

MATERIAL SAFETY DATA SHEET

ARCOPLUS® AIRCRAFT DEICING FLUID

MSDS No P000721-1-OSHA-AE
Ver. No 1
Ver. Date NOV 3 93



ARCO Chemical Company
3801 West Chester Pike
Newtown Square, PA 19073-3287

IMPORTANT: Read this MSDS before handling and disposing of this product and pass this information on to the employees, customers, and users of this product. This product is covered by the OSHA Hazard Communication Rule and this document has been prepared in accord with the MSDS requirements of this rule.

1. General

Trade Name	ARCOPLUS® AIRCRAFT DEICING FLUID		Telephone Numbers:
Other Company Names	None	EMERGENCY	800/424-9300 CHEMTREC 610/353-8300 ARCO CHEM
Synonyms	None	CUSTOMER SERVICE	800/321-7000 INFO ONLY
Other Industry Names	Deicer, Type I fluid		
Chemical Family	Aqueous solution of glycol		
Generic Name	Aqueous Solution of Propylene Glycol		
DOT Hazardous Material Proper Shipping Name	Not regulated		
DOT Hazard Class	DOT Packing Group	DOT Reportable Quantity	UN/NA ID No.
Not regulated	Not regulated	(Based on Material) Not applicable	Not applicable
CAS No. (See Section 9 - Components)	Company Material ID	MSDS Class	
	BE1616	P	

2. Summary of Hazards

Signal Word	CAUTION
Physical Hazards	Aqueous solutions may produce flammable vapors
Acute Health Effects (Short-Term)	No data found, no expected inhalation hazard No data found, suspect eye irritant No data found, no expected ingestion hazard No data found, no expected skin irritation hazard No data found, no expected skin absorption hazard
Chronic Health Effects (Long-Term)	Avoid repeated or prolonged inhalation of vapors or mists from this material No chronic health hazards are expected to occur from anticipated conditions of normal use of this material

3. Fire and Explosion

Flash Point	Autoignition Temperature	Flammable Limits
GT 212°F (COC) (See conditions to avoid/conditions of flammability elsewhere in this document)	No Data Available	Lower: AP 2 (% vol in air) Upper: AP 13 (% vol in air)
Fire and Explosion Hazards	Heat from fire can generate flammable vapor. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined. Vapors may travel long distances along the ground before igniting and flashing back to vapor source. This product is designed specifically for aircraft deicing use and is not to be used in sprinkler systems or other fire fighting equipment. 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. Always drain and flush systems containing propylene glycol with water before welding or other maintenance.	
Extinguishing Media	Alcohol type foam Dry chemical CO ₂ Water spray	
Extinguishing Media Use Comment	No additional information available	



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3. Fire and Explosion (Cont'd)

Special Firefighting Procedures	Do not enter fire area without proper protection. Fight fire from a safe distance/protected location. Heat may build enough pressure to rupture closed containers/spreading fire/increasing risk of burns/injuries. Apply aqueous extinguishing media carefully to avoid frothing. Avoid frothing/steam explosion. Use water spray/fog for cooling. Notify authorities immediately if liquid enters sewer/public waters.
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4. Health Hazards

Summary of Acute Hazards	Slight health hazard
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ROUTE OF EXPOSURE	SIGNS AND SYMPTOMS	PRIMARY ROUTE(S)
Inhalation	Although no appropriate human or animal health effects data are known to exist, this material is not expected to be an inhalation hazard	No
Eye Contact	Although no appropriate human or animal health effects data are known to exist, this material is expected to cause eye irritation	Yes
Skin Absorption	Although no appropriate human or animal health effects data are known to exist, this material is not expected to be a health hazard by skin absorption.	No
Skin Irritation	Although no appropriate human or animal health effects data are known to exist, this material is not expected to be a skin irritant	No
Ingestion	Although no appropriate human or animal health effects data are known to exist, this material is not expected to be an ingestion hazard	No

Summary of Chronic Hazards	No adverse chronic health effects are expected from anticipated conditions of normal use of this material.
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Special Health Effects	No additional medical information found
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5. Protective Equipment and Other Control Measures

