



## TECHNICAL BULLETIN

### Classic Car Coolants

Issue: Updated – June 2017

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It would be safe to say that when it comes to oils and lubricants, most people with the aid of a handbook can usually identify the correct oil to use for engine, gearbox and rear axle requirements. In some cases the information is quite detailed. The same cannot be said in regards to radiator products.

Such statements as - "use only rain water, or clean soft water" and in winter, "use an anti-freeze compound topping up as necessary" does not auger well for total cooling system protection. The "clean soft water" once it's in the radiator will not be very clean or very soft for very long, and over "topping up" of anti-freeze will certainly cause corrosion if this method is applied.

**Soluble oils** were also added to cooling systems, the reason being that it was thought to provide exceptional lubrication to water pumps but all it did was to provide a rather oily mess with no creditable results whatsoever. A disadvantage would be that in hotter running engines, there is a risk of build of deposits in the engine from the oxidation of the oil – which of course does not help heat transfer. So this is far from ideal.

#### ***So having said that, what are the alternatives?***

If we look at plain tap water, forgetting about "clean soft water", distilled water, spring water so on and so forth, we find that there are two distant disadvantages. The first is that it freezes in winter, the second it does nothing to stop corrosion. Distilled water on the other hand can be more corrosive than tap water. This is because distilled water grabs oxygen out of the air more readily than conventional tap water and passes the oxygen straight into the cooling system causing oxidation.

#### ***Now what is corrosion?***

In short there are four different types of corrosion, and it is perhaps beneficial to spend some time looking at each different type as they all play a significant role in cooling systems if not properly treated.

#### ***The first one comes under the heading of "Deposits".***

These are the calcium carbonates which are the hard deposits one sees in such things as kettles if the water supply in the area is "hard" or contains minerals. These deposits adhere to the tubes in the radiator, restricting water flow and reducing the overall efficiency. This was the reason as to why the need for "filtered type waters" especially in England where "hard water" is quite common. South Australia is also known for its mineral-based water supply so the need for a "soft water" in these places is justified

#### ***The second form of corrosion is – "Oxidation".***

Oxidation is oxygen combining with iron to form rust and aluminium to form the white deposits so often found in castings etc. Oxygen also affects copper and causes the rapid colour degradation.

#### ***Thirdly we have "Electrolysis"***

Electrolysis can be defined as the chemical reaction with dissimilar metals which react with one another via water conducting electricity. Where aluminium is involved, such electrolysis preferentially attacks the aluminium and deposits it elsewhere leaving holes where there should be no holes!

#### ***And finally we have "Erosion"***

Erosion is sometimes confused with electrolytic corrosion. Erosion is mainly a mechanical problem caused by water flow and turbulence and is normally found in isolated areas of the engine.



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So with the above in mind, and in particular with veteran, vintage and classic cars featuring large amounts of aluminium, copper, brass and bronze, it is therefore imperative to add something to water to protect against the derivatives of corrosion. The answer lies in a corrosion inhibitor.

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**Penrite Classic Car Coolant** is Type "B", colourless, hybrid-organic, non-glycol based, corrosion inhibitor concentrate designed specifically for use in veteran, Edwardian, vintage and classic car cooling systems. It protects against corrosion, cavitation, scaling and oxidation. It is an effective engine coolant that uses a hybrid inhibitor to provide maximum protection against corrosion whilst providing superior heat transfer to significantly reduce engine operating temperature.

**Demineralised Water** is a clear, colourless and odourless purified water that has been refined by removing harmful mineral ions, salts and other impurities such as Calcium, Magnesium, Sodium, Chloride, Sulphate, Nitrate and bicarbonate that can cause destabilisation of other chemicals with which it is mixed. It is also known as deionised water and used in **OEM Approved** coolant Premix solutions.



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