

Tetrahydrofuran**AH340-4**

Version 1.1 1

Revision Date 08/24/2017

Print Date 08/24/2017

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Tetrahydrofuran

SDS Number : 000000011440

Product Use Description : Solvent

Manufacturer or supplier's details : CHEM-SUPPLY Pty Ltd
38-50 Bedford St.
Gillman SA 5013, Australia

For more information call : +61 8 8440 2000
(Monday-Friday, 9:00am-5:00pm)

In case of emergency call : Medical: 1-800-498-5701 or +1-303-389-1414
: **Transportation (CHEMTREC): 1-800-424-9300 or +1-703-527-3887**
:
: **CHEMTREC in Australia: +(61)-290372994**
: (24 hours/day, 7 days/week)

2. HAZARDS IDENTIFICATION**Classification of the substance or mixture**

Classification of the substance or mixture : Flammable liquids, Category 2
Acute toxicity, Category 4, Oral
Eye irritation, Category 2A
Skin irritation, Category 2
Carcinogenicity, Category 2
Specific target organ toxicity - single exposure, Category 3,
Respiratory system

GHS Label elements, including precautionary statements

Symbol(s) :



Tetrahydrofuran**AH340-4**

Version 1.1 1

Revision Date 08/24/2017

Print Date 08/24/2017

Signal word	: Danger
Hazard statements	: Highly flammable liquid and vapour. Harmful if swallowed. Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation. Suspected of causing cancer.
Precautionary statements	: Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ ventilating/ lighting/ equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. Response: IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice/ attention. If skin irritation occurs: Get medical advice/ attention. If eye irritation persists: Get medical advice/ attention. Take off contaminated clothing and wash before reuse. In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction. Storage: Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up.

Tetrahydrofuran

AH340-4

Version 1.1 1

Revision Date 08/24/2017

Print Date 08/24/2017

Disposal:

Dispose of contents/ container to an approved waste disposal plant.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : C₄H₈O

Chemical nature : Substance

CAS-No. : 109-99-9

Hazardous components

Chemical name	CAS-No.	Concentration
Tetrahydrofuran	109-99-9	<= 100%

4. FIRST AID MEASURES

General advice : If unconscious, place in recovery position and seek medical advice.

Inhalation : Remove to fresh air.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
Use oxygen as required, provided a qualified operator is present.
Call a physician.

Skin contact : Wash off immediately with plenty of water for at least 15 minutes.
Take off contaminated clothing and shoes immediately.
Wash contaminated clothing before re-use.
Call a physician.

Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Protect unharmed eye.
Call a physician.

Ingestion : Do not induce vomiting without medical advice.

Tetrahydrofuran

AH340-4

Version 1.1 1

Revision Date 08/24/2017

Print Date 08/24/2017

Notes to physician : Never give anything by mouth to an unconscious person.
Call a physician.
: Treat symptomatically.

5. FIREFIGHTING MEASURES

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

Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.

Specific hazards during firefighting : Highly flammable.
Vapours may form explosive mixtures with air.
Vapours are heavier than air and may spread along floors.
Vapors may travel to areas away from work site before igniting/flashback to vapor source.
May form explosive peroxides.
In case of fire hazardous decomposition products may be produced such as:
Carbon monoxide
Carbon dioxide (CO₂)

Special protective equipment for firefighters : Wear self-contained breathing apparatus and protective suit.

Further information : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
: HAZCHEM Code: 2YE

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Wear personal protective equipment.
Immediately evacuate personnel to safe areas.
Keep people away from and upwind of spill/leak.
Ensure adequate ventilation.
Remove all sources of ignition.
Do not swallow.
Do not breathe vapours or spray mist.
Avoid contact with skin, eyes and clothing.

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

Tetrahydrofuran**AH340-4**

Version 1.1 1

Revision Date 08/24/2017

Print Date 08/24/2017

Prevent product from entering drains.
Discharge into the environment must be avoided.
Do not flush into surface water or sanitary sewer system.
Do not allow run-off from fire fighting to enter drains or water courses.

Methods for cleaning up : Ventilate the area.
No sparking tools should be used.
Use explosion-proof equipment.
Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

7. HANDLING AND STORAGE**Handling**

Advice on safe handling : Wear personal protective equipment.
Use only in well-ventilated areas.
Keep container tightly closed.
Do not smoke.
Do not swallow.
Do not breathe vapours or spray mist.
Avoid contact with skin, eyes and clothing.

Advice on protection against fire and explosion : May form explosive peroxides.
Keep away from fire, sparks and heated surfaces.
Take precautionary measures against static discharges.
Ensure all equipment is electrically grounded before beginning transfer operations.
Use explosion-proof equipment.
Keep product and empty container away from heat and sources of ignition.
No sparking tools should be used.
No smoking.