Respiratory	No special respiratory protection equipment is recommended under anticipated conditions of normal use. If nuisance mists cause discomfort, U.S. National Institute for Occupational Safety and Health (NIOSH)/U.S. Mine Safety and Health Administration (MSHA) approved respiratory protection is suggested.
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Eye	Eye protection such as chemical splash goggles and/or face shield must be worn when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapor. Contact lenses must not be worn.
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Skin	Not normally considered a skin hazard. Where use can result in skin contact, practice good personal hygiene. Wash hands and other exposed areas with mild soap and water before eating, drinking, smoking, and when leaving work.
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Engineering Controls	No special ventilation is recommended under anticipated conditions of normal use beyond that needed for normal comfort control.
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Other Hygienic Practices	Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove soiled clothing/wash thoroughly before reuse. Shower after work using plenty of soap and water.
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Other Work Practices	No special work practices are needed beyond the above recommendations under anticipated conditions of normal use.
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6. Occupational Exposure Limits

Substance	Source	Date	Type	Value/Units	Time	Skin
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There may be U.S. Occupational Safety and Health Administration (OSHA) Personal Exposure Limits (PELs) and/or American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) for one or more components which are trade secrets. Chemical identities will be revealed to treating physicians in an emergency or to purchasers after execution of a secrecy agreement.

Exposure Limit Comments	No additional Occupational Exposure Limit information available
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7. Emergency and First Aid

Inhalation	Not expected to present a significant inhalation hazard under anticipated conditions of normal use.
Eye Contact	In case of eye contact, immediately rinse with clean water for 20-30 minutes. Retract eyelids often. Obtain emergency medical attention if pain, blinking, tears or redness persist.
Skin Contact	Not expected to present a significant skin hazard under anticipated conditions of normal use.
Ingestion	Ingestion unlikely. However, if ingested, Do not induce vomiting. Obtain emergency medical attention.
Physician's Emergency Medical Treatment Procedures	Treat symptomatically
Physician's Detoxification Procedures	If swallowed, DO NOT INDUCE VOMITING. Administer an aqueous slurry of activated charcoal followed by a cathartic such as magnesium citrate or sorbitol

8. Spill and Disposal

Precautions if Material is Spilled or Released

In case of accidental spill, may contaminate water supplies/pollute public waters. Evacuate/limit access. Prevent flow to sewer/public waters. Stop release. Notify fire and environmental authorities. Slippery walking. May be diluted with water to reduce slipperiness. Impound/recover large land spill. Soak up small spills with inert solids. Use 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. Report per regulatory requirements.

Waste Disposal Methods

Product is biodegradable. Notify sewage treatment authorities to avoid overloading/poisoning plant biomass. Assure effluent complies with applicable regulations

9. Components

(This may not be a complete list of components.)

(Compositions given are typical values, not specifications.)

<u>Component Name</u>	<u>CAS No.</u>	<u>Composition Amount (Wt.)</u>	<u>Carcinogen ###</u>
Propylene Glycol	57-55-6	AP 88 %	N/P
Water	7732-18-5	AP 9 %	N/P
Trade Secret-ACC P000721-01 #		LT 1 %	
Trade Secret-ACC P000721-02 #		LT 1 %	
Trade Secret-ACC P000721-03 #		LT 1 %	
Trade Secret-ACC P000721-04 #		LT 1 %	
Trade Secret-ACC P000721-05 #		LT 1 %	
Trade Secret-ACC P000721-06 #		LT 1 %	

The specific chemical identity of this component is a trade secret. Chemical identities will be revealed to treating physicians in an emergency, or to purchasers after execution of a secrecy agreement.

###1=U.S. National Toxicological Program 2=International Agency for Research on Cancer 3=U.S. Occupational Health and Safety Administration 4=American Conference of Governmental Industrial Hygienists 9=Other

10. Component Health Hazards

<u>Component</u>	<u>Component Health Hazards</u>
Propylene Glycol	Slight eye irritant
Trade Secret-ACC P000721-01 #	Allergic sensitizer Slight skin irritant
Trade Secret-ACC P000721-02 #	No data available

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11. Additional Toxicological Information

Component Name/Comments

Propylene Glycol

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).

Material

No additional toxicology information is available for this material

12. Physical and Chemical Data

Boiling Point AP 268°F (at 760 mm Hg)	Viscosity (Brookfield) AP 121 CPS (at 32°F)	Dry Point No Data Available
Freezing Point AP -70°F	Vapor Pressure LT 1 psia (at 77°F)	Volatile Characteristics Not available
Specific Gravity AP 1.042 at 77°F (H ₂ O = 1.0 at 39.2°F)	Vapor Specific Gravity No Data Available	Solubility in Water Complete (In All Proportions)
pH AP 7.3 to 8.3	Hazardous Polymerization Not expected to occur	Stability Stable
Other Chemical Reactivity	No additional information available	
Other Physical and Chemical Properties	No additional information available	
Appearance and Odor	Orange Liquid Little or no odor	
Conditions to Avoid	High temperatures oxidizing conditions 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.	
Materials to Avoid	Strong oxidizing agents	
Hazardous Decomposition Products	Incomplete combustion may produce carbon monoxide and other toxic gases	

13. Hazards Rating Information

National Fire Protection Association

Health = 0 Flammability = 1 Reactivity = 0 Special Hazard None

Ratings have been based on available component information from the National Fire Protection Association

National Paint and Coatings Association

Hazardous Material Information System (HMIS)

Health = 0 Flammability = 1 Reactivity = 0 Personal Protection = D

Ratings have been generated according to criteria specified in the National Paint and Coatings Association Implementation Manual based on component information available

14. Additional Precautions

Handling and Storage Procedures

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.

