

Material Safety Data Sheet

GLYCOOL® 350

Infosafe™ IA1DJ **Issue Date** February 2008 **Status** ISSUED by **BS:**
No. HUNTSMAN 1.10.9

Classified as hazardous according to criteria of NOHSC

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name GLYCOOL® 350

Product Code

Company Name HUNTSMAN CORPORATION AUSTRALIA PTY LTD. (ABN 67 083 984 187)

Address 61 Market Road Brooklyn
Victoria 3012

Emergency Tel. 1800 786 152 (ALL HOURS) / International: +65 6336 6011 (ALL HOURS)

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Fax: +613 9316 3647

(24 hour a day available) Emergency telephone number: Australia: 1800 786 152 (ALL HOURS)
International: + 65 6336 6011 (ALL HOURS)

Recommended Use Automotive radiator coolant.

Other Names None Listed

2. HAZARDS IDENTIFICATION

Hazard Classification HAZARDOUS SUBSTANCE.
NON-DANGEROUS GOODS.

Hazard classification according to the criteria of NOHSC.
Dangerous goods classification according to the Australia Dangerous Goods Code.

Risk Phrase(s) R22 Harmful if swallowed.

Safety Phrase(s) S2 Keep out of reach of children.

Other Information Hazardous Substance. Non-Dangerous Goods.
This material is classified as hazardous according to health criteria of ASCC.
Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail.
Classified as a C1 (COMBUSTIBLE LIQUID) for the purpose of storage and handling, in accordance with the requirements of AS 1940. Refer to State Regulations for storage and transport requirements.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Information on Composition Appearance: Green liquid.

Ingredients	Name	CAS	Proportion
	Ethylene glycol	107-21-1	>60 %
	Corrosion Inhibitors	-	1-9%
	Stabiliser	-	<1 %
	Anti-foaming additive		<1 %
	Dyes		<1 %
	Denatonium benzoate *	3734-33-6	<1 %

Other Information * Actual content at 10 ppm

4. FIRST AID MEASURES

First Aid Measures If poisoning occurs, contact a doctor or Poisons Information Centre. Phone (Australia 13 1126; New Zealand 0800 764 766).

Inhalation Remove victim from exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. If breathing laboured and patient cyanotic (blue), ensure airways are clear and have qualified person give oxygen through a face mask. If breathing has stopped apply artificial respiration at once. In event of cardiac arrest, apply external cardiac massage. Seek immediate medical attention.

Ingestion Rinse mouth with water. Give plenty of water to drink. If vomiting occurs give further water. Seek medical advice.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. If irritation occurs seek medical attention. Wash contaminated clothing

before re-use.

Eye	Irrigate with copious quantities of water. Eyelids to be held open. In all cases of eye contamination it is a sensible precaution to seek medical advice.
Advice to Doctor	Treat symptomatically. Ethylene glycol can cause central nervous system depression and metabolic acidosis. Consider the following management actions; gastric decontamination, correction of metabolic acidosis with bicarbonate, inhibition of ethylene glycol metabolism by giving ethanol (100 mg/dL or higher) or fomepizole as antidotes and haemodialysis to remove ethylene glycol and its major metabolite glycolic acid. (1)

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media	For large fires use water fog, fine water spray or foam. Do not use water jets. For small fires use foam, dry chemical, carbon dioxide or water spray.
Hazards from Combustion Products	Combustible liquid. On burning will emit toxic fumes including carbon monoxide and carbon dioxide.
Special Protective Equipment for fire fighters	Heating can cause expansion or decomposition leading to violent rupture of containers. If safe to do so, remove containers from path of fire. Keep containers cool with water spray. Fire fighters to wear self-contained breathing apparatus if risk of exposure to vapour or products of combustion as well as structural fire fighters uniform.
Decomposition Temp.	N Av

6. ACCIDENTAL RELEASE MEASURES

Emergency Procedures	Emergency procedures: Slippery when spilt. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contamination and inhalation of vapours. Do not touch or walk through spilled material.
Methods and Materials for Containment and Clean Up Procedures	Contain - prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labelled drums for disposal. Wash area down with excess water to remove residual material.

