PNEC = 39µg/kg<br>sediment dw | PNEC = 48µg/L      | PNEC = 39µg/L                      | PNEC = 11µg/kg<br>soil dw |

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| Component                              | Marine water  | Marine water sediment         | Marine water intermittent | Food chain | Air                        |
|----------------------------------------|---------------|-------------------------------|---------------------------|------------|----------------------------|
| Boron trichloride<br>10294-34-5 ( 12 ) | PNEC = 39µg/L | PNEC = 39µg/kg<br>sediment dw |                           |            | PNEC = 16mg/m <sup>3</sup> |

## 8.2. Exposure controls

### Engineering Measures

Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting equipment.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

### Personal protective equipment

**Eye Protection** Goggles (European standard - EN 166)

**Hand Protection** Protective gloves

| Glove material              | Breakthrough time                    | Glove thickness | EU standard | Glove comments        |
|-----------------------------|--------------------------------------|-----------------|-------------|-----------------------|
| Nitrile rubber<br>Viton (R) | See manufacturers<br>recommendations | -               | EN 374      | (minimum requirement) |

**Skin and body protection** Long sleeved clothing.

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

**Respiratory Protection** When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

**Large scale/emergency use** Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced  
**Recommended Filter type:** Organic gases and vapours filter Type A Brown conforming to EN14387

**Small scale/Laboratory use** Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.  
**Recommended half mask:-** Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141  
When RPE is used a face piece Fit Test should be conducted

**Environmental exposure controls** Prevent product from entering drains. Do not allow material to contaminate ground water system.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties

**Physical State** Liquid

**Appearance** Clear

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|                                         |                          |                                   |
|-----------------------------------------|--------------------------|-----------------------------------|
| Odor                                    | No information available |                                   |
| Odor Threshold                          | No data available        |                                   |
| Melting Point/Range                     | No data available        |                                   |
| Softening Point                         | No data available        |                                   |
| Boiling Point/Range                     | No information available |                                   |
| Flammability (liquid)                   | Highly flammable         | On basis of test data             |
| Flammability (solid,gas)                | Not applicable           | Liquid                            |
| Explosion Limits                        | No data available        |                                   |
| Flash Point                             | -17 °C / 1.4 °F          | Method - No information available |
| Autoignition Temperature                | No data available        |                                   |
| Decomposition Temperature               | No data available        |                                   |
| pH                                      | No information available |                                   |
| Viscosity                               | No data available        |                                   |
| Water Solubility                        | Water reactive           |                                   |
| Solubility in other solvents            | No information available |                                   |
| Partition Coefficient (n-octanol/water) |                          |                                   |
| Component                               | log Pow                  |                                   |
| Hexane                                  | 4.11                     |                                   |
| Vapor Pressure                          | 1128 mmHg @ 20 °C        |                                   |
| Density / Specific Gravity              | 0.738                    |                                   |
| Bulk Density                            | Not applicable           | Liquid                            |
| Vapor Density                           | No information available | (Air = 1.0)                       |
| Particle characteristics                | Not applicable (liquid)  |                                   |

## 9.2. Other information

**Explosive Properties** Vapors may form explosive mixtures with air

## SECTION 10: STABILITY AND REACTIVITY

### 10.1. Reactivity

None known, based on information available

### 10.2. Chemical stability

Reacts violently with water, liberating extremely flammable gases. Moisture sensitive.

### 10.3. Possibility of hazardous reactions

#### Hazardous Polymerization

Hazardous polymerization does not occur.

#### Hazardous Reactions

None under normal processing. Reacts violently with water.

### 10.4. Conditions to avoid

Excess heat. Incompatible products. Exposure to moist air or water. Exposure to moisture. Keep away from open flames, hot surfaces and sources of ignition.

### 10.5. Incompatible materials

Acids. Bases. Water. Strong oxidizing agents. Alcohols. Metals.

### 10.6. Hazardous decomposition products

Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). Oxides of boron. Hydrogen chloride gas.