Decontamination Procedures

Clean equipment with water

**15. Regulatory Information****Federal****Toxic Substance Control Act (TSCA)**

The following is the Toxic Substances Control Act (TSCA) Chemical Substance Inventory Status of the components of this material with CAS numbers listed in Section 9 - Components:

CHEMICAL	CAS NO.	STATUS
Propylene Glycol	57-55-6	Listed - Non Confidential
Water	7732-18-5	Listed - Non Confidential
Trade Secret-ACC P000721-01 #		Listed - ACC Trade Secret
Trade Secret-ACC P000721-02 #		Listed - ACC Trade Secret
Trade Secret-ACC P000721-03 #		Listed - ACC Trade Secret
Trade Secret-ACC P000721-04 #		Listed - ACC Trade Secret
Trade Secret-ACC P000721-05 #		Listed - ACC Trade Secret
Trade Secret-ACC P000721-06 #		Listed - ACC Trade Secret

The specific chemical identity of this component is a trade secret. Chemical identities will be revealed to treating physicians in an emergency, or to purchasers after execution of a secrecy agreement

Superfund Amendments and Reauthorization of 1988 (SARA), Title III**-Section 302/304**

Requires emergency planning based on 'Threshold Planning Quantities' (TPQs), and release reporting based on Reportable Quantities (RQs) of 'Extremely Hazardous Substances' (EHS) listed in Appendix A of 40 CFR 355. There are no components of this material with known CAS numbers which are on the EHS list.

-Section 311 & 312

Based upon available information, this material and/or components are not classified as any of the specific health and/or physical hazards defined by Section 311 & 312.

-Section 313

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.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

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

OSHA Regulations

'Chemical-specific' U.S. Occupational Safety and Health Administration (OSHA) regulations (1910.1002 to 1910.1050) presented under 29 U.S. Code of Federal Regulations (CFR) 1910 do not apply to this material or its components.

Other EPA Regulations

No additional information available

Department of Transportation (DOT)

Other than the normal shipping instructions and information given in this MSDS, there are no other specific U.S. Department of Transportation (DOT) regulations governing the shipment of this material.

State Regulations:**California Safe Drinking Water and Toxic Enforcement Act of 1988 - Proposition 65**

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.

California South Coast Air Quality Management District (SCAQMD) Rule 443.1 (VOC's)

A Volatile Organic Compound (VOC) is any volatile compound of carbon excluding methane, carbon monoxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, 1,1,1-trichloroethane, methylene chloride, (FC-23), (CFC-113), (CFC-12), (CFC-11), (CFC-22), (CFC-114), and (CFC-115). By this definition, this is a VOC material.



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15. Regulatory Information (Cont'd)

Massachusetts Right to Know Substance List (MSL) [105 CMR 670.000]

Extraordinarily Hazardous Substances (MSL-EHS) must be identified when present in materials at levels greater than state specified criterion. The criterion is $\geq 0.0001\%$. Hazardous Substances (MSL-HS) on the MSL must be identified when present in materials at greater than the state specified criterion. The criterion is $\geq 1\%$. Components with CAS numbers present in this material, at levels specified in Section 9 - Components, do not require reporting under the statute.

New Jersey Registration

None of the trade secrets listed in Section 9 - Components have been registered with the State of New Jersey.

Pennsylvania Right to Know Hazardous Substance List

Hazardous Substances (PA-HS) 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:

CHEMICAL	CAS NO.
Propylene Glycol	57-55-6

Special Hazardous Substances (PA-SHS) must be identified when present in materials at levels greater than the state specified criterion. The criterion is $\geq 0.01\%$. Environmental Hazards (PA-EH) must be identified when present in materials at levels greater than the state specified criterion. The criterion is $\geq 0.01\%$. Components with CAS numbers in this material, at levels specified in Section 9 - Components, do not require reporting under the statute.

Regulatory Advisory

If you reformulate or further process this material, you should consider re-evaluation of the regulatory status of the components listed in this sheet.