Storage

Requirements for storage areas and containers : Store in area designed for storage of flammable liquids.
Protect from physical damage.
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.
Keep away from heat and sources of ignition.
Keep away from direct sunlight.

Tetrahydrofuran**AH340-4**

Version 1.1 1

Revision Date 08/24/2017

Print Date 08/24/2017

Protect from exposure to air/oxygen (peroxide formation).
Protect against light.
Store away from incompatible substances.
Container hazardous when empty.
Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Further information on storage conditions : Keep containers tightly closed in a dry, cool and well-ventilated place.
Keep under nitrogen.
Protect from exposure to air/oxygen (peroxide formation).

Materials to avoid : Strong oxidizing agents, Strong acids and strong bases, May form explosive peroxides., May attack many plastics, rubbers and coatings.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Components	CAS-No.	Value	Control parameters	Update	Basis
Tetrahydrofuran	109-99-9	SKIN_DES : Skin designation:	Can be absorbed through the skin.	12 2011	AU NOEL: Australia. National Workplace OELs (Workplace Exposure Standards for Airborne Contaminants, Appendix A)
		TWA : Time Weighted Average (TWA):	100 ppm 295 mg/m3	12 2011	AU NOEL: Australia. National Workplace OELs (Workplace Exposure Standards for Airborne Contaminants, Appendix A)
		TWA : Time Weighted Average (TWA):	100 ppm 295 mg/m3	08 2005	AU OEL: Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment)
		SKIN_DES : Skin designation:	Can be absorbed through the skin.	08 2005	AU OEL: Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the

Tetrahydrofuran**AH340-4**

Version 1.1 1

Revision Date 08/24/2017

Print Date 08/24/2017

Occupational
Environment)**Engineering measures**

Use with local exhaust ventilation.

Prevent vapour buildup by providing adequate ventilation during and after use.

Personal protective equipment

- Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment.
For rescue and maintenance work in storage tanks use self-contained breathing apparatus.
Use NIOSH approved respiratory protection.
- Hand protection : Solvent-resistant gloves
Gloves must be inspected prior to use.
Replace when worn.
- Eye protection : Do not wear contact lenses.
Wear as appropriate:
Safety glasses with side-shields
If splashes are likely to occur, wear:
Goggles or face shield, giving complete protection to eyes
- Skin and body protection : Wear as appropriate:
Solvent-resistant apron
Flame retardant antistatic protective clothing.
If splashes are likely to occur, wear:
Protective suit
- Hygiene measures : When using, do not eat, drink or smoke.
Wash hands before breaks and immediately after handling the product.
Keep working clothes separately.
Remove and wash contaminated clothing before re-use.
Do not swallow.
Do not breathe vapours or spray mist.
Avoid contact with skin, eyes and clothing.
This material has an established AIHA ERPG exposure limit.
The current list of ERPG exposure limits can be found at
http://www.aiha.org/insideaiha/GuidelineDevelopment/ERPG/Documents/2011erpgweelhandbook_table-only.pdf.
- Protective measures : Ensure that eyewash stations and safety showers are close to the workstation location.

Tetrahydrofuran**AH340-4**

Version 1.1 1

Revision Date 08/24/2017

Print Date 08/24/2017

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: liquid
Colour	: clear and colourless
Odour	: ether-like
pH	: Note: Not applicable
Melting point/range	: -108.5 °C
Boiling point/boiling range	: 66 °C
Flash point	: 7 °F (-14 °C) Method: closed cup
Evaporation rate	: 14.5 Method: Compared to Butyl acetate.
Lower explosion limit	: 2 %(V)
Upper explosion limit	: 11.8 %(V)
Vapour pressure	: 189 hPa at 20 °C(68 °F)
Vapour density	: 2.5 Note: (Air = 1.0)
Density	: 0.8892 g/cm ³ at 20 °C
Water solubility	: Note: completely soluble
Partition coefficient: n-octanol/water	: log Pow: 0.46 at 20 °C

Tetrahydrofuran**AH340-4**

Version 1.1 1

Revision Date 08/24/2017

Print Date 08/24/2017

Ignition temperature : 321 °C

Decomposition temperature : Note: At normal pressure may be distilled without decomposition.

Molecular weight : 72.11 g/mol

10. STABILITY AND REACTIVITY

Chemical stability : Stable under recommended storage conditions.

Possibility of hazardous reactions : Hazardous polymerisation may occur.

Conditions to avoid : Heat, flames and sparks.
Keep away from direct sunlight.
Protect from exposure to air/oxygen (peroxide formation).
Protect against light.

