

Safety Data Sheet

#90028958 · Full 16-section SDS

According to Regulation (EC) No 1907/2006

According to Regulation (EC) No 2020/878

PRODUCT	CAS NUMBER	FORMULA	VERSION	REVISION DATE
Borane tetrahydrofuran complex solution 1.0 M in THF	14044-65-6	C4H11BO	10	15 Sep 2026

SECTION 1

Identification

1.1 Product identifier

Product name	Borane tetrahydrofuran complex solution 1.0 M in THF
CAS number	14044-65-6
EC / EINECS number	237-881-8
UFI code	8K22-AFYV-6C8K-HHKN
Chemical formula	C4H11BO
Molecular weight	85.94
SMILES	[H-][B+3]([H-])([H-])O1CCCC1

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

For analytical purposes, scientific research and development; professional use only; not for human consumption or veterinary purposes.

1.3 Details of the supplier of the safety data sheet

Molekula Limited
1 Millennium Way, Newton Aycliffe
Durham, DL5 6JW, United Kingdom
info@molekula.com · +44 (0) 3302 000333

1.4 Emergency telephone number

0344 892 0111 — National Poisons Information Service (NPIS) (United Kingdom — for healthcare professionals (via TOXBASE))

SECTION 2

Hazard identification

2.1 Classification of the substance or mixture

Flam. Liq. 2; H225
Water-react. 1; H260
Acute Tox. 4; H302
Eye Dam. 1; H318
Acute Tox. 4; H332
STOT SE 3; H335
STOT SE 3; H336
Carc. 2; H351

2.2 Label elements

**DANGER**

CODE	HAZARD STATEMENT
EUH014	Reacts violently with water
EUH018	In use may form flammable/explosive vapour-air mixture
EUH019	May form explosive peroxides
H225	Highly flammable liquid and vapour
H260	In contact with water releases flammable gases which may ignite spontaneously
H302	Harmful if swallowed
H318	Causes serious eye damage
H332	Harmful if inhaled
H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness
H351	Suspected of causing cancer
CODE	PRECAUTIONARY STATEMENT
P210	Keep away from heat/sparks/open flames/hot surfaces - No smoking
P223	Keep away from any possible contact with water, because of violent reaction and possible flash fire
P231+P232	Handle under inert gas. Protect from moisture
P260	Do not breathe dust/fume/gas/mist/vapours/spray
P280	Wear protective gloves/protective clothing/eye protection/face protection
P302+P334	IF ON SKIN: Immerse in cool water/wrap in wet bandages

2.3 Other hazards

This substance/mixture does not meet the PBT or vPvB criteria of REACH regulation, annex XIII.

SECTION 3

Composition / information on ingredients**3.1 Substances**

Name	Borane tetrahydrofuran complex solution 1.0 M in THF
CAS number	14044-65-6
EC number	237-881-8
Concentration / purity	90-95% Tetrahydrofuran (CAS: 109-99-9) 5-10% Borane tetrahydrofuran complex (CAS: 14044-65-6)
Classification according to Regulation (EC) No 1272/2008	Flam. Liq. 2; H225 Water-react. 1; H260 Acute Tox. 4; H302 Eye Dam. 1; H318 Acute Tox. 4; H332 STOT SE 3; H335 STOT SE 3; H336 Carc. 2; H351
Hazard statements	EUH014, EUH018, EUH019, H225, H260, H302, H318, H332, H335, H336, H351
Acute toxicity estimate (ATE)	<i>No data available</i>
Impurities / stabilising additives	None

SECTION 4

First-aid measures**4.1 Description of first aid measures**

Inhalation	Remove victim to fresh air, keep at rest; give oxygen or artificial respiration if breathing difficulties persist. Seek medical advice.
Skin contact	Remove contaminated clothing (unless stuck to skin), wash immediately with plenty of water. Consult a doctor if irritation persists.
Eye contact	Rinse immediately with plenty of water for at least 15 minutes. Remove contact lenses if safe. Seek medical advice if irritation persists.
Ingestion	Rinse mouth with water. Do not induce vomiting. Seek immediate medical advice.

Get medical attention if any discomfort continues. Show this Safety Data Sheet (SDS) to medical personnel. First aiders/ medical personnel need to protect themselves.

