



Material Safety Data Sheet

MSDS No.: BE9000
 Variant: U.S.A.-EN
 Version No: 1.3
 Validation Date: 01/10/2002

CONCENTRATE ARCOPLUS® ADF

SECTION 1: IDENTIFICATION

Product Name: CONCENTRATE ARCOPLUS® ADF

Product Number: 00000000000499008

Chemical Name: Propylene Glycol Mixture

CAS Number: Mixture

Chemical Family: Aqueous solution of glycol

Synonyms: Type I fluid; Aircraft Deicing Fluid

Manufacturer: Lyondell Chemical Company
 One Houston Center, Suite 1600
 1221 McKinney St.
 P.O. Box 2583
 Houston Texas 77252-2583

Telephone Numbers:
Emergency: CHEMTREC 800 424-9300
 LYONDELL 800-245-4532

Non-Emergency: CUSTOMER SERVICE
 888 777-0232
 PRODUCT SAFETY
 800 700-0946

SECTION 2 : Composition/Information on Ingredients

Component Name:	CAS #.	EU Inventory Number:	Concentration by Wt./Mol%		
			Avg.	Min.	Max.
Propylene Glycol	57-55-6	EINECS 200-338-0		88.0	89.0
Water	7732-18-5	EINECS 231-791-2		10.0	11.0
Tolyltriazole	29385-43-1	EINECS 249-596-6			0.05
Other Proprietary Components					1.5

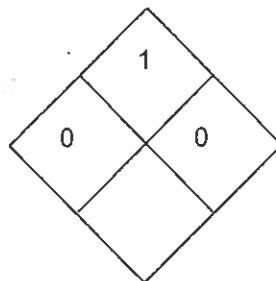
SECTION 3: HAZARD IDENTIFICATION

Emergency Overview This material is NOT HAZARDOUS by OSHA Hazard Communication definition.

Signal Word: Caution.

Hazards: Slight eye irritant.

NFPA



HMIS®

Health	0
Flammability	1
Reactivity	0



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Physical State: Liquid.
Color: Phrase (#1) Orange to red.
Odor: Little or no odor.
Odor Threshold: No Data Available. Odor is not an adequate warning of potentially hazardous ambient air concentrations.

Potential Health Effects

Routes of Exposure: Eye Skin. Inhalation

Signs and Symptoms

of Acute Exposure: Slight health hazard.

- *Propylene Glycol* Slight eye irritant.
- *Tolyltriazole* Eye irritant. Ingestion hazard. Slight skin irritant.

Skin: No significant signs or symptoms indicative of any adverse health hazard are expected to occur as a result of skin exposure. Not a skin absorption hazard.

Inhalation: No significant signs or symptoms indicative of any health hazard are expected to occur as a result of inhalation exposure.

Eye: May cause minor eye irritation.

Ingestion: Not a likely route of exposure. No significant signs or symptoms indicative of any health hazard are expected to occur as a result of ingestion.

Chronic Health Effects: See component summary.

- *Propylene Glycol* No chronic health hazards are expected to occur from anticipated conditions of normal use of this material.
- *Tolyltriazole* No known chronic health effects.

Conditions Aggravated by Exposure: This material or its emissions may aggravate pre-existing eye disease.

SECTION 4: FIRST AID MEASURES

General: After adequate first aid, no further treatment is required unless symptoms reappear.

Inhalation: Not expected to present a significant inhalation hazard under anticipated conditions of normal use. If overcome by exposure, remove victim to fresh air immediately. Give oxygen or artificial respiration as needed. Obtain medical attention if breathing difficulty persists.

Eye: Thoroughly flush the eyes with large amounts of clean low-pressure water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation persists, seek medical attention.



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Skin: Not expected to present a significant skin hazard under anticipated conditions of normal use. If skin contact occurs, remove contaminated clothing and wash skin thoroughly.

Ingestion: Ingestion unlikely. If large quantity swallowed, give lukewarm water (pint/ 1/2 litre) if victim completely conscious/alert. Obtain medical attention.

Physician's Detoxification Procedures: Treat symptomatically. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

SECTION 5: FIRE FIGHTING MEASURES

Flammability Classification: OSHA/NFPA Class IIIB combustible liquid.

Flash Point / Method: 109 °C(228 °F)(PMCC)(Aqueous solution).

Auto-ignition Temperature: No Data Available.

Flammable Limits: LOWER: 2 vol%, (based on Propylene Glycol)
UPPER: 13 vol%, (based on Propylene Glycol)

Hazardous Combustion Products: Incomplete combustion may produce carbon monoxide and other toxic gases.

Special Conditions to Avoid: Aqueous solutions containing less than 95% propylene glycol by weight have no flash point as obtained by standard test methods. However aqueous solutions of propylene glycol greater than 22% by weight, if heated sufficiently, will produce flammable vapors. Heat from fire can generate flammable vapor. Aqueous solutions may produce flammable vapors. May travel long distances along the ground before igniting and flashing back to vapor source. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined. This product is designed specifically for aircraft deicing use and is not to be used in sprinkler systems or other fire fighting equipment.

