

Changing colours of coolant

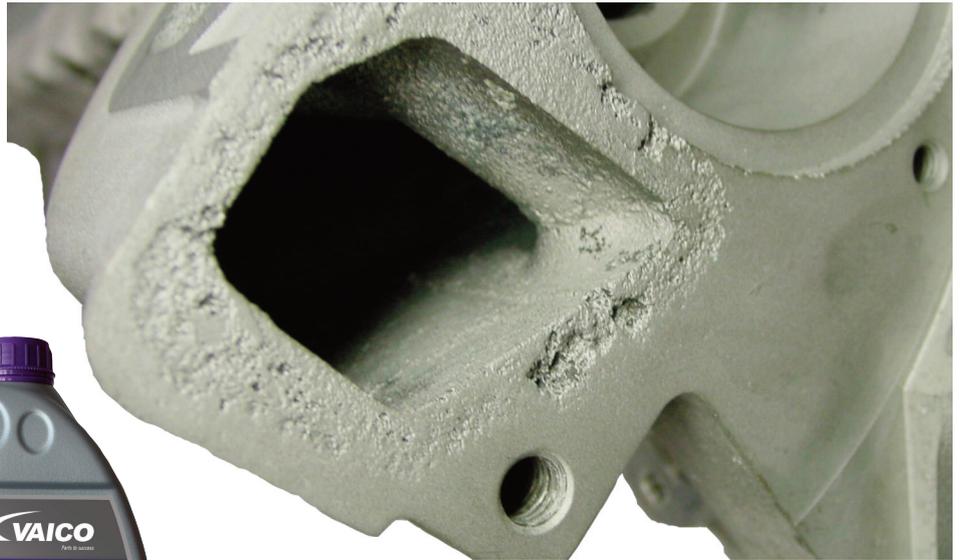
The days when coolant was the same from car to car are long gone. The reason for the differences in coolant comes down to simple chemistry, as Vaico explains.

For many years, the same basic coolant was used for every vehicle on the road. This was an improvement over the very early days of motoring, when a driver would drain the water from the cooling system, if there was a danger of it freezing. The driver would then have to refill the cooling system the next time it was started. Glycol was the first additive used in cooling systems, to both lower the freezing temperature, but it also raised the boiling point of the fluid. It was probably at this time that the terms coolant and anti-freeze were first used. Of course, they are the same thing, as coolant and anti-freeze are different names for the same fluid.

In older engines, the engine block was cast from steel and ordinary corrosion was the biggest concern, after preventing the coolant from freezing or boiling. Over the years, coolant became more advanced as silicates, phosphates and borates were added to the ethylene glycol based coolant. These additives were all chosen to enhance and extend the service life of the coolant. As long as ethylene glycol coolant remains alkaline (the opposite of acidic), corrosion is controlled and the cooling system is protected. Over time, the corrosion inhibitors will be depleted and the corrosion protection is lost. It is for this reason that the older type green antifreeze should be changed every two years or so.

Advances in engine building and design, fuelled by the never ending quest for more power and higher reliability, resulted in aluminium engine blocks, radiators and other cooling system components. The standard ethylene glycol coolant was not completely suitable for aluminium components, so a new type of coolant was required. While it is commonly believed that aluminium can't corrode, this is simply not true. Aluminium corrodes very easily when it is exposed to certain chemicals. So new materials in the components of the cooling system require a new type of coolant.

The first thing that mechanics would have noticed about this new coolant was its colour. While the older ethylene glycol based coolant was green, the newer coolant was pink or red. This type of



This cylinder head was destroyed by corrosion caused by using the wrong type of coolant. Using the specified coolant type at all times will avoid this costly problem

coolant was first seen in asian cars.

As engine design and technology advanced, newer types of coolant became available, including propylene glycol, organic acid technology (OAT), hybrid organic acid technology (HOAT) and others. While some of these coolants can be mixed, it was never considered best practice. For instance, you could put the older green glycol coolant in any car, even a new high tech one. It would work as a coolant in a manner, but will take its toll by corroding aluminium at a much higher rate and will have a much shorter useful service life. In the end, the cheaper coolant will have a much higher cost to replace severely corroded parts. To make it a bit easier to see that there are differences, there are many different dyes that are added to coolant to help identify what type it is. As there are over 15 vehicle specific coolant types, care should be taken to ensure that the proper type is used for each car.

Advances in engine and coolant designs continues to modern cars, and a mechanic should take care to follow the manufacturer's requirements for the

type of coolant and service intervals. Failure to follow these basic instructions will only result in a shortened service life, damage to the cooling system (and engine) or both. To steer clear of this potential problem, a mechanic only has to follow a simple rule: use the type of coolant that the manufacturer has specified and never mix different types of coolants.

Volkswagen introduced a new type of coolant, known as G12. G12 does not have any phosphates or silicates, which would cause long term problems to a VW engine. Other types followed, G12++ and G13 so far. There will definitely be more types in the future. Vaico makes a coolant that is fully compliant with the requirements of VW engines that specify G12 coolant.

It is common for your customers to think of coolant at this time of year, as many drivers only think of it as anti-freeze, and that it is only necessary during the winter. Help your customers prepare their cars for winter, and the rest of the year too. Use only the specified type of coolant, follow the service intervals and procedures for each Make/Model and you will not have to worry about future cooling system problems.