4.2 Most important symptoms and effects, both acute and delayed

Not applicable

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5

Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media Dry powder, sand.

Unsuitable extinguishing media Water jet. Foam. Water

5.2 Special hazards arising from the substance or mixture

Flammable liquid and vapour; reacts violently with water; may form flammable/explosive vapour-air mixtures and explosive peroxides; dry residue is explosive.

Hazardous decomposition products- Boranes, Carbon oxides

5.3 Advice for firefighters

Keep container closed, away from heat/sparks/flames. Prevent firefighting water from entering the environment. Use self-contained breathing apparatus and protective clothing.

SECTION 6

Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Ventilate area thoroughly; wear protective gloves/clothing/eye protection. Evacuate unnecessary personnel; mark contaminated area. Avoid contact with skin/eyes/clothing.

6.2 Environmental precautions

Prevent entry into sewers/public waters; notify authorities if contamination occurs.

6.3 Methods and material for containment and cleaning up

Contain spill with bunding; soak up with inert solids (e.g., clay, diatomaceous earth). Stop release if safe.

6.4 Reference to other sections

For specific precautions, see Section 8 and Section 13.

SECTION 7

Handling & storage

7.1 Precautions for safe handling

Avoid formation of vapours; avoid contact with skin, eyes, and clothing; handle under inert gas; ensure suitable ventilation; do not handle in confined spaces; take off contaminated clothing immediately and wash before reuse; wash hands before eating, drinking, or smoking.

7.2 Conditions for safe storage, including any incompatibilities

Storage temperature 2 to 8 °C

Conditions for safe storage (incompatibilities) Keep in original container in a cool, well-ventilated place away from heat sources, direct sunlight, moisture, and water; store under inert gas; prevent moisture contact; keep away from combustible materials.

7.3 Specific end use(s)

See Section 1.2.

SECTION 8

Exposure controls / personal protection**8.1 Control parameters**

Occupational exposure limits (OEL / WEL) EH40/2005 Work Exposure Limits, Fourth edition. Published 2020.

STEL: 100 ppm 15 min
 STEL: 300 mg/m³ 15 min
 TWA: 50 ppm 8 hr
 TWA: 150 mg/m³ 8 hr
 Skin

DNEC/PNEC data

DNEC (Tetrahydrofuran):
 Chronic effects systemic (Dermal)- 12.6 mg/kg bw/day
 Acute effects local (Inhalation)- 300 mg/m³
 Acute effects systemic (Inhalation)- 96 mg/m³
 Chronic effects local (Inhalation)- 150 mg/m³
 Chronic effects systemic (Inhalation)- 72.4 mg/m³

PNEC (Tetrahydrofuran):
 Fresh water- 4.32 mg/L
 Fresh water sediment- 23.3 mg/kg sediment dw
 Water Intermittent- 21.6 mg/L
 Microorganisms in sewage treatment- 4.6 mg/L
 Soil (Agriculture)- 2.13 mg/kg soil dw
 Marine water- 0.432 mg/L
 Marine water sediment- 2.33 mg/kg sediment dw
 Food chain- 67 mg/kg food

8.2 Exposure controls**Eye / face protection**

Safety glasses
 Wear eye/face protection as recommended. All eye/face protection should comply with EN ISO 16321-1:2022.

Skin / hand protection

Gloves (Splash): Butyl Rubber, 0.3mm (10 mins)

Respiratory protection

Full-face respirator
 Keep self-contained breathing apparatus readily available for emergency use. Provide adequate ventilation. If ventilation is insufficient, suitable respiratory protection must be provided. Respiratory equipment: Reusable Air-Purifying Respirator (APR). Filter type: ABEK. Standard: EN 14387.

Other protection

No data available

Environmental exposure controls

No data available

SECTION 9

Physical & chemical properties**9.1 Information on basic physical and chemical properties****Appearance / physical state**

Liquid
DERIVED FROM: LITERATURE

Colour

Colourless
DERIVED FROM: LITERATURE

Odour	Pungent DERIVED FROM: LITERATURE
Melting / freezing point	-108°C DERIVED FROM: LITERATURE
Boiling point	65.5 - 66.5 °C DERIVED FROM: LITERATURE
Flammability	No data available
Lower and upper explosion limit	No data available
Flash point	-22 °C DERIVED FROM: LITERATURE
Auto-ignition temperature	>103°C DERIVED FROM: LITERATURE
Decomposition temperature	No data available
pH	Not applicable
Acidity	Neutral DERIVED FROM: LITERATURE
Kinematic viscosity	No data available
Solubility	Not applicable
Partition coefficient n-octanol/water (log value)	Not applicable
Vapour pressure	Not applicable
Density (g/mL)	0.898 g/mL DERIVED FROM: LITERATURE
Relative vapour density	No data available
Particle characteristics	No data available

9.2 Other information

No data available

SECTION 10

Stability & reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

Flammable liquid and vapour; may form flammable/explosive vapour-air mixtures; may form explosive peroxides.

