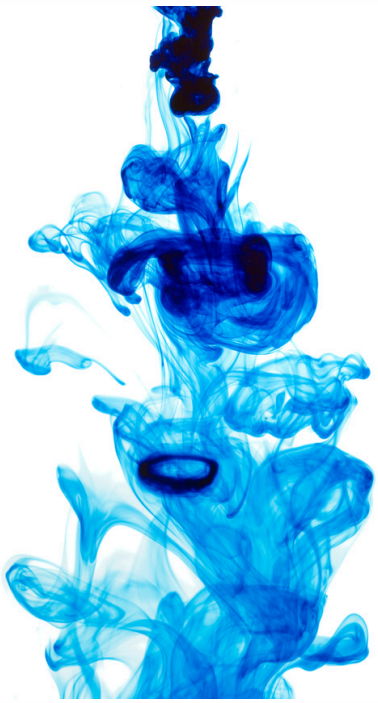
ANTIFREEZE/COOLANT



The main function of the coolant liquid is to cool the engine, leading the heat towards radiator. Moreover, thanks to the presence of glycol or glycerin it is able to protect the system from freezing. The added additives provide adequate corrosion protection, lubricate moving parts and protect rubber components. In the latest generation cars (Hybrid and EV), the presence of electrostatic corrosion is not to be underestimated given the increasing presence of electrical and electronic components. For this reason, some radiator liquids contain special additives that inhibit electrostatic corrosion.

Incorrect liquid with inadequate technology, poor quality or wrongly diluted causes:

- Visible mechanical damage.
- Drilling of lubricating heat exchangers.
- Exhaust gas drawing between cylinder gaps in the mono-block.
- Cavitation and incrustation in the water pump.
- Deterioration of the gaskets.

Antifreeze liquids are colored thus helping the user to distinguish liquids and avoid mixing them with each other.
Color sorting is a simple visual simplification that should not be considered for choosing the correct liquid to top up.
The correct standard is indicated in the user and maintenance booklet (see G11/G12/G12+/ G12++/G13).

Antifreeze liquid of blue/ green color

It is a liquid based on ethylene glycol that uses as inorganic anti-corrosive additives such as: phosphate salts, nitrites, silica and borate, extremely toxic and polluting. It is also the first antifreeze liquid to be placed on the market. This type of liquid is still on the market mainly for the use of refills and replacement in old cars (until the early 90s). The use of this liquid, however, was abandoned because of its high toxicity.


Antifreeze liquid of red color

Introduced on the market in 1997, the antifreeze liquid of red color is the most widespread in recent years and used on all modern engines. One of the main differences of this new liquid are related to its additives. Unlike blue/green and yellow liquids, it contains only organic additives (without silicates and phosphates) and is identified with the acronym OAT (Organic Additive Technology), that is, technology with organic additives.

Antifreeze liquid of violet color

Antifreeze of purple color is a liquid that has gradually replaced the traditional red liquid. It is compatible with all previous liquids, although for old cars with copper/brass radiator it is better to keep the liquid originally indicated by the manufacturer. New versions of this liquid replace part of ethylene glycol with glycerin, which has a lower environmental impact.

Antifreeze liquid of yellow color

Some car manufacturers have replaced inorganic additives with organic additives combined with the inorganic ones, which have been given a yellow color. That's, it's an intermediate solution that combines a base of organic additives, but also contains a part of inorganic additives like silicates and phosphates. You might find in liquids of this type the acronym HOAT (Hybrid Organic Additive Technology), that is, technology with hybrid organic additives.

Now you have all necessary information to make the replacement of your car antifreeze liquid.
You discovered all chemical characteristics and meaning of the antifreeze liquid color.
Therefore , at this point for cold season your car engine will be protected from any possible damage caused by bad weather and winter climate. Above all under certain circumstances you know now how it is important to check the quality of the antifreeze liquid, especially in old car which need higher control as compared to the new ones already using the antifreeze liquid.

COMPATIBILITY WITH HARD WATERS

Drinking water contains ions of calcium, magnesium, iron etc. If the mixture of coolant/water is made with water rich in such ions or hard, insoluble compounds may form during operation, which will settle on metal surfaces, reducing the heat exchange power. The best radiator liquids contain special additives and formulations that prevent the deposit of these ions.

CONTROL

It is good practice to check the state and condition of the liquid that can give essential information on engine the condition. If the color is altered, dark, or oil drops are visible it means that the cooling and lubrication system are in contact and could cause the head gasket wear. With a density meter you can check the goodness of the liquid and dose the antifreeze correctly. If the density meter indicates that the minimum sustainable temperature is close to 0 °C, it will be necessary to empty the system and restore it with a new liquid.

REFILL

It is recommended to check the level of coolant periodically. In the engine area the expansion tank shows the minimum/ maximum level. Check in the use and maintenance book what type of liquid is required for the car.

WHEN THE COOLANT MUST BE CHANGED

Usually, the car maintenance program given by the car manufacturer must be followed, in any case every 100,000km it should be replaced completely.

Discover our full range of chemicals on our website www.FrigAir.com