

ASHLAND®		Page: 1 of 15
		Revision Date: 03.07.2013
SAFETY DATA SHEET		Print Date: 30.09.2013
TETRAHYDROFURAN 250 PPM BHT		MSDS Number: R0718323 Version: 1.1
832120		

Conforms to EU Regulation 1907/2006/EC as amended. - SDSCLP_GB

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name : TETRAHYDROFURAN 250 PPM BHT

Registration number : 01-2119444314-46-0010

Substance name : tetrahydrofuran

Substance No.

Index-No. : 603-025-00-0

EC-No. : 203-726-8

CAS-No. : 109-99-9

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

Use of the Substance/Mixture : Laboratory chemicals
Solvent.
Corrosion inhibitor.
Coatings

1.3 Details of the supplier of the safety data sheet Ashland P.O. Box 8619 NL3009 AP, Rotterdam Netherlands EUSMT@ashland.com	1.4 Emergency telephone number 00-800-274-5263-3/001-606-329-5701 , or contact your local emergency telephone number at 112 Product Information +31 10 497 5000 (in the Netherlands), or contact your local CSR contact person
---	--

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Flammable liquids, Category 2

H225: Highly flammable liquid and vapour.

ASHLAND®		Page: 2 of 15
SAFETY DATA SHEET		Revision Date: 03.07.2013
TETRAHYDROFURAN 250 PPM BHT		Print Date: 30.09.2013
832120		MSDS Number: R0718323 Version: 1.1

Acute toxicity, Category 4
 Eye irritation, Category 2
 Carcinogenicity, Category 2
 Specific target organ toxicity - single exposure, Category 3, Respiratory system

H302: Harmful if swallowed.
 H319: Causes serious eye irritation.
 H351: Suspected of causing cancer.
 H335: May cause respiratory irritation.

Classification (67/548/EEC, 1999/45/EC)

Highly flammable

R11: Highly flammable.
 R19: May form explosive peroxides.
 R40: Limited evidence of a carcinogenic effect.
 R22: Harmful if swallowed.
 R36/37: Irritating to eyes and respiratory system.

Carcinogenic Category 3
 Harmful
 Irritant

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



Signal word : Danger

Hazard statements : H225 Highly flammable liquid and vapour.
 H302 Harmful if swallowed.
 H319 Causes serious eye irritation.
 H335 May cause respiratory irritation.
 H351 Suspected of causing cancer.

Precautionary statements : **Prevention:**
 P201 Obtain special instructions before use.
 P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
 P233 Keep container tightly closed.
 P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
 P281 Use personal protective equipment as required.

Response:
 P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Hazardous components which must be listed on the label:
 109-99-9 tetrahydrofuran

Additional Labelling:

ASHLAND®		Page: 3 of 15
		Revision Date: 03.07.2013
SAFETY DATA SHEET		Print Date: 30.09.2013
TETRAHYDROFURAN 250 PPM BHT		MSDS Number: R0718323 Version: 1.1
832120		

EUH019 May form explosive peroxides.

2.3 Other hazards

Assessment : PBT substance , vPvB substance - not determined

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical Name	CAS-No. EINECS-No. / ELINCS No.	Concentration [%]
tetrahydrofuran	109-99-9 203-726-8	>= 90 - <= 100

SECTION 4: First aid measures

4.1 Description of first aid measures

- General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
- If inhaled : Move to fresh air.
If symptoms persist, call a physician.
In case of shortness of breath, give oxygen.
- In case of skin contact : Take off contaminated clothing and shoes immediately.
Wash off immediately with plenty of water.
Wash contaminated clothing before re-use.
If skin irritation persists, call a physician.
- In case of eye contact : Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Remove contact lenses.
- If swallowed : Do not induce vomiting without medical advice.
Never give anything by mouth to an unconscious person.
Consult a physician if necessary.

4.2 Most important symptoms and effects, both acute and delayed

- Symptoms : Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include:
stomach or intestinal upset (nausea, vomiting, diarrhea)
irritation (nose, throat, airways)

ASHLAND®		Page: 4 of 15
		Revision Date: 03.07.2013
SAFETY DATA SHEET		Print Date: 30.09.2013
TETRAHYDROFURAN 250 PPM BHT		MSDS Number: R0718323 Version: 1.1
832120		

central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness)

Risks : no data available

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : no data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : ABC powder
Carbon dioxide (CO₂)
Dry chemical
Water spray

Unsuitable extinguishing media : Halons

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : carbon dioxide and carbon monoxide
Hydrocarbons

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

Further information : Use water spray to cool unopened containers.
Prevent fire extinguishing water from contaminating surface water or the ground water system.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
For safety reasons in case of fire, cans should be stored separately in closed containments.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Persons not wearing protective equipment should be excluded

ASHLAND®		Page: 5 of 15
		Revision Date: 03.07.2013
SAFETY DATA SHEET		Print Date: 30.09.2013
TETRAHYDROFURAN 250 PPM BHT		MSDS Number: R0718323 Version: 1.1
832120		

from area of spill until clean-up has been completed.
 Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
 Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks).
 Pay attention to the spreading of gases especially at ground level (heavier than air) and to the direction of the wind.
 Evacuate personnel to safe areas.