## SECTION 11: TOXICOLOGICAL INFORMATION

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

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## Product Information

### (a) acute toxicity;

Oral

Category 2

Dermal

Based on available data, the classification criteria are not met

Inhalation

Category 2

## Toxicology data for the components

| Component         | LD50 Oral              | LD50 Dermal                  | LC50 Inhalation              |
|-------------------|------------------------|------------------------------|------------------------------|
| Hexane            | LD50 = 25 g/kg ( Rat ) | LD50 = 3000 mg/kg ( Rabbit ) | LC50 = 48000 ppm ( Rat ) 4 h |
| Boron trichloride | -                      | -                            | LC50 = 2541 ppm ( Rat ) 1 h  |

### (b) skin corrosion/irritation;

Category 1 B

### (c) serious eye damage/irritation;

No data available

### (d) respiratory or skin sensitization;

Respiratory

No data available

Skin

No data available

### (e) germ cell mutagenicity;

No data available

### (f) carcinogenicity;

No data available

There are no known carcinogenic chemicals in this product.

### (g) reproductive toxicity;

Reproductive Effects

Category 2

may adversely affect the male reproductive system.

### (h) STOT-single exposure;

Category 3

Results / Target organs

Central nervous system (CNS).

### (i) STOT-repeated exposure;

Category 1

Target Organs

Central nervous system (CNS), Peripheral Nervous System (PNS).

### (j) aspiration hazard;

Category 1

### Symptoms / effects, both acute and delayed

Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation.

## 11.2. Information on other hazards

### Endocrine Disrupting Properties

Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

## SECTION 12: ECOLOGICAL INFORMATION



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## 12.1. Toxicity

### Ecotoxicity effects

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

| Component | Freshwater Fish                                               | Water Flea          | Freshwater Algae |
|-----------|---------------------------------------------------------------|---------------------|------------------|
| Hexane    | LC50: 2.1 - 2.98 mg/L, 96h flow-through (Pimephales promelas) | EC50: 3.87 mg/L/48h |                  |

## 12.2. Persistence and degradability

### Persistence

Persistence is unlikely, Reacts violently with water.

## 12.3. Bioaccumulative potential

Bioaccumulation is unlikely

| Component | log Pow | Bioconcentration factor (BCF) |
|-----------|---------|-------------------------------|
| Hexane    | 4.11    | No data available             |

## 12.4. Mobility in soil

The product contains volatile organic compounds (VOC) which will evaporate easily from all surfaces. Will likely be mobile in the environment due to its volatility. Disperses rapidly in air

## 12.5. Results of PBT and vPvB assessment

No data available for assessment.

## 12.6. Endocrine disrupting properties

### Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

## 12.7. Other adverse effects

### Persistent Organic Pollutant Ozone Depletion Potential

This product does not contain any known or suspected substance  
This product does not contain any known or suspected substance

## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1. Waste treatment methods

#### Waste from Residues/Unused Products

Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

#### Contaminated Packaging

Dispose of this container to hazardous or special waste collection point. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and empty container away from heat and sources of ignition.

#### European Waste Catalogue (EWC)

According to the European Waste Catalog, Waste Codes are not product specific, but application specific.

#### Other Information

Waste codes should be assigned by the user based on the application for which the product was used. Can be landfilled or incinerated, when in compliance with local regulations. Do not empty into drains. Do not let this chemical enter the environment.

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## SECTION 14: TRANSPORT INFORMATION

### IMDG/IMO

**14.1. UN number** UN3286  
**14.2. UN proper shipping name** Flammable liquid, toxic, corrosive, n.o.s.  
Technical Shipping Name (BORON TRICHLORIDE, HEXANE)  
**14.3. Transport hazard class(es)** 3  
Subsidiary Hazard Class 6.1, 8  
**14.4. Packing group** I

### ADR

**14.1. UN number** UN3286  
**14.2. UN proper shipping name** Flammable liquid, toxic, corrosive, n.o.s.  
Technical Shipping Name (BORON TRICHLORIDE, HEXANE)  
**14.3. Transport hazard class(es)** 3  
Subsidiary Hazard Class 6.1, 8  
**14.4. Packing group** I

