



Technical Service Bulletin

Date: 1/2/12

Product Description: AMSOIL Dominator® Coolant Boost

Subject: Leaks in certain aluminum alloy radiators

OBJECTIVE:

Communicate issues with select high-performance radiators manufactured internationally that develop leaks under specific water quality conditions while using AMSOIL Dominator® Coolant Boost.

ISSUES:

Use of cooling water with high chloride ion content in certain aluminum alloy radiators can create corrosion. The reaction with chloride ions can accelerate aluminum corrosion, which rapidly degrades the core and causes leaks.

TECHNICAL DISCUSSION:

A number of worldwide environmental factors have increased the frequency in which municipal tap water contains high levels of chloride, including use of desalination plants for tap water, winter road salt runoff, road construction and leached ground minerals.

Chloride ions in engine coolant can also originate from welding flux residue that was not completely rinsed from aluminum/alloy radiators and cores during manufacture, especially those manufactured in Asia. Because it can be difficult to find the exact source of chloride ions, it may be necessary to obtain the radiator for analysis if a failure occurs.

Because chloride ions are very corrosive to aluminum and its alloys, ASTM D3306 lists the maximum allowable chloride content for engine coolant at 25 ppm. At higher levels, chloride ions can stimulate corrosion of aluminum/alloys, and due to the regenerative nature of this process, corrosion continues until the entire surface of the aluminum has been penetrated. In radiators, this results in leaks and/or failures. In most cases, the chloride ions originate from the cooling water source.

Although chloride ions are not known to cause corrosion in cast iron engine blocks/cylinder heads or copper/brass radiators, it is advisable to avoid using high chloride content water as a coolant.

Users may falsely conclude that a radiator failure was

caused by the addition of AMSOIL Coolant Boost when it was actually caused by high chloride content in the water, even if the same water source was previously used with a 50/50 antifreeze mix. When mixing 50/50, the chloride content in the water is cut in half and may not pose a problem when diluted.

RECOMMENDATION:

1. When using straight water with AMSOIL Coolant Boost, be sure to treat the entire cooling system with Coolant Boost at the recommended treat rate. Undertreatment, in addition to high chloride content in the water, can result in aluminum alloy radiator failures.
2. Use water with low chloride content. The safest source is reverse osmosis (RO) water. Neither distilled water nor deionized water is suitable for engine coolant use unless mixed 50/50 with antifreeze.
3. Tap water with low chloride content may be used. Before using tap water as engine coolant, consumers with aluminum or alloy radiators are advised to contact their municipalities to determine whether chloride in the tap water exceeds 25 ppm. If it does, bottled drinking water should be used. Note: water processed through water softeners does not remove chloride.
4. Bottled drinking water is highly recommended because it consists of high-quality RO water and is available nationwide in liter and gallon-size containers.
5. Spring water may or may not be suitable. It can contain high levels of calcium that can cause scaling and deposits in an engine cooling system.

AMSOIL Dealers who encounter a customer with a complaint of this nature are advised to obtain a sample of the used coolant and send it to AMSOIL Technical Services for analysis to determine the cause of the failure.

For additional information regarding chloride:
<http://en.wikipedia.org/wiki/Chloride>

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