

PYROIL

PRODUCT INFORMATION

Item # 36046 P1

PYROIL HEAVY DUTY ANTIFREEZE/COOLANT PART NO. AFC-1, AFC-55

Aluminum Protection, Low Silicate Formula

Pyroil Heavy Duty Antifreeze/Coolant formulation contains a unique, low silicate, all-metals protection inhibitor package. It provides excellent all-metal (including aluminum) protection as illustrated by the ASTM corrosion test results shown on this sheet, and yet it meets the requirements of the trucking industry (less than 0.1% silicate)*. This formulation fits the requirements as specified by ASTM D4985 for heavy duty diesel engine applications.

Pyroil recommends the use of a supplemental coolant additive (SCA), when used in a heavy duty diesel application. Too much SCA in any antifreeze coolant results in silicate deposit or "green goo." The low silicate level in this formulation aids in preventing silicate deposits when used in proper recommended usage levels.

As indicated, Pyroil's AFC-1 and AFC-55 antifreezes meet the rigid requirements of the ASTM D4985 standard for a heavy duty diesel antifreeze*. It also meets ASTM D3306 standard for a high quality antifreeze coolant. It will not affect engine or vehicle finishes, and is compatible with all major American brands of antifreeze and supplemental additives. It will not affect radiator hoses and contains a high quality defoamer to prevent foam for the life of the coolant.

Pyroil's AFC-1 and AFC-55 antifreeze meets or exceeds the following antifreeze specifications and/or recommended practices.

ASTM	D4985
Cummins Bulletin	85T8-2
GM	1899M and 1825M
ASTM	D3306
SAE	J1034 and J814c
SAE	J1941
TMC of ATA**	RP-302A

* As per the Cummins heavy duty truck antifreeze coolant specification.
** The Maintenance Council of American Trucking Association (formerly RCCC). For sale in U.S.

Pyroil Heavy Duty Antifreeze Coolant Boil/Freeze Protection		
% Antifreeze	Freezing Point, °F/C	Boiling Point*, °F/C
20	+18/-8	263/123
33 1/3	0/-17	258/123
40	-12/-24	260/128
50	-34/-35	265/128
70*	-60/-67	277/135

* Maximum freeze protection is at 70%.
** Boiling point shown using conventional 15 psi radiator cap.

Typical Physical Properties		
Antifreeze Glycols	mass %	94.4
Corrosion Inhibitors	mass %	2.1
Water	mass %	3.5
Flash Point	°F/C	250/121
Weight per gallon @ 60°F/16°C	lbs/KG	9.418/4.278
Silicates	mass %	<.1

Aluminum Water Pump Tests		
ASTM D2809 Pump Cavitation (Extended Test)		
Test Period	Results	Specification
100 hours	8	8
300 hours	8.5	.
600 hours	8	.
1000 hours	8	.

ASTM cavitation corrosion rating: 10-perfect 1-performed

Spent antifreeze coolants in most states is not hazardous unless it contains more than 5 ppm of lead. Pyroil recommends that spent coolant never be disposed of by dumping into a storm sewer or onto the ground. Instead, contact your local municipality for instructions on where to and how to properly dispose of this coolant and protect our environment.

If any coolant is spilled onto the ground, the EPA has a 5,000 pound Reportable Quantity (RQ) which states that they must be notified of the spill. Should an accident of this nature occur, call the EPA and ask for proper instructions on how to contain the coolant.

Important: While the information and data contained in this bulletin are presented in good faith and believed to be reliable, they do not constitute a part of our terms and conditions of sale unless specifically incorporated in our Order Acknowledgment.

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ASTM D4985	Specifications	AFC-1 Typical	ASTM Method
Chloride	25 PPM, max	<25	D3634
Silicon	250 PPM, max.	<250	.
Specific gravity, 80/80° F	1.110-1.145	1.131	D1122
Freezing point, 50% V/V	-34°F/-36°C	-34°F/-36°C	D1177
Boiling point, undiluted	325°F/162°C	330°F/164°C	D1120
Boiling point, 50% V/V	225°F/107°C	225°F/107°C	D1120
Effect on engine or vehicle finish	No effect	No effect	.
Ash content, mass %	5 max.	<3	D1119
pH, 50%, V/V	7.5-11.0	10.4	D1287
Reserve alkalinity*	10 min.	11	D1121
Water mass %	5 max.	3.5	D1123
Color	Distinctive	Green	.
Effect on nonmetals	No adverse effect	No adverse effect	.
Storage stability	-	> 1 year	.
Foaming	150 ml vol., max. 5 sec. break, max.	50 ml 2 sec.	D1881 D1881
Cavitation-erosion rating	8 min.	9	D2609

* Reserve alkalinity (RA) is a term used to indicate the amount of alkaline inhibitors present in an antifreeze formulation. It is incorrect to relate a high RA with a high-quality antifreeze. Present state-of-the-art antifreeze formulations contain many new inhibitors which give added protection to certain metals but do not raise the RA number.