Extinguishing Media: Suitable: Alcohol type foam. Dry chemical. CO2. Use waterspray/waterfog for cooling.

Unsuitable: Do not use solid water stream/may spread fire.

Fire Fighting Instructions: Protective Equipment/Clothing: Do not enter fire area without proper protection. Use only approved supplied air or self-contained breathing apparatus operated in positive pressure mode.

INSTRUCTIONS: Avoid frothing/steam explosion. Heat may build enough pressure to rupture closed containers/spreading fire/increasing risk of burns/injuries. Apply aqueous extinguishing media carefully to avoid frothing. Use water spray/fog for cooling. Fight fire from a safe distance/protected location. When fighting a fire, notify environmental authorities if liquid enters sewers or public waters.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Release Response: May contaminate water supplies/pollute public waters. Evacuate/limit access. Prevent flow to sewer/public waters. Stop release. Notify fire and environmental authorities. Material creates dangerous slipping hazard on hard surfaces. May be diluted with water to reduce slipperiness. Impound/recover large land spill. Soak up small spills with inert solids. Use



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suitable disposal containers. On water, material is soluble and may float or sink. Contain/collect rapidly to minimize dispersion. Disperse residue to reduce aquatic harm.

SECTION 7: HANDLING AND STORAGE

Handling: Caution should be exercised in the use of glycol-water deicing/anti-icing solutions in and around aircraft having silver or silver-coated electrical/electronic circuitry. Dehydrolysis reactions which result in fire have been reported when such glycol-water solutions contact silver or silver-coated circuits, such as defectively insulated wiring, switches, and circuit breakers, which are conducting direct current. Use with extreme care when applying around heaters or engine exhaust. ARCOPLUS is primarily an aircraft deicing fluid, which when used diluted and heated will efficiently remove frozen deposits from parked aircraft and retard the refreezing of the residual fluid when no precipitation is falling. During periods of precipitation, the ability to retard refreezing of treated surfaces is severely diminished. When precipitation is expected, consideration should be given to the utilization of SAE Type II / IV deicing / antiicing procedures. The aircraft should be inspected by qualified personnel to assure the critical surfaces are free from all signs of frozen deposits immediately prior to initiating the take off roll. Any signs of refreezing shall be cause for the aircraft to be completely deiced again before dispatch. Always drain and flush systems containing propylene glycol with water before welding or other maintenance.

Storage: Stainless steel containers. Lined steel. Mild steel. Reinforced plastic.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls: No special ventilation is recommended under anticipated conditions of normal use beyond that needed for normal comfort control.

Personal Protection:

Inhalation: A respiratory protection program that meets OSHA's 29 CFR 1910.134 or ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. No special respiratory protection is recommended under anticipated conditions of normal use with adequate ventilation.

Skin: Wear chemical resistant gloves such as: 4H(tm)(PE/EVAL). Avoid contact with skin. Where use can result in skin contact, practice good personal hygiene.

Eye: Wear eye protection appropriate to conditions of material use.

Other Hygienic Practices: Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the hazards and/or potential hazards that may be encountered during use. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Recommended Work

Practices Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove soiled clothing/wash thoroughly before reuse.

Occupational Exposure Limits:

<u>Component Name:</u>	<u>Source / Date</u>	<u>Value / Units</u>	<u>Type</u>	<u>Notation</u>	<u>Carcinogenic Listing*</u>
Propylene Glycol	US (ACGIH) / 2001	N/L			N/L
	US (OSHA) / 2001	No occupational exposure limit(s)			



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		have been established for this substance.			
Water	US (ACGIH) / 2001	N/L			
Tolyltriazole	US (ACGIH) / 2001	N/L			
	US (OSHA) / 2001	N/L			
Other Proprietary Components	US (ACGIH) / 2001	N/L			
	US (OSHA) / 2001	N/L			

*1 = OSHA 2 = IARC 3 = NTP 4 = Others N/L = Not Listed See Section 11 for more information

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Specific Gravity: ~1.04, @ (25 °C/77 °F), (Water = 1.0 at 4°C (39.2°F)) **Vapor:** ~2.07, @ (25 °C/77 °F)

Boiling Point: ~ 112.2 °C/234 °F, @ 760 mm Hg **pH:** ~ 7.3 - 8.3

Vapor Pressure: 10.9 mm Hg, @ (25 °C /77 °F) **Viscosity:** ~ 140 mPa.s, @ (0 °C/32 °F), (Brookfield).

Solubility: Solubility (Water):
Complete (In All Proportions).

Octanol/Water Partition Coefficient in Kow: No Data Available. **Melting/Freezing Point:** ~ -56.7 °C/-70 °F

Dry Point: ~ 202.2 °C **Evaporation Rate:** No Data Available.

Other Physical & Chemical Properties: Hygroscopic. Volatile Characteristics: Slight: 0.1 to 1.0%

SECTION 10: STABILITY AND REACTIVITY

Chemical Stability: This material is stable when properly handled and stored.

