



## **Evans Waterless Engine Coolants ..... Better by Design**

The primary purpose of a liquid coolant is to remove heat from the cylinder head and engine block. Secondary concerns all apply to how the coolant transfers heat, its ability to be pumped, limit corrosion and deposits, offer lubricity and not freeze.

Traditional engine coolant is a 50/50 mix of ethylene glycol and water.

Heat is transferred from the cylinder bore and cylinder head to the liquid coolant. The state of the coolant is dependent on the rate of heat input. When the coolant reaches the hottest part of the cylinder head which is usually around the combustion chamber and exhaust valve, it will actually start to boil. This phase change is identified as nucleate boiling and allows efficient transfer of heat. The coolant's chemical and thermal reaction is responsible for how efficient this process becomes.

At very low load on the engine no boiling occurs. During higher engine loads and speeds the rate of heat flow through the cylinder head is increased until steam bubbles are formed in certain regions on the surface of the water jacket. These areas are the metal bridge between the exhaust valve seats and spark plug boss.

Under severe engine load and speed the vapor bubbles become so large and numerous that the liquid has difficulty flowing. When this critical temperature is reached the hot surface of the water jacket suddenly becomes insulated by individual steam bubbles which join together to form a film. Under these conditions the film insulates the water jacket from the coolant and metal surface temperature of the cylinder head elevates dramatically and can cause the engine to ping or lack power even though the temperature gauge shows no sign of this condition.

Evans Cooling Systems have developed a range of waterless engine coolants that uses no water; therefore the coolant remains in its liquid form ensuring no vapour is formed and maximum thermal conductivity is achieved at all temperatures.

In addition, it never freezes and does not boil until 190 degrees C. It also is a lifetime coolant so maintenance is completely eliminated once it is installed.

Evans High Performance Waterless Engine Coolant can be installed in any engine (stock or modified) with excellent results.

With Evans Coolant in your system and sufficient measures taken to increase flow of coolant to the radiator it is possible to control higher operating temperatures on and off the highway. More importantly, since the Evans Coolant is removing the heat from the engine, it runs great at any temperature. The loading up and poor driveability at elevated coolant temperature is now gone.

The important thing to note is that the cylinder head metal surface temperature has dropped dramatically with Evans Coolant installed, though the liquid temperature on the gauge may not have changed much.

### **About Evans Cooling Systems Australasia:**

Evans Cooling Systems Australasia, based in Melbourne, Victoria, continually seeks to improve engine performance and efficiency, and to contribute to a cleaner and safer environment. For more information on Evans Cooling Systems Australasia and Evans waterless engine coolants please visit [www.evanscoolants.com.au](http://www.evanscoolants.com.au), Dealer enquiries welcome, (03) 9318 9811.