RADCOOL

Features:

Radcool is single-phase, universal automotive engine antifreeze based on a long life organic corrosion inhibitor system. It is a nitrite-, nitrate-, phosphate-, silicate-, borate and amine-free formulation which uses carboxylate technology to provide maximum protection of the six basic metal alloys found in most heat transfer systems. This inhibitor system eliminates the need for silicates, phosphates, borates, nitrites, nitrates and amine additives traditionally used for this purpose.

Replacing these inhibitors is significant for water pump life because many of these conventional inhibitors have been shown to be abrasive to water pump seals. In comparison field tests with conventional antifreeze in taxi fleets, Radcool Antifreeze significantly reduced the need to replace water pumps during the 100,000 mile test. In addition to fleet tests, this product has also been tested by a major manufacturer of water pump seals, and has been found to be more compatible with the seals than any other antifreeze tested.

Since the antifreeze contains no phosphates or silicates, hard water deposits in the cooling system are almost eliminated. The low level of abrasive dissolved solids in Radcool Antifreeze results in improved water pump seal life.

The life of a coolant in an automobile engine is limited by the corrosion protection ability of the corrosion inhibitors. The main corrosion inhibitors in Radcool Antifreeze have been shown to remain above 95% of their original concentration after 150,000 miles in automobiles. This allows much longer interval between antifreeze changes without worrying about loss of corrosion protection.

Radcool delivers value through:

- Meets Automotive and Heavy Duty Service Specifications: ASTM D-6210 • ASTM D-3306 • ASTM D4985-98 • ASTM D 6210-98
- 5 year or 150,000 mile service interval
- Provides effective, long term corrosion protection for aluminum, brass, cast iron, steel, solder and copper
- Protects against winter freeze up and minimizes the chance of summer boil over
- Compatible with water pump seal materials and minimizes the formation of abrasive dissolved solids
- Stable for at least eight years storage
- No silicate dropout or gel formation during use or storage
- 100% biodegradable in its pure unused form
- Excellent heat transfer properties
- Nitrite-, borate-, phosphate-, nitrate- and amine-free
- Outstanding hot surface aluminum protection
- Superior protection in high operating temperatures
- Compatible with conventional antifreeze. Dilution with conventional antifreeze will reduce extended life benefits.

Applications

Radcool recommended for use in the cooling systems of all types of automotive engines.

For optimum year round protection against freezing, boiling, and corrosion, a 50 percent Radcool Antifreeze/Coolant solution (1 part anti-freeze/1 part water) is recommended. For maximum protection against freezing in extremely cold areas, a 60 percent solution (3 parts anti-freeze/2 parts water) can be used. Dilution of 70 percent is recommended with De-ionised water only.

Note: These products are not to be used to protect the inside of potable water systems against freezing.

Recommended Dilutions for Radcool Antifreeze

Boiling Protection	°C(°F)*
50% 1:1 (1 part antifreeze/1 part water)	129.4(265)

* 15lb pressure cap

Freezing Protection	**°C(°F)**
40% 2:3 (2 parts antifreeze/3 parts water	-24.4(-12)
50% 1:1 (1 part antifreeze/1 part water)	-36.7(-34)
60% 3:2 (3 parts antifreeze/2 parts water)	-52.2(-62)

Radcool recommends that this product not be diluted by more than 10% with conventional coolants.

Corrosion Protection

Used Radcool Antifreeze was tested in laboratory controlled corrosion tests for new coolants after it had already been in service for more than 100,000 miles. The used Radcool Antifreeze/Coolant passed the ASTM D 1384 requirements for glassware corrosion with results equivalent to new coolants and also passed the ASTM D 4340 Aluminum Hot Surface Test for new coolant. Radcool Antifreeze/Coolant represents the next generation of universal engine coolants.

This coolant is suitable for a five year or 150,000 miles service life in automotive applications.

Radcool Antifreeze and Prediluted 50/50 have been tested against all ASTM standards for heavy duty and light duty coolants. In ASTM 1384, Glassware Corrosion test, the inhibitor sys-tem rendered weight losses that were only a small frac-tion of allowed limits for all six metals tested.

Radcool Antifreeze/ Coolant ASTM D 1384 Glassware Corrosion Test		
	ASTM Limit	Weight loss, mg per coupon*
Copper	10 max	2
Solder	30 max	-2
Brass	10 max	2
Steel	10 max	-1
Iron	10 max	-3
Aluminum	30 max	4

* Negative indicates net gain

Traditional phosphate and borate containing coolants exhibit high pH and reserve alkalinity (RA[1]) when compared with Radcool Antifreeze/Coolant. This comparison can not be used to make conclusions about relative corrosion protection since the definition of RA is based upon the buffering curve of inhibitors that are not present in the coolant. Its unique corrosion inhibitor system is designed to protect aluminum and other system metals at lower pH levels than conventional coolants.

1. RA is defined as the amount, in milliliters (mL), of 0.1 normal hydrochloric acid required to reduce the pH of 10 ml of anti-freeze to 5.5.

A comparison of Radcool coolant with traditional coolants is shown below:

	Radcool Antifreeze/Coolant	**Traditional antifreeze/coolant**
Typical pH	8.3	10.5
Typical RA (mL)	6.0	12.0

Handling Practice :

The primary limiting factor in the shelf life of a coolant is silicate instability. Since silicate will eventually polymerize to silicate gel, all traditional coolants have a shelf life of about 18 months. Radcool Antifreeze is silicate-free and therefore can be stored for at least 8 years without a problem, provided the integrity of the container is maintained.

Always dispose of used in accordance with local, state, and federal guidelines.

SLOAN INTERNATIONAL INC.
NEW BURGH, N.Y. 12550
U.S.A.