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ThermoClean

Tips & Tricks for Water Baths and Water Circulation Systems. Efficient Stabilization of Cooling/Heating Water against Microorganism.

ThermoClean is the original brand name of the Original Equipment Manufacturer (OEM) Bioanalytic GmbH • Germany.
ThermoClean also is sold under many secondary brand names of other Original Sales Manufacturers (OSM) worldwide.
ThermoClean is a series of different products for water circulation systems and humidification devices.

The following glossary (in alphabetic order) provides advice for each keyword presented below.
All tips are merely recommendations - the enormous number of possible applications and different usage parameters does not allow any universally applicable statements.

Corrosion Protection

ThermoClean DC is a biological stabiliser (biocide) and does not promote corrosion.
If specific corrosion protection is required for sensitive alloys, then use in addition to the biological stabilization the ultra corrosion protection **ThermoClean CP:BT** or the universal protection **ThermoClean CPX**.
ThermoClean CP:BT (only ultra corrosion protection) is compatible for use together with **ThermoClean DC** (biological stabilization) and **ThermoClean CPX.**
⇨⇨⇨ Re-dosing

Degradation

ThermoClean DC is a biodegradable biocide (as legally required in the EU). Correspondingly, it gradually loses its effect in circulation water. **ThermoClean DC** should thus be periodically re-dosed.
⇨⇨⇨ Re-dosing

Duration of Protection

ThermoClean is effective for weeks to several months. Re-dose as necessary.
ThermoClean is biodegradable as mandated by law. This limits its effective time. **ThermoClean** should thus be periodically replenished.
⇨⇨⇨ Re-dosing

Foaming

If heavy foaming occurs when replenishing **ThermoClean** under strong circulation with air entrainment, and if this becomes a problem, replace the water completely or use an anti-foaming agent (available from Bioanalytic).
⇨⇨⇨ Water Quality

Frost Protection

For use at temperatures below the freezing point of water, you may add a frost protection agent. Useable are:
- Ethylenglycol (1,2-Ethandiol)
- Ethanol
- Glycerol

Check the compatibility of others frost protection agents with **ThermoClean** before use.

Ion Exchange

Purified water is often produces with an ion exchange resin (sometimes downstream of a reverse osmosis system). The resin frequently releases very small particles