Typical ASTM Corrosion Test Results			
Glassware Corrosion Test	Weight loss Mg/Specimen		ASTM Method
	Spec.	Actual	
Copper	10	.9	D1384
Solder	30	.9	
Brass	10	1.3	
Steel	10	.5	
Cast Iron	10	5.5	
Aluminum	30	4.7	
Simulated Service Test			
Copper	20	3.2	D2570
Solder	60	.5	
Brass	20	17.4	
Steel	20	4.5	
Cast Iron	20	2.2	
Aluminum	60	2.6	
Hot Surface Corrosion			
Specimen weight loss	1.0	<0.5	D4340

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Item # 360514

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MATERIAL SAFETY DATA SHEET

The Valvoline Company

Page 001
Date Prepared: 11/20/96
Date Printed: 11/30/96
MSDS No: 0296765-003.001

PYROIL ANTIFREEZE COOLANT(ALL PUR) AFC-1

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Material Identity

Product Name: PYROIL ANTIFREEZE COOLANT(ALL PUR) AFC-1
General or Generic ID: GLYCOL

Company

The Valvoline Company
P.O. Box 14000
Lexington, KY 40512

Telephone Numbers

Emergency: 1-800-274-5263
Information: 1-606-357-7847

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient(s)	CAS Number	% (by weight)
ETHYLENE GLYCOL	107-21-1	90.0
DIETHYLENE GLYCOL	111-46-6	0.0- 10.0

3. HAZARDS IDENTIFICATION

Potential Health Effects

Eye

Exposure may cause mild eye irritation. Symptoms may include stinging, tearing, and redness.

Skin

Exposure may cause mild skin irritation. Symptoms may include redness and burning.

Swallowing

Single dose oral toxicity is low. Swallowing small amounts during normal handling is not likely to cause harmful effects; swallowing large amounts may be harmful.

Inhalation

Exposure to vapor or mist is possible.

Symptoms of Exposure

gastrointestinal irritation (nausea, vomiting, diarrhea), irritation (nose, throat, respiratory tract) (pre-existing lung disorders, e.g. asthma-like conditions, may be aggravated by exposure to this material), central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness), kidney damage.

Target Organ Effects

Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals, and may aggravate pre-existing disorders of these organs in humans: kidney damage, Overexposure to this material (or its components) has been suggested as a cause of the following effects in humans, and may aggravate pre-existing disorders of these organs: central nervous system effects, liver abnormalities, kidney damage

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PYROIL ANTIFREEZE COOLANT(ALL PUR) AFC-1

Developmental Information

This material (or a component) may cause birth defects in humans based on positive test results with laboratory animals.

Cancer Information

No data

Other Health Effects

No data

Primary Route(s) of Entry

No data

4. FIRST AID MEASURES

Eyes

If symptoms develop, immediately move individual away from exposure and into fresh air. Flush eyes gently with water for at least 15 minutes while holding eyelids apart; seek immediate medical attention.

Skin

Remove contaminated clothing. Wash exposed area with soap and water. If symptoms persist, seek medical attention. Launder clothing before reuse.

Swallowing

If swallowed, seek medical attention. If individual is drowsy or unconscious, do not give anything by mouth; place individual on the left side with the head down. If individual is conscious and alert, induce vomiting by giving syrup of ipecac or by gently placing two fingers at the back of the throat. If possible, do not leave individual unattended.

Inhalation

If symptoms develop, immediately move individual away from exposure and into fresh air. Seek immediate medical attention; keep person warm and quiet. If person is not breathing, begin artificial respiration. If breathing is difficult, administer oxygen.

Note to Physicians

This product contains ethylene glycol. Ethanol decreases the metabolism of ethylene glycol to toxic metabolites. Ethanol should be administered as soon as possible in cases of severe poisoning since the elimination half-life of ethylene glycol is 3 hours. If medical care will be delayed several hours, use three to four 1-ounce oral "shots" of 86-proof or higher whiskey before or during transport to the hospital. Hemodialysis effectively removes ethylene glycol and its metabolites from the body.