6.2 Environmental precautions

Environmental precautions : Prevent further leakage or spillage if safe to do so.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
 Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

no data available

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Do not breathe vapours or spray mist.
 Avoid contact with skin and eyes.
 For personal protection see section 8.
 Provide sufficient air exchange and/or exhaust in work rooms.
 Avoid exceeding of the given occupational exposure limits (see section 8).
 Smoking, eating and drinking should be prohibited in the application area.
 Ensure all equipment is electrically grounded and bonded before beginning transfer operations.

Advice on protection against fire and explosion : Take measures to prevent the build up of electrostatic charge.
 Mixture may charge electrostatically: always use earthing leads when transferring from one container to another.
 Keep product and empty container away from heat and sources of ignition.
 No sparking tools should be used.
 Avoid formation of aerosol.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage : Store in original container.

ASHLAND®		Page: 6 of 15
		Revision Date: 03.07.2013
SAFETY DATA SHEET		Print Date: 30.09.2013
TETRAHYDROFURAN 250 PPM BHT		MSDS Number: R0718323 Version: 1.1
832120		

areas and containers

Keep containers tightly closed in a dry, cool and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Electrical installations / working materials must comply with the technological safety standards.

Other data

: Stable under recommended storage conditions.

7.3 Specific end use(s)

no data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Components	CAS-No.	Value type	Form of Exposure	Control parameters	Update	Basis
tetrahydrofuran	109-99-9	TWA		50 ppm 150 mg/m3	2007	EH40 WEL
tetrahydrofuran	109-99-9	STEL		100 ppm 300 mg/m3	2007	EH40 WEL

8.2 Exposure controls

Engineering measures

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below level of overexposure (from known, suspected or apparent adverse effects).

Personal protective equipment

Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hand protection : Wear impervious gloves (consult your safety equipment supplier).

: Nitrile rubber
butyl-rubber

Eye protection : Safety glasses with side-shields

Skin and body protection : Wear as appropriate:

ASHLAND®		Page: 7 of 15
		Revision Date: 03.07.2013
SAFETY DATA SHEET		Print Date: 30.09.2013
TETRAHYDROFURAN 250 PPM BHT		MSDS Number: R0718323 Version: 1.1
832120		

Safety shoes
Flame-resistant clothing

Hygiene measures : Keep away from food, drink and animal feedingstuffs.
When using do not eat, drink or smoke.
Ensure that eyewash stations and safety showers are close to the workstation location.

Environmental exposure controls

General advice : Prevent further leakage or spillage if safe to do so.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance : liquid
 Colour : clear
 Odour : ether-like
 Odour Threshold : no data available
 pH : no data available
 Freezing point / Melting point : -108,5 °C

Boiling point : 66 °C

Flash point : -21,2 °C

Evaporation rate : no data available
 Flammability (solid, gas) : no data available
 Burning rate : no data available
 Lower explosion limit : no data available
 Upper explosion limit : no data available
 Vapour pressure : 170 hPa; 20 °C

Relative vapour density : no data available
 Relative density : no data available
 Density : 0,886 g/cm³; 25 °C

ASHLAND®		Page: 8 of 15
		Revision Date: 03.07.2013
SAFETY DATA SHEET		Print Date: 30.09.2013
TETRAHYDROFURAN 250 PPM BHT		MSDS Number: R0718323 Version: 1.1
832120		

Water solubility : soluble

Solubility in other solvents : no data available

Partition coefficient: n-octanol/water : log Pow: 0,45; 25 °C

Auto-ignition temperature : 215 °C

Ignition temperature : no data available

Thermal decomposition : no data available

Viscosity, dynamic : 0,456 mPa.s; 25 °C

Viscosity, kinematic : no data available

Explosive properties : no data available

Oxidizing properties : no data available

9.2 Other information

Bulk density : no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Hazardous polymerisation does not occur.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : Further information: Stable under recommended storage conditions.

: Hazardous polymerisation does not occur.
Vapours may form explosive mixture with air.

10.4 Conditions to avoid

Conditions to avoid : Heat, flames and sparks.

