

MT COOLANT CHECK

(Patent Number: 4332358)

Non-Chemical Approach to Engine Cooling System Predictive Maintenance

The test device MT COOLANT CHECK is designed and developed for regular on-site assessment of the engine coolant quality in the global shipping sector and beyond. It offers a completely novel, **non-chemical and environmentally friendly** approach to engine cooling system predictive maintenance that is not yet available on the market. The conventional on-board engine coolant diagnosis is conducted with the help of portable test kits which all use different chemicals, predominantly classified as hazardous products for the environment. Until now, Martechnic® also offered traditional chemical-based test kits "COOLANT AND LUBE OIL" and "MT COOLING WATER CHECK". Using the chemicals, complex physical and/or chemical analyses of individual parameters (**chlorides, nitrite additives**, pH etc.) are performed in order to quantitatively determine the additives and substances contained in the coolant in "ppm" or "mg/l" and to find out whether the anti-corrosion effect of the coolant in use is still sufficient. When individual parameters are out of specified limits, usually addition of additives or coolant change are the measures to follow.

In contrast, the alternative innovative measurement method of the MT COOLANT CHECK offers **just one single test** by means of the electrotechnical apparatus, with constant (corrosion resistant) and working/ changeable (corrosion-prone) electrodes in a simulated engine cooling system. No chemicals are required at all.



Test Device "MT COOLANT CHECK" with a Screw Cap Test Tube incl. Changeable (Corrosion-Prone) Electrodes, Set of 18 pcs, Steel

Technical Features:

- Scope of application: engine coolant
- Measuring range:
 - Lagner: 0 – 100 lag
 - Chlorid: 0 – 60 ppm Cl
 - pH (separate optional pH electrode): pH 0 – 14
- Measuring time: ca. 20 min. (unattended automated measurement cycle)
- Integrated dosing tool: dosing rate of the chemical additive in kg (powder) or in l (liquid)
- Measured sample: a coolant sample of 30 ml in a simulated cooling system

Benefits:

- Time-saving: just one single test instead of a series of individual tests
- Fail-safe automated measurement
- Environmentally friendly: easily recyclable electrodes are used for testing instead of hazardous chemicals



**Test Kit "MT COOLANT CHECK",
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- No chemical wastes: electrodes disposed as a regular scrap metal on a vessel
- Suitable for different coolant formulations regardless of the coolant additive composition/ manufacturer
- Commercially advantageous: no shelf-life limitations for test electrodes in comparison to chemicals

Both electrodes are subjected to corrosion stress. The performance of the engine coolant is characterized in relation to its existing level of corrosion protection on the metals used in the cooling system. All the evaluation is carried out fully automatically. The remaining corrosion protection of the engine coolant in use is determined with a new unit of measurement: Lagner (lag).

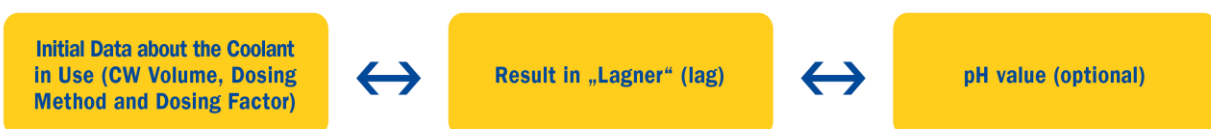
Thereby, the MT COOLANT CHECK aims at the determination of the gradual (or sudden) deterioration in anti-corrosion performance of the engine coolant, that is unavoidable during engine operation, before the individual analyses of the chemical composition and physical properties allow any conclusions to be drawn.

The measurement of a pH value can be carried out through the integration of a separate optional pH electrode into the sensing head of the MT COOLANT CHECK to replace the use of disposable pH test strips. In this case, the pH value of the coolant sample will be automatically measured and directly displayed.

When the anti-corrosive effect of the engine coolant in use is insufficient, the dosing rate of the chemical additive to be added is automatically calculated, by entering the following available technical data provided in the manufacturer's coolant specifications:

1. CW (cooling water) volume in m^3
2. Dosing method: liquid or powder
3. Dosing factor: l/m^3 or kg/m^3

Therefore, the maintenance crew on-board a vessel receives a clear recommendation to further actions if required:



Automatic assessment of the coolant's anti-corrosive protection with recommendation to action

Overall, the innovative testing equipment of Martechnic® with the environmentally-friendly and resource-efficient measurement allows the engineers and users to reduce their ecological CO₂ footprint by implementing chemical-free testing of the engine coolant into their predictive on-board maintenance practices.