5. FIRE FIGHTING MEASURES

Flash Point

250.0 F (121.1 C) COC

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Explosive Limit
(for component) Lower 3.2 %

Autoignition Temperature
No data

Hazardous Products of Combustion
May form: carbon dioxide and carbon monoxide, various hydrocarbons.

Fire and Explosion Hazards
Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.

Extinguishing Media
alcohol foam, carbon dioxide, dry chemical.

Fire Fighting Instructions
Wear a self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode with appropriate turn-out gear and chemical resistant personal protective equipment. Refer to the personal protective equipment section of this MSDS.

NFPA Rating
Health - 1, Flammability - 1, Reactivity - 0

6. ACCIDENTAL RELEASE MEASURES

Small Spill
Absorb liquid on vermiculite, floor absorbent or other absorbent material.

Large Spill
Prevent run-off to sewers, streams or other bodies of water. If run-off occurs, notify proper authorities as required, that a spill has occurred. Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be taken up on sand, clay, earth, floor absorbent, or other absorbent material and shoveled into containers.

7. HANDLING AND STORAGE

Handling
Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed.

Storage
Not applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection
Chemical splash goggles in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. Consult your safety representative.

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Skin Protection

Wear resistant gloves such as: neoprene, nitrile rubber, polyvinyl chloride, To prevent repeated or prolonged skin contact, wear impervious clothing and boots..

Respiratory Protections

If workplace exposure limit(s) of product or any component is exceeded (See Exposure Guidelines), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (consult your industrial hygienist). Engineering or administrative controls should be implemented to reduce exposure. If needed use a NIOSH/MSHA jointly approved dust respirator. (Consult your safety representative.)

Engineering Controls

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

Exposure Guidelines

Component

ETHYLENE GLYCOL (107-21-1)
OSHA VPEL 50.000 ppm - Ceiling
ACGIH TLV 100.000 mg/m3 - Ceiling as an aerosol

DIETHYLENE GLYCOL (111-46-6)
No exposure limits established

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point
(for product) 330.0 F (165.5 C) @ 760.00 mmHg

Vapor Pressure
No data

Specific Vapor Density
> 1.000 @ AIR=1

Specific Gravity
1.128 @ 77.00 F

Liquid Density
9.400 lbs/gal @ 77.00 F
1.128 kg/l @ 25.00 C

Percent Volatiles (Including Water)
No data

Evaporation Rate
SLOWER THAN ETHYL ETHER

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PYROIL ANTIFREEZE COOLANT(ALL PUR) AFC-1

Appearance

No data

State

LIQUID

Physical Form

No data

Color

GREEN

Odor

FAINT GLYCOL

pH

No data

10. STABILITY AND REACTIVITY

Hazardous Polymerization

Product will not undergo hazardous polymerization.

Hazardous Decomposition

May form: carbon dioxide and carbon monoxide, various hydrocarbons.

Chemical Stability

Stable.

Incompatibility

Avoid contact with: strong oxidizing agents.

11. TOXICOLOGICAL INFORMATION

No data

12. ECOLOGICAL INFORMATION

No data

13. DISPOSAL CONSIDERATION

Waste Management Information

Dispose of in accordance with all applicable local, state and federal regulations.

14. TRANSPORT INFORMATION

DOT Information - 49 CER 172.101

DOT Description:

Not Regulated

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PYROIL ANTIFREEZE COOLANT(ALL PUR) AFC-1

Container/Mode:
CASES/SURFACE - NO EXEMPTIONS

NOS Component:
ETHYLENE GLYCOL

RQ (Reportable Quantity) - 49 CFR 172.101
Not applicable

15. REGULATORY INFORMATION

US Federal Regulations

TSCA (Toxic Substances Control Act) Status
TSCA (UNITED STATES) The intentional ingredients of this product are listed.

CERCLA RQ - 40 CFR 302.4	
Component	Component
-----	-----
ETHYLENE GLYCOL	5000

SARA 302 Components - 40 CFR 355 Appendix A
None

Section 311/312 Hazard Class - 40 CFR 370.2
Immediate(X) Delayed(X) Fire() Reactive() Sudden Release of Pressure()

SARA 313 Components - 40 CFR 372.65		
Section 313 Component(s)	CAS Number	Max %
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ETHYLENE GLYCOL	107-21-1	90.14

International Regulations

Inventory Status
Not determined

State and Local Regulations

California Proposition 65
None

New Jersey RTK Label Information
ETHYLENE GLYCOL 107-21-1

Pennsylvania RTK Label Information
1,2-ETHANEDIOL 107-21-1
ETHANOL, 2,2'-OXYBIS- 111-46-6

16. 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.