Conditions to Avoid: High temperatures, oxidizing conditions.

Incompatibility with: Reacts with strong oxidizing agents.

Decomposition Products: Carbon Monoxide and other toxic vapors.

Hazardous Polymerization: Not expected to occur.

Reactions with Air and Water: Not expected to occur.

SECTION 11: TOXICOLOGICAL INFORMATION



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Product

Summary: No additional toxicology information is available for this material. However, evaluation of each component under normal use of this product in deicing indicates a margin of safety from exposure to potential hazards. (See Component Toxicity Information).

Target Organ Effects Eye. Skin.

Component Summary:

Propylene Glycol

LD50 (Oral)	Rat	20,000 MG/KG
	Mouse	22,000 MG/KG
LD50 (Skin)	Rabbit	20,800 MG/KG

SKIN EFFECTS: High concentrations of Propylene Glycol in water when held in contact with human skin under closed conditions have been reported to cause skin irritation (Cosmetics and Toiletries 99:83-91,1984). The authors attribute the observations to a sweat retention reaction by skin. No reactions were observed in open patch tests with human subjects. One literature report indicates rare eczematous skin reactions and even more rarely an allergic skin reaction from exposure to Propylene Glycol (Anderson and Starr, Hautarzt 33 (1) 1982).

Target Organ Effects Eye. Skin.

Tolyltriazole

LD50 (Oral)	Rat	675 MG/KG
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Repeated Dose Toxicity No known chronic or adverse effects have been associated with repeated exposure to this material.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity: Normal deicing operations involve routine environmental releases with no expected harm to the environment.

Environmental Fate: Propylene glycol is expected to degraded rapidly in the vapor phase by reaction with photochemically produced hydroxyl radicals. It has an estimated half-life of 32 hours in an average ambient atmosphere. Propylene glycol is expected to degrade relatively rapidly via biodegradation in water. It is not expected to be susceptible to hydrolysis, oxidation, volatilization, bioconcentration, and adsorption to sediments. Propylene glycol is expected to degrade relatively rapidly via biodegradation in soil. Degradation in soil does not appear to be inhibited by high glycol concentrations or by subfreezing temperatures. Due to its high mobility and low adsorptivity, propylene glycol is susceptible to leaching. However, concurrent biodegradation may be rapid enough to diminish the significance of leaching. Evaporation from dry (but not moist) soil surfaces is likely to occur.



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Bioaccumulation: Based on the octanol/water partition coefficient, the bioconcentration factor is estimated to be <1.

Biodegradation: This material is expected to be readily biodegradable.

SECTION 13: DISPOSAL CONSIDERATIONS

Contaminated product, soil, water, container residues and spill cleanup materials may be hazardous wastes. Comply with applicable local, state or international regulations concerning solid or hazardous waste disposal and/or container disposal.

SECTION 14: TRANSPORT INFORMATION

Proper Shipping Name: Not Regulated

UN/NA ID: Not applicable

NAER Guidebook: Not Applicable

Marine Pollutant: No

Labels: Not applicable.

DOT Hazard Class: Not Regulated.

IMDG Hazard Class: Not Regulated.

ADR/VLG Hazard Class: Not Regulated.

ICAO/IATA Hazard Class: Not Regulated.

ADNR/VBG Hazard Class: Not Regulated.

RID/VSG Hazard Class: Not Regulated.

SECTION 15: REGULATORY INFORMATION

Regulatory Advisory: No chemicals in this material with known CAS numbers are subject to the reporting requirements of CERCLA.

Regulatory Status: All components of this product are listed or are exempt from listing on the TSCA 8(b) inventory. If identified components of this product are listed under the TSCA 12(b) Export Notification rule, they will be listed below.

SARA - Section 313 Emissions Reporting:

The material does not contain any chemical components with known CAS numbers that exceed the De Minimis reporting levels established by SARA Title III, Section 313 and 40 CFR 372.

Component Summary:

Reporting Threshold

SARA - Section 311/312: Based upon available information, this material is not classified as the following health and/or physical hazards according to Section 311 & 312:

Other Regulatory Information: No additional information available.



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State Reporting:

- This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins under California Proposition 65 at levels which would be subject to the proposition.
- A Volatile Organic Compound (VOC) is any volatile compound of carbon excluding methane, carbon monoxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, 1,1-trichloromethane, methylene chloride, (FC-23), (CFC-113), (CFC-22), (CFC-114), and (CFC-115). By this definition, this is a (VOC) material.
- Hazardous Substances listed by the State of Pennsylvania must be identified when present in materials at levels greater than the state specified criterion. The criterion is $\geq 1\%$. Components with CAS numbers in this material at a level which could require reporting under the statute are:

Propylene Glycol / CAS# 57-55-6.

SECTION 16: OTHER INFORMATION

DISCLAIMER OF RESPONSIBILITY:

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Latest Revision(s): Revised Section(s): 2 3 11

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