### IATA

**14.1. UN number** UN3286  
**14.2. UN proper shipping name** FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S.\*  
Technical Shipping Name (BORON TRICHLORIDE, HEXANE)  
**14.3. Transport hazard class(es)** 3  
Subsidiary Hazard Class 6.1, 8  
**14.4. Packing group** I

**14.5. Environmental hazards** Dangerous for the environment  
Product is a marine pollutant according to the criteria set by IMDG/IMO

**14.6. Special precautions for user** No special precautions required.

**14.7. Maritime transport in bulk according to IMO instruments** Not applicable, packaged goods

## SECTION 15: REGULATORY INFORMATION

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

#### International Inventories

Europe (EINECS/ELINCS/NLP), China (IECSC), Taiwan (TCSI), Korea (KECL), Japan (ENCS), Japan (ISHL), Canada (DSL/NDSL), Australia (AICS), New Zealand (NZIoC), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

| Component         | CAS No     | EINECS    | ELINCS    | NLP | IECSC | TCSI | KECL     | ENCS | ISHL |
|-------------------|------------|-----------|-----------|-----|-------|------|----------|------|------|
| Hexane            | 110-54-3   | 203-777-6 | 438-390-3 | -   | X     | X    | KE-18626 | X    | X    |
| Boron trichloride | 10294-34-5 | 233-658-4 | -         | -   | X     | X    | KE-03539 | X    | X    |

| Component         | CAS No     | TSCA | TSCA Inventory notification - Active-Inactive | DSL | NDSL | AICS | NZIoC | PICCS |
|-------------------|------------|------|-----------------------------------------------|-----|------|------|-------|-------|
| Hexane            | 110-54-3   | X    | ACTIVE                                        | X   | -    | X    | X     | X     |
| Boron trichloride | 10294-34-5 | X    | ACTIVE                                        | X   | -    | X    | X     | X     |

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Legend: X - Listed '-' - Not Listed

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

## Authorisation/Restrictions according to EU REACH

| Component         | CAS No     | REACH (1907/2006) - Annex XIV - Substances Subject to Authorization | REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances | REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)                    |
|-------------------|------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Hexane            | 110-54-3   | -                                                                   | Use restricted. See entry 75.<br>(see link for restriction details)           | SVHC candidate list - EC 203-777-6 - Specific target organ toxicity after repeated exposure Article 57(f) - human health |
| Boron trichloride | 10294-34-5 | -                                                                   | Use restricted. See entry 75.<br>(see link for restriction details)           | -                                                                                                                        |

### REACH links

<https://echa.europa.eu/substances-restricted-under-reach>

<https://echa.europa.eu/candidate-list-table>

### Seveso III Directive (2012/18/EC)

| Component         | CAS No     | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements |
|-------------------|------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Hexane            | 110-54-3   | Not applicable                                                                            | Not applicable                                                                           |
| Boron trichloride | 10294-34-5 | Not applicable                                                                            | Not applicable                                                                           |

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

| Component         | CAS No     | OECD HPV       | Restriction of Hazardous Substances (RoHS) | Basel Convention (Hazardous Waste) |
|-------------------|------------|----------------|--------------------------------------------|------------------------------------|
| Hexane            | 110-54-3   | Listed         | Not applicable                             | Annex I - Y42                      |
| Boron trichloride | 10294-34-5 | Not applicable | Not applicable                             | Not applicable                     |

### Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals

Not applicable

### Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?

Not applicable

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work .