One or more of the trade secret components of this material listed in the components section, may be on states' regulatory lists. Chemical identities will be revealed to treating physicians in an emergency or to purchasers after execution of a secrecy agreement.



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16. Label Information

Manufacturer ARCO Chemical Company
3801 West Chester Pike
Newtown Square, PA 19073-3287

Telephone Numbers:
EMERGENCY
800/424-9300 CHEMTREC
610/353-8300 ARCO CHEM
CUSTOMER SERVICE
800/321-7000 INFO ONLY

Other Company Names None

Signal Word CAUTION

Use Statement For industrial use only
Keep out of reach of children

Physical Hazards
Aqueous solutions may produce flammable vapors

Health Hazards
Suspect eye irritant

Precautionary Measures
Aircraft should be inspected by qualified personnel during periods of precipitation to assure critical surfaces are free from all signs of deposits immediately prior to initiating the take off roll
Aircraft should be completely deiced again at any sign of re-freezing
Consideration should be given to Type II deicing/anti-icing procedures when precipitation is expected
Avoid contact with eyes
Use with adequate ventilation
Wash thoroughly with soap and water
Remove spillage immediately from any hard, smooth walking areas

DOT Information:	UN/NA ID No. Not applicable	DOT Hazard Class Not regulated	DOT Packing Group Not regulated	DOT RQ (Based on Material) Not applicable
DOT Hazardous Material Proper Shipping Name Not regulated				

<u>Component Name</u>	<u>CAS No.</u>	<u>Composition Amount (Wt.)</u>	<u>RQ</u>
Propylene Glycol	57-55-6	AP 88 %	Not applicable
Water	7732-18-5	AP 9 %	Not applicable
Trade Secret-ACC P000721-01 #		LT 1 %	
Trade Secret-ACC P000721-02 #		LT 1 %	
Trade Secret-ACC P000721-03 #		LT 1 %	
Trade Secret-ACC P000721-04 #		LT 1 %	
Trade Secret-ACC P000721-05 #		LT 1 %	

Chemical identities will be revealed to treating physicians in an emergency or to purchasers after execution of a secrecy agreement

Instructions: In case of fire, use: Alcohol type foam, Dry chemical, CO₂, Water spray

First Aid:

- Inhalation:** Not expected to present a significant inhalation hazard under anticipated conditions of normal use.
- Eye Contact:** In case of eye contact, immediately rinse with clean water for 20-30 minutes. Retract eyelids often. Obtain emergency medical attention if pain, blinking, tears or redness persist.
- Skin Contact:** Not expected to present a significant skin hazard under anticipated conditions of normal use.
- Ingestion:** Ingestion unlikely. However, if ingested, do not induce vomiting. Obtain emergency medical attention.

In case of spill: In case of accidental spill, may contaminate water supplies/pollute public waters. Evacuate/limit access. Equip responders with proper protection. Prevent flow to sewer/public waters. Stop release. Notify fire and environmental authorities. Slippery walking. May be diluted with water to reduce slipperiness. Impound/recover large land spill. Soak up small spills with inert solids. Use 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. Report per regulatory requirements.

Protective Equipment

- Respiratory:** Use only U.S. National Institute for Occupational Safety and Health (NIOSH)/U.S. Mine Safety and Health Administration (MSHA) approved supplied air device to enter a closed area where material has been released.
- Eye:** Chemical splash goggles and/or face shield should be worn.
- Skin:** No special clothing normally required. Where use can result in skin contact, wash thoroughly before eating, drinking, smoking, or leaving work.

Label No: LP000721 Version No: 1 Date: 1 September 1993



17. General Comments

General Comments

Product must be diluted before use.

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.

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.

When precipitation is expected, consideration should be given to the utilization of SAE type II deicing/ antiicing procedures

Other Comments

Some of the information presented and conclusions drawn herein are from sources other than direct test data on the material itself.

Note	EQ=Equal	AP=Approximately	N/P=No Applicable Information Found
Qualifications:	LT=Less Than	UK=Unknown	N/AP=Not Applicable
	GT=Greater Than	TR=Trace	N/DA=No Data Available

DISCLAIMER OF LIABILITY:

The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

This MSDS was prepared and is to be used only for this material. If the material is used as a component in another material, this MSDS information may not be applicable. This document is generated for the purpose of distributing health, safety, and environmental data. It is not a specification sheet nor should any displayed data be construed as a specification. Some of the information presented and conclusions drawn herein are from sources other than direct test data on the product itself.

Print Date 7 February 1995

Document Status APPROVED