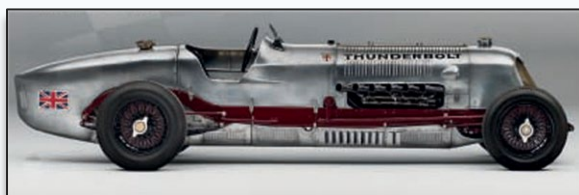




## **THE EVANS ADVANTAGE**

Since the 1930s engine coolants have been based on a mixture of water, ethylene glycol (antifreeze) and corrosion inhibitors. All such mixtures are known to have inherent physical and chemical limitations that often affect performance and can lead to premature engine failure.

According to the British Testing Council – Testing Advisory Group – “up to 60% of engine failures can be attributed to cooling system failure”.... Confirming there are inherent flaws associated with water-based coolants and emphasising the need for something better ! Evans Waterless Coolants represent a major step forward in engine cooling technology which, over the last 20years, have been proven to increase engine reliability, reduce maintenance costs and improve performance.



### **No Water – No Overheating**

Evans Waterless Coolants have a boiling point above 180 degrees C, effectively eliminating overheating, boil-over and after-boil.

### **No Water – No Pressure**

Evans Waterless Coolants have a very low vapour pressure, eradicating the danger of scalding and reducing strain on engine components.

### **No Water – No Corrosion**

Water contains oxygen and acts as an electrolyte which leads to corrosion. Evans Waterless Coolants eliminate these corrosion sources.

### **No Water – More BHP**

Evans Waterless Coolants eliminate engine hotspots which lead to poor combustion and loss of power.

### **No Water – No Liner Erosion**

Evans Waterless Coolants are proven to reduce liner pitting by 75% compared with water based coolants.

### **No Water – No Scaling**

Water contains impurities and hardness salts that lead to scaling and poor heat transfer. Evans Waterless Coolants contain none of these impurities.



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## HOW EVANS WORKS

### **Consistent Cooling, Efficient Combustion**

Within an engine cooling system the hottest surfaces are those adjacent to the combustion chamber, specifically the cylinder liners and cylinder head. Around these zones water-based coolants often vaporise, generating hot-spots and preventing efficient cooling. Overheating, boil-over, cavitation and poor combustion are all symptomatic of such coolant failures. Evans Waterless Coolants do not vaporise around the combustion zone or where pressure drops occur. Consequently using Evans ensures consistent cooling and efficient combustion, even when the engine is put under extreme load.

### **Lower Pressure, Less Stress, Increased Safety**

When water turns to steam it puts additional stress on radiators, hoses and other engine components, and when high pressure steam escape there is always a risk of scalding. Evans coolants have a much lower vapour pressure compared to water-based coolants, resulting in 75% reduced system pressure. Evans engineers often demonstrate this characteristic by removing the coolant cap immediately after a race..... hey presto, no geyser!

### **Reduced Maintenance, Improved Preservation**

Water contains dissolved oxygen which corrodes carbon steel and cast iron. It also facilitates electrolyte activity, leading to galvanic corrosion and pitting – a common source of failure in aluminium and copper components. Evans waterless coolants do not contain dissolved oxygen and are non-conductive. Hence, Evans removes the root cause of corrosion whilst improving reliability, reducing maintenance costs and preserving engine life.

## A NON-TOXIC COOLANT FOR LIFE



Water-based coolants must be changed-out at regular intervals, as corrosion inhibitors are neutralised through the oxidising actions of water. Evans waterless coolants do not entrain oxygen and are proven to last 20+ years. Standard car antifreeze is toxic and the documented causes of many domestic pet deaths. Evans coolants have been confirmed as non-toxic by an EPA certified laboratory. For more information on how to prevent poisonings please refer to [www.bluedeath.org.uk](http://www.bluedeath.org.uk) , [www.rspca.org.uk](http://www.rspca.org.uk), and [www.fabcats.org](http://www.fabcats.org)



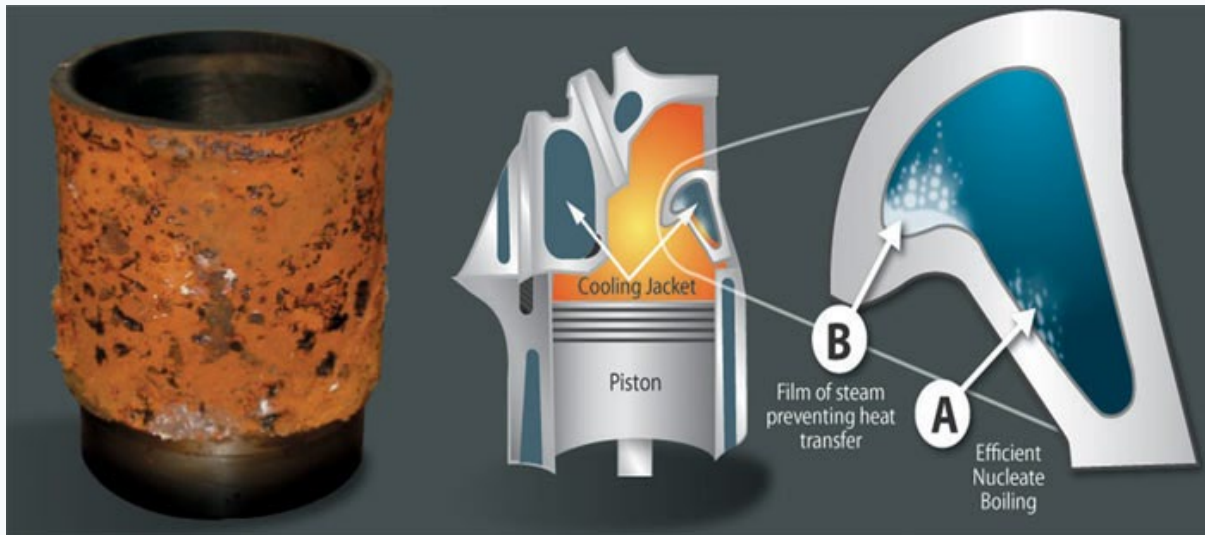
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## LIMITATIONS OF WATER

### Physical Limitations of Water



Traditional water based coolants regularly cross the thermal boundary that separates efficient Nucleate Boiling (A) from inefficient Critical Heat Flux. CHF is synonymous with the condition 'Departure from Nucleate Boiling'. When 'DNB' occurs a layer of steam bubbles form adjacent to the engine combustion zone (B). Steam dissipates less than one-thirtieth of the heat water does, leading to rapid over-heating of local metal surfaces, resulting in inefficient combustion. The properties of Evans prevent 'DNB' and ensures the engine performs as designed.

Under atmospheric conditions water-based coolants will boil around 103 degrees C. Additional (cap) pressure can raise the boiling point to 120 degrees C but in a dynamic environment, such as a cooling system, there are other factors in play. Specifically, when fluids flow at speed through tortuous cooling channels and pumps, eddy currents are formed and pressure drops are inevitable. At these locations steam vapour often escapes and cavitation occurs.

### Chemical Limitations of Water

Water contains dissolved oxygen which when heated above 100 degrees C is driven off. However, as the water cools it re-oxygenates. This process leads to a perpetual cycle of oxidation and corrosion. It also neutralises the corrosion inhibitors, necessitating regular coolant change-out. The problem is accentuated in vintage and classic vehicles where the coolant is in direct contact with air. Water also acts as an electrolyte when dissolved solids are present. This promotes galvanic corrosion where metals of low nobility sacrifice themselves to the metals of high nobility – this is often manifested by pitting.



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