Take note of Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values

Take note of Directive 94/33/EC on the protection of young people at work

Take note of Dir 92/85/EC on the protection of pregnant and breastfeeding women at work

## National Regulations

**UK** - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

### WGK Classification

Water endangering class = 2 (self classification)

| Component | Germany - Water Classification (AwSV) | Germany - TA-Luft Class |
|-----------|---------------------------------------|-------------------------|
| Hexane    | WGK3                                  |                         |

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| Component | France - INRS (Tables of occupational diseases)            |
|-----------|------------------------------------------------------------|
| Hexane    | Tableaux des maladies professionnelles (TMP) - RG 59,RG 84 |

| Component                 | Switzerland - Ordinance on the Reduction of Risk from handling of hazardous substances preparation (SR 814.81) | Switzerland - Ordinance on Incentive Taxes on Volatile Organic Compounds (OVOC) | Switzerland - Ordinance of the Rotterdam Convention on the Prior Informed Consent Procedure |
|---------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Hexane<br>110-54-3 ( 88 ) | Prohibited and Restricted Substances                                                                           | Group I                                                                         |                                                                                             |

## 15.2. Chemical safety assessment

Chemical Safety Assessment/Reports (CSA/CSR) are not required for mixtures

## SECTION 16: OTHER INFORMATION

### Full text of H-Statements referred to under sections 2 and 3

H225 - Highly flammable liquid and vapor  
H300 - Fatal if swallowed  
H304 - May be fatal if swallowed and enters airways  
H314 - Causes severe skin burns and eye damage  
H315 - Causes skin irritation  
H330 - Fatal if inhaled  
H336 - May cause drowsiness or dizziness  
H361f - Suspected of damaging fertility  
H411 - Toxic to aquatic life with long lasting effects  
H372 - Causes damage to organs through prolonged or repeated exposure

### Legend

**CAS** - Chemical Abstracts Service

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances

**IECSC** - Chinese Inventory of Existing Chemical Substances

**KECL** - Korean Existing and Evaluated Chemical Substances

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory

**DSL/NDL** - Canadian Domestic Substances List/Non-Domestic Substances List

**ENCS** - Japanese Existing and New Chemical Substances

**AICS** - Australian Inventory of Chemical Substances

**NZIoC** - New Zealand Inventory of Chemicals

**WEL** - Workplace Exposure Limit

**ACGIH** - American Conference of Governmental Industrial Hygienists

**DNEL** - Derived No Effect Level

**RPE** - Respiratory Protective Equipment

**LC50** - Lethal Concentration 50%

**NOEC** - No Observed Effect Concentration

**PBT** - Persistent, Bioaccumulative, Toxic

**TWA** - Time Weighted Average

**IARC** - International Agency for Research on Cancer Predicted No Effect Concentration (PNEC)

**LD50** - Lethal Dose 50%

**EC50** - Effective Concentration 50%

**POW** - Partition coefficient Octanol:Water

**vPvB** - very Persistent, very Bioaccumulative

**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road

**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code

**OECD** - Organisation for Economic Co-operation and Development

**BCF** - Bioconcentration factor

**Key literature references and sources for data**

<https://echa.europa.eu/information-on-chemicals>

Suppliers safety data sheet, Chemadviser - LOLI, Merck index, RTECS

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association

**MARPOL** - International Convention for the Prevention of Pollution from Ships

**ATE** - Acute Toxicity Estimate

**VOC** - (Volatile Organic Compound)

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

# SAFETY DATA SHEET

Boron trichloride, 1M solution in hexanes, mixed isomers

Revision Date 14-Mar-2026

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|                       |                       |
|-----------------------|-----------------------|
| Physical hazards      | On basis of test data |
| Health Hazards        | Calculation method    |
| Environmental hazards | Calculation method    |

## Training Advice

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

First aid for chemical exposure, including the use of eye wash and safety showers.

Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.

Chemical incident response training.

|                  |                                             |
|------------------|---------------------------------------------|
| Prepared By      | Health, Safety and Environmental Department |
| Creation Date    | 22-Sep-2009                                 |
| Revision Date    | 14-Mar-2026                                 |
| Revision Summary | SDS sections updated, 2, 3, 15.             |

**This safety data sheet complies with Regulation UK SI 2019/758 and UK SI 2020/1577 as amended.**

## Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of Safety Data Sheet**