Stable under the prescribed storage conditions

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

Heat, sparks, open flames, sunlight, moisture, water, humidity.

10.5 Incompatible materials

Strong oxidizing agents, sources of ignition, moisture, water.

10.6 Hazardous decomposition products

Thermal decomposition generates flammable gases. See section 5

SECTION 11

Toxicological information

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

Acute toxicity (LD50 / LC50)	Information on hazard classes as defined in Regulation (EC) No 1272/2008 Tetrahydrofuran- LD50 Oral - Rat - male and female - 1,650 mg/kg Tetrahydrofuran- LC50 Inhalation - Rat - male and female - 6 h - > 14.7 mg/l - vapour Borane tetrahydrofuran complex- LD50 Oral - Rat - female - > 500 - < 2,000 mg/kg Ref: External SDS
Skin corrosion / irritation	Not classified
Eye corrosion / irritation	Causes serious eye damage.
Respiratory / skin sensitisation	Not classified
Carcinogenicity	Suspected of causing cancer.
Mutagenicity	Not classified
Reproductive toxicity	Not classified
STOT (single / repeated exposure)	May cause respiratory irritation (single exposure).
Aspiration hazard	Not classified

11.2 Information on other hazards

Not classified

SECTION 12

Ecological information

12.1 Toxicity

Tetrahydrofuran:

flow-through test LC50 - Pimephales promelas (fathead minnow) - 2,160 mg/l - 96 h

static test EC50 - Daphnia magna (Water flea) - 3,485 mg/l - 48 h

flow-through test NOEC - Pimephales promelas (fathead minnow) - 216 mg/l - 33 d

Ref: External SDS

12.2 Persistence and degradability

Not applicable

12.3 Bioaccumulative potential

Not applicable

12.4 Mobility in soil

No additional information available

12.5 Results of PBT and vPvB assessment

Not applicable

12.6 Endocrine disrupting properties

See Section 11.2.

12.7 Other adverse effects

No data available

SECTION 13

Disposal considerations

13.1 Waste treatment methods

Dispose in accordance with local/national regulations; handle empty containers with care (residual vapors flammable). Avoid environmental release.

SECTION 14

Transport information

14.1 UN number or ID number

UN3399

14.2 UN proper shipping name

ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE

14.3 Transport hazard class(es)

4.3 (3)



14.4 Packing group

I

14.5 Environmental hazards

Not a marine pollutant

14.6 Special precautions for user

Special precautions for user	Handle in accordance with good industrial hygiene and safety practice
Transport category	0
Tunnel code	(B/E)
Packing instruction (ADR)	P402
Packing instruction (IMDG)	P402

14.7 Maritime transport in bulk according to IMO instruments

No data available

SECTION 15

Regulatory information

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

Substance-specific regulations (e.g. licences) *No data available*

REACH code Y110

ECHA notification *Not applicable*

15.2 Chemical safety assessment

Not required

SECTION 16

Other information

Revision notes / other information

Replaces previous SDS ver. 1. Published 24th September 2019
Hazard classification and labelling according to Regulation (EC) 1272/2008
All eye/face protection should comply with EN ISO 16321-1:2022
Respiratory equipment: Reusable air-purifying respirator (APR)
Filter Type: ABEK
Standard: EN 14387
National Regulations:
-Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances
Other regulations, limitations and legal regulations:
-Directive 94/33/EC- The protection of young people at work.

This Safety Data Sheet was generated automatically from the data Molekula holds against this product, in the 16-section GHS/CLP format. Fields shown as "No data available" carry no recorded value; fields shown as "Not applicable" were assessed as not relevant to this substance. For queries, contact Molekula at info@molekula.com.