



Keep your 4X4 cool out on the track.

Environmental factors such as rough terrain, steep inclines and ambient temperatures can add some unwanted heat to your 4x4 engine. As your engine begins to work harder metal surface temperatures increase, putting extra strain on your engine coolant. As more heat is rejected to your coolant the risk of overheating and engine damage increases dramatically.

Conventional engine coolants are typically a 50/50 mix of ethylene glycol (including inhibitors) and water. The engine must operate within the chemical and physical limitations of water and any up and above these parameters starts creating issues which many avid 4x4 enthusiasts are well aware of. Whilst pressure caps and inhibitors do assist in overcoming some of these issues, it is fair to say that the issues will certainly not be eliminated, and as long as water is involved the issues will always be present.

When additional heat sources are added to your engine it is important that your coolant (and cooling system) are also upgraded in line with any modifications and environmental factors.

In these instances it is the vapour and vapour pressure generated by the water within the system that causes heat transfer to be reduced and overheating to occur.

Water vapor in a cooling system always occupies a volume that displaces a like volume of liquid coolant from the location of the water vapor. The hottest parts of the cylinder head are the likeliest locations for localized boiling of coolant and water vapor creation. If the nearby surrounding liquid coolant is hotter than the boiling point of the water at the local pressure, the vapor will remain at that location, forming an insulating barrier between the hot cylinder head metal and the liquid coolants. How good is the insulation? Water vapor has just four percent of the thermal conductivity of a liquid coolant that is half water. With that insulation present, less heat is conducted from the hot metal, the metal temperature rises, and a "hot spot" forms.

A cylinder head hot spot in any engine stresses the metal, possibly causing the head to warp or crack. In a spark-ignition engine, the hot spot can be a site for pre-ignition and detonation.

Evans waterless coolants don't contain water and they have a boiling point considerably hotter than the temperature at which they are operated. The huge separation between operating temperature and boiling point means that any locally generated vapor immediately condenses into nearby liquid that is much colder than the coolant's boiling point. There is no vapor to contend with.