Incompatible materials to avoid : Strong oxidizing agents
Strong acids and strong bases
May form explosive peroxides.
May attack many plastics, rubbers and coatings.

Hazardous decomposition products : Peroxides
In case of fire hazardous decomposition products may be produced such as:
Carbon monoxide
Carbon dioxide (CO₂)

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity : LD50: 1,650 mg/kg
Species: Rat

Acute inhalation toxicity : LC50: 53.1 mg/l
Exposure time: 4 h
Species: Rat

: LC50: 21000 ppm

Tetrahydrofuran**AH340-4**

Version 1.1 1

Revision Date 08/24/2017

Print Date 08/24/2017

	Exposure time: 3 h Species: Rat
Skin irritation	: Species: Rabbit Result: Irritating to skin.
Eye irritation	: Species: Rabbit Result: Irritating to eyes.
Further information	: Note: Confirmed animal carcinogen with unknown relevance to humans.

12. Ecological information**Toxicity**

Toxicity to fish	: LC50: 2,160 mg/l Exposure time: 96 h Species: Pimephales promelas (fathead minnow)
	: LC50: 2,820 mg/l Species: Leuciscus idus (Golden orfe)
Toxicity to bacteria	: LC50: > 580 mg/l Exposure time: 16 h Species: Bacteria

Other adverse effects

Additional ecological information	: Bioaccumulation is unlikely.
-----------------------------------	--------------------------------

Tetrahydrofuran**AH340-4**

Version 1.1 1

Revision Date 08/24/2017

Print Date 08/24/2017

13. DISPOSAL CONSIDERATIONS

Product : In accordance with local and national regulations.

14. TRANSPORT INFORMATION**ADR**

UN/ID No. : UN 2056
Description of the goods : TETRAHYDROFURAN
Class : 3
Packing group : II
Classification Code : F1
Hazard Identification Number : 33
Labels : 3

ADG_ROAD

UN/ID No. : UN 2056
Description of the goods : TETRAHYDROFURAN
Class : 3
Packing group : II
Hazard Identification Number : 33
Labels : 3

IATA

UN/ID No. : UN 2056
Description of the goods : Tetrahydrofuran
Class : 3
Packing group : II
Labels : 3
Packing instruction (cargo aircraft) : 364
Packing instruction (passenger aircraft) : 353
Packing instruction (passenger aircraft) : Y341

IMDG

UN/ID No. : UN 2056
Description of the goods : TETRAHYDROFURAN
Class : 3
Packing group : II
Labels : 3
EmS Number 1 : F-E
EmS Number 2 : S-D

Tetrahydrofuran**AH340-4**

Version 1.1 1

Revision Date 08/24/2017

Print Date 08/24/2017

Marine pollutant : no

HAZCHEM Code: 2YE

15. REGULATORY INFORMATION**National regulatory information**Standard for the Uniform : No poison schedule number allocated
Scheduling of Medicines and
Poisons**Other international regulations****Notification status**US. Toxic Substances : On TSCA Inventory
Control ActAustralia. Industrial Chemical : On the inventory, or in compliance with the inventory
(Notification and
Assessment) ActCanada. Canadian : All components of this product are on the Canadian DSL
Environmental Protection Act
(CEPA). Domestic
Substances List (DSL)

Japan. Kashin-Hou Law List : On the inventory, or in compliance with the inventory

Korea. Existing Chemicals : On the inventory, or in compliance with the inventory
Inventory (KECI)Philippines. The Toxic : On the inventory, or in compliance with the inventory
Substances and Hazardous
and Nuclear Waste Control
ActChina. Inventory of Existing : On the inventory, or in compliance with the inventory
Chemical SubstancesNew Zealand. Inventory of : On the inventory, or in compliance with the inventory
Chemicals (NZIoC), as
published by ERMA New
Zealand

Tetrahydrofuran**AH340-4**

Version 1.1 1

Revision Date 08/24/2017

Print Date 08/24/2017

16. OTHER INFORMATION**Sources of key data used to compile the Safety Data Sheet:**

1. National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC:2011(2003)]
2. Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(1999)]
3. List of Designated Hazardous Substances [NOHSC:10005(1999)]
4. Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995)]
5. Australian Dangerous Goods Code, No. 6 [National Road Transport Commission]
6. Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP), No. 19 [NDPSC: 2004]
7. National Code of Practice for the Labelling of Workplace Substances [NOHSC:2012(1994)]

Further information

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.

Final determination of suitability of any material is the sole responsibility of the user.

This information should not constitute a guarantee for any specific product properties.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

Prepared by:
Honeywell Performance Materials and Technologies Product Stewardship Group

End of Safety Data Sheet