7. HANDLING AND STORAGE

Precautions for Safe Handling	Avoid eye contact and repeated or prolonged skin contact. Avoid inhaling vapours or spray mists. Use with local exhaust ventilation. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and
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other protective equipment before storage or re-use. Do not dispose of material to sewers or waterways.

Conditions for Safe Storage Store in a cool place and out of direct sunlight. Store away from oxidising agents and foodstuffs. Keep containers closed at all times - check regularly for leaks.

Other Information Classified as a C1 (COMBUSTIBLE LIQUID) for the purpose of storage and handling, in accordance with the requirements of AS 1940. Refer to State Regulations for storage and transport requirements. This material is a Scheduled Poison S5 and must be stored, maintained and used in accordance with the relevant regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

National Exposure Standards No value assigned for this specific material by the Australian Safety and Compensation Council (ASCC).
However, Exposure Standards for constituent:

	TWA		STEL		
	ppm	mg/m ³	ppm	mg/m ³	
Notices					
Ethylene glycol (vapour)	20	52	40	104	Skin
Ethylene glycol (particulate)	-	10	-	-	Skin

As published by the Australian Safety and Compensation Council (ASCC).

Exposure Standard (TWA) is the time-weighted average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life.

STEL (Short Term Exposure Limit) - the average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight-hour work day.
Skin Absorption Notice - absorption through the skin may be a significant source of exposure.

The exposure standard is invalidated if such contact should occur.

The Exposure Standards listed represent airborne concentrations of individual chemical substances which, according to current knowledge, should neither impair the health of, nor cause undue discomfort to, nearly all workers. They are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These Exposure Standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Biological Limit Values Not relevant.

Engineering Controls Ensure ventilation is adequate to maintain air concentrations below Exposure Standard. If material is used at elevated temperatures or as an aerosol, use with local exhaust ventilation or while wearing respirator. Vapour heavier than air - prevent concentration in hollows or sumps. DO NOT enter confined spaces where vapour may have collected. Keep

containers closed when not in use.

Personal Protective Equipment OVERALLS, SAFETY SHOES, SAFETY GLASSES, GLOVES (Short), RESPIRATOR.
Wear overalls, safety glasses and impervious gloves. Available information (2) suggests that gloves made from Nitrile, Neoprene, PVC or natural rubber should be suitable for intermittent contact. However, due to variations in glove constructions and local conditions, a final assessment should be made by the user. If inhalation risk exists wear a filter respirator suitable for organic vapours/particulates meeting the requirements of AS/NZS 1715 and AS/NZS 1716.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance Green liquid.

Decomposition

Temperature N Av

Melting

Point N App

Boiling

Point 155°C

Solubility in Water

N Av

pH Value 10.2 - 10.8 (33% aqueous soln)

Vapour

Pressure 0.01 kPa* (20°C)

Vapour Density (Air=1)

2.2*

Evaporation

Rate N Av (n-Butyl acetate=1)

Viscosity N Av (20°C)

Volatile

Component Nil

Density 1.12 g/cm³ (20°C)

Flash Point 123°C (CC)

Auto-

Ignition

Temperature N Av

Flammable

Limits -

Lower 3.2%

Flammable**Limits -****Upper** 12.8*%**Other**

Solubility: Miscible with water and alcohols.

Information Sublimation Point: N App

(Typical values only - consult specification sheet)

N Av = Not available N App = Not applicable

* = for ethylene glycol

10. STABILITY AND REACTIVITY

Chemical**Stability** Stable under normal conditions of use.**Conditions****to Avoid** None known.**Incompatible****Materials** Reacts with strong oxidising agents.**Hazardous****Decompositio****n Products** Carbon dioxide and carbon monoxide.**Hazardous****Reactions** None known.

11. TOXICOLOGICAL INFORMATION

Toxicology**Information**

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms that may arise if the product is mishandled are:

Acute Effects

Ingestion: Initial symptoms following a large dose (>100 mL) are those of alcohol intoxication (without the odour of ethanol) progressing to vomiting, headache, stupor, convulsions and unconsciousness.