ASHLAND®		Page: 9 of 15
		Revision Date: 03.07.2013
SAFETY DATA SHEET		Print Date: 30.09.2013
TETRAHYDROFURAN 250 PPM BHT		MSDS Number: R0718323 Version: 1.1
832120		

Exposure to moisture.
Heating in air.

10.5 Incompatible materials

Materials to avoid : Acids
Strong oxidizing agents

10.6 Hazardous decomposition products

Hazardous decomposition products : carbon dioxide and carbon monoxide
Hydrocarbons

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Product

Acute oral toxicity : no data available

Acute inhalation toxicity : no data available

Acute dermal toxicity : no data available

Skin corrosion/irritation : no data available

Serious eye damage/eye irritation : no data available

Respiratory or skin sensitisation : no data available

Components:

tetrahydrofuran :

Acute oral toxicity : LD 50: 1.650 mg/kg, Rat

Acute inhalation toxicity : LC 50: > 14,7 mg/l, 6 h, Rat,

Acute dermal toxicity : LD 50: > 2.000 mg/kg, Rat

Respiratory or skin sensitisation : mouse

Germ cell mutagenicity

Genotoxicity in vitro : Ames test, Result: negative

ASHLAND®		Page: 10 of 15
		Revision Date: 03.07.2013
SAFETY DATA SHEET		Print Date: 30.09.2013
TETRAHYDROFURAN 250 PPM BHT		MSDS Number: R0718323 Version: 1.1
832120		

Genotoxicity in vitro : Chromosome aberration test in vitro, Result: negative
Genotoxicity in vivo : In vivo micronucleus test, mouse, Result: negative

SECTION 12: Ecological information

12.1 Toxicity

Product:

no data available

Components:

no data available

12.2 Persistence and degradability

Product:

no data available

Components:

tetrahydrofuran :

Biodegradability : 63 %, Exposure time: 48 d, Inherently biodegradable

12.3 Bioaccumulative potential

Product:

Bioaccumulation : The substance has low potential for bioaccumulation.

Components:

tetrahydrofuran :

Bioaccumulation : Bioconcentration factor (BCF): 3,16

12.4 Mobility in soil

Product:

no data available

Components:

no data available

12.5 Results of PBT and vPvB assessment

Product:

no data available

Components:

no data available

ASHLAND®		Page: 11 of 15
		Revision Date: 03.07.2013
SAFETY DATA SHEET		Print Date: 30.09.2013
TETRAHYDROFURAN 250 PPM BHT		MSDS Number: R0718323 Version: 1.1
832120		

12.6 Other adverse effects

Product:

no data available

Components:

no data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

- | | |
|------------------------|--|
| Product | : Dispose of in accordance with the European Directives on waste and hazardous waste. |
| | : Do not contaminate ponds, waterways or ditches with chemical or used container.
Container hazardous when empty.
Dispose of in accordance with local regulations. |
| Contaminated packaging | : Empty remaining contents.
Dispose of as unused product.
Empty containers should be taken to an approved waste handling site for recycling or disposal.
Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum. |

SECTION 14: Transport information

14.1 UN number

ADR: UN2056

ADNR: UN2056

RID: UN2056

INTERNATIONAL MARITIME DANGEROUS GOODS: UN2056

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO: UN2056

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER: UN2056

14.2 UN proper shipping name

ADR: TETRAHYDROFURAN

ADNR: TETRAHYDROFURAN

RID: TETRAHYDROFURAN

INTERNATIONAL MARITIME DANGEROUS GOODS: TETRAHYDROFURAN

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO: Tetrahydrofuran

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER: Tetrahydrofuran

ASHLAND®		Page: 12 of 15
		Revision Date: 03.07.2013
SAFETY DATA SHEET		Print Date: 30.09.2013
TETRAHYDROFURAN 250 PPM BHT		MSDS Number: R0718323 Version: 1.1
832120		

14.3 Transport hazard class(es)

ADR: 3

ADNR: 3

RID: 3

INTERNATIONAL MARITIME DANGEROUS GOODS: 3

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO: 3

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER: 3

14.4 Packing group

ADR: II

ADNR: II

RID: II

INTERNATIONAL MARITIME DANGEROUS GOODS: II

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO: II

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER: II

14.5 Environmental hazards

ADR: not applicable

ADNR: not applicable

RID: not applicable

INTERNATIONAL MARITIME DANGEROUS GOODS: not applicable

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO: not applicable

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER: not applicable

14.6 Special precautions for user

Not applicable

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Ship Type: Not applicable

Hazard code(s): Not applicable

Pollutant Category: Not applicable

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

SECTION 15: Regulatory information

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

Seveso II - Directive 2003/105/EC amending Council Directive 96/82/EC on the control of major-

