

Treatment and Maintenance of Heating and Cooling systems

• APPEARANCE

Depends on the presence in water of sediments, suspended and colloidal particles as well as dissolved substances that have detectable characteristics: turbidity, colouring, foam formation or magnetic metal deposits.

• BACTERIAL LOAD

Expresses the total number of bacteria per unit of volume. Can be estimated by counting the Colony Forming Units present on the Petri dish (laboratory) where was cultivated a known volume of the liquid to be tested.

• CHEMICAL CONDITIONING

The chemical conditioning treatment means that a chemical product is used to prevent the formation of chemical corrosion, which are amplified by the increase of temperatures within the systems. Various chemicals are used depending on the formulations in heating and cooling circuits and also in domestic hot water production circuits. They also prevent the adherence of carbonates in order to protect against oxidation and corrosion, forming a protective molecular film on metal walls of thermal plants and eliminating the frequent gaseous and thermal stresses due to contact with different metals.

• DENSITY

Is defined by the ratio between the mass of a body and the volume occupied by the same. The unit of measurement in the international system is Kg/m³.

• HARDNESS

Expresses the sum of calcium and magnesium salts that are dissolved in it. Is expressed in ppm or mg/l OF CaCO₃ or in French degrees (1° f = 10 ppm or mg/l of CaCO₃). The hardness leads to deposit formation within circuits that are not subjected to treatment.

• EC

The electrical conductivity is the ability of a material to enable passage of electrical current. Is defined as the reverse value of residual current and its unit of measurement is Siemens per meter (S/m).

• SYSTEM AGE



• IRON

The iron in the circuit can give rise to deposits and/or secondary corrosion. The iron dissolved in water originates from corrosion and shows that the anti-corrosion protection of the water circuit is insufficient.

• MAGNETITE

Iron, if not protected, tends to oxidize in various forms including Magnetite, an oxide usually protective and magnetic, strongly bonded to iron surface. Due to changes in temperature and high temperatures, magnetite decomposes to ferrous oxide powder in nature that often clogs the heat exchangers and pump bodies.

• MOLYBDENUM

Chemical element acting as basic active ingredient of the main chemical pre-conditioning agents in additives for heating systems.

• pH

Expresses the degree of acidity or basicity (alkalinity) of a solution, according to a scale ranging from 0 to 14. The pH is one of the basic parameters for evaluating the corrosivity of water.

It is also a very important factor in the development and extent of phenomena such as fouling, corrosion and microbiological growth.

• POLYPHOSPHATES

Polyphosphates are also chemical conditioning agents used in the production of domestic hot water, and combine with the hardness (without changing the value of water) and prevent the precipitation thus avoiding fouling, which lead to loss of efficiency of heating systems and high energy consumption. They also explain the protective function on pipes with an effective anti-corrosion action.

• ALKALINE RESERVE

Expresses the amount of salts with alkaline properties dissolved in water. It could be defined simply as the opposite of acidity. Actually, it is the water capacity to "resist" changes induced by external factors of its own pH. The unit of measurement is expressed in ppm (parts per million). In the case of Antifreeze, an insufficient Alkaline Reserve indicates a poor protection against corrosion.

• TDS

Total Dissolved Solids or Fixed Residue is a parameter used to classify mineral waters and drinking water in general. Expressed in mg/l, it indicates the amount of solid substances, perfectly dried, that remains after evaporation by heating in a capsule of platinum, calibrated beforehand, a known quantity of filtered water.

• FREEZING TEMPERATURE

Expresses the temperature to which a solution can be subjected, before crystallization and consequent solidification.

• CST TESTER

Portable digital instrument for measuring Temperature, Electrical Conductivity and Fixed Residue.