Respiratory system involvement may occur 12 - 24 hours after ingestion. Symptoms may include hyperventilation and rapid shallow breathing. From 24-72 hours the patient may experience a decrease in urine output, flank pain progressing to renal failure which may be permanent. Death may occur from respiratory failure or pulmonary oedema. (3)

Eye contact: May be an eye irritant.

Skin contact: Contact with skin may result in irritation. Will have a degreasing action on the skin.

Repeated or prolonged skin contact may lead to irritant contact dermatitis. Can be absorbed through the skin but not readily absorbed in toxic amounts (symptoms may be similar to those described for 'INGESTION'). (3)

Inhalation: Inhalation of vapours (from heating), mists or aerosols can produce respiratory irritation and may result in

headaches, dizziness and possible nausea.

Long Term Effects:

Animal studies have shown that long term repeated exposure to high doses of ethylene glycol in the diet causes kidney injury. (3)

Acute toxicity / Chronic toxicity

Estimated minimum lethal dose (human) following ingestion of ethylene glycol is thought to be greater than 1 mL/kg. (3)

Skin Irritation (rabbit, Draize): Mild irritant (3)

Eye Irritation: (rabbit, Draize): Mild irritant (3)

High doses of ethylene glycol in rats and mice have resulted in reproductive and developmental toxicity following exposure by the oral and inhalation (respirable aerosol) routes. These particular data sets are not considered relevant to normal industrial use but do emphasise the need for care in handling. (3)

Data from animal and human studies to date do not provide evidence that exposure to ethylene glycol has mutagenic or carcinogenic effects. (3)

12. ECOLOGICAL INFORMATION

Ecological

Information Avoid contaminating waterways.

Ecotoxicity No LC50 data found for this material, however for the main constituent ethylene glycol:

24 hr LD50 (goldfish): >5,000 mg/L. (4)

Non hazardous to aquatic organisms

Persistence

/

No data found for material, however the main constituent,

Degradability ethylene glycol, is expected to be readily biodegradable according to the AS 4351 Part 2 test method.

Mobility

No data found for material.

13. DISPOSAL CONSIDERATIONS

Disposal Considerations Disposal methods: Empty containers should be forwarded to an approved agent for recycling. Avoid unauthorised discharge to sewer.

Special precautions for landfill or incineration

Special precautions for landfill or incineration: Material suitable for disposal by incineration or landfill through an approved agent.

14. TRANSPORT INFORMATION

Transport Information Not classified as Dangerous Goods, according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.

15. REGULATORY INFORMATION

Regulatory Information	Country/Region	Inventory	Status
	Australia	AICS	All components listed
	Canada	DSL	Not determined
	Europe	EINECS	Not determined
	Japan	ENCS	Not determined
	Korea	ECL	Not determined
	New Zealand	NZIoC	All components listed
	United States	TSCA	Not determined

Poisons Schedule S5

Symbol Xn Harmful

Hazard Category Harmful

AICS (Australia) All the constituents of this material are listed on the Australian Inventory of Chemical Substances (AICS).

16. OTHER INFORMATION

Literature References

(1) Poisons Information Monograph 227 - Ethylene Glycol, International Programme on Chemical Safety (IPCS), World Health Organization, Geneva, 09/2005. Available at: <http://www.inchem.org/documents/pims/chemical/pim227.htm#10.%20TREATMENT>

(2) Ansell Chemical Resistance Guide - Permeation and Degradation Data, 7th Edition, Ansell Occupational Healthcare, 2003.

(3) Concise International Chemical Assessment Document Number 45 - Ethylene Glycol. International Programme on Chemical Safety (IPCS), World Health Organization Geneva, 2002. Available at: <http://www.inchem.org/documents/cicads/cicads/cicad45.htm#6.0>

(4) Handbook of Environmental Data on Organic Chemicals, 3rd Edition, Verschueren, K., Van Nostrand Reinhold, 1996

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Other Information GLYCOOL is a registered trademark of Huntsman Corporation or an affiliate thereof in one or more, but not all, countries.

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Material Safety Data Sheets are updated frequently. Please ensure that you have a current copy.

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