ASHLAND®		Page: 13 of 15
		Revision Date: 03.07.2013
SAFETY DATA SHEET		Print Date: 30.09.2013
TETRAHYDROFURAN 250 PPM BHT		MSDS Number: R0718323 Version: 1.1
832120		

accident hazards involving dangerous substances

Hazard class	Number	Quantity 1	Quantity 2
Highly flammable	7b	5.000 t	50.000 t

Notification status

US. Toxic Substances Control Act	y (positive listing)
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL). (Can. Gaz. Part II, Vol. 133)	y (positive listing)
Australia. Industrial Chemical (Notification and Assessment) Act	y (positive listing)
Japan. ENCS - Existing and New Chemical Substances Inventory	y (positive listing)
Korea. Toxic Chemical Control Law (TCCL) List	y (positive listing)
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	y (positive listing)
China. Inventory of Existing Chemical Substances	y (positive listing)

15.2 Chemical Safety Assessment

no data available

SECTION 16: Other information

Full text of R-phrases referred to under sections 2 and 3

R11	Highly flammable.
R19	May form explosive peroxides.
R22	Harmful if swallowed.
R36/37	Irritating to eyes and respiratory system.
R40	Limited evidence of a carcinogenic effect.

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

H225	Highly flammable liquid and vapour.
H302	Harmful if swallowed.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.

Further information

ASHLAND®		Page: 14 of 15
		Revision Date: 03.07.2013
SAFETY DATA SHEET		Print Date: 30.09.2013
TETRAHYDROFURAN 250 PPM BHT		MSDS Number: R0718323 Version: 1.1
832120		

Other information : The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This SDS has been prepared by Ashland's Environmental Health and Safety Department (+31 10 497 5000).

List of abbreviations and acronyms that could be, but not necessarily are, used in this safety data sheet :

ACGIH : American Conference of Industrial Hygienists
 BEI : Biological Exposure Index
 CAS : Chemical Abstracts Service (Division of the American Chemical Society).
 CMR : Carcinogenic, Mutagenic or Toxic for Reproduction
 FG : Food grade
 GHS : Globally Harmonized System of Classification and Labeling of Chemicals.
 H-statement : Hazard Statement
 IATA : International Air Transport Association.
 IATA-DGR : Dangerous Goods Regulation by the "International Air Transport Association" (IATA).

ICAO : International Civil Aviation Organization
 ICAO-TI (ICAO) : Technical Instructions by the "International Civil Aviation Organization"
 IMDG : International Maritime Code for Dangerous Goods
 ISO : International Organization for Standardization
 logPow : octanol-water partition coefficient
 LCxx : Lethal Concentration, for xx percent of test population
 LDxx : Lethal Dose, for xx percent of test population.
 ICxx : Inhibitory Concentration for xx of a substance
 Ecxx : Effective Concentration of xx
 N.O.S.: Not Otherwise Specified
 OECD : Organization for Economic Co-operation and Development
 OEL : Occupational Exposure Limit
 P-Statement : Precautionary Statement
 PBT : Persistent , Bioaccumulative and Toxic
 PPE : Personal Protective Equipment
 STEL : Short-term exposure limit
 STOT : Specific Target Organ Toxicity
 TLV : Threshold Limit Value
 TWA : Time-weighted average
 vPvB : Very Persistent and Very Bioaccumulative
 WEL : Workplace Exposure Level
 ABM : Water Hazard Class for the Netherlands
 ADR : Agreement concerning the International Carriage of Dangerous Goods by Road.
 ADN: Regulation for the Carriage of Dangerous Substances on the Rhine
 CLP : Classification, Labelling and Packaging
 CSA : Chemical Safety Assessment

ASHLAND®		Page: 15 of 15
		Revision Date: 03.07.2013
SAFETY DATA SHEET		Print Date: 30.09.2013
TETRAHYDROFURAN 250 PPM BHT		MSDS Number: R0718323 Version: 1.1
832120		

CSR : Chemical Safety Report

DNEL : Derived No Effect Level.

EINECS : European Inventory of Existing Commercial Chemical Substances.

ELINCS : European List of Notified Chemical Substances

PEC : Predicted Effect Concentration

PEL : Permissible Exposure Limits

PNEC : Predicted No Effect Concentration

R-pharse : Risk phrase

REACH : Registration, Evaluation, Authorisation and Restriction of Chemicals

RID : Regulation Concerning the International Transport of Dangerous Goods by Rail

S-phrase: Safety phrase

WGK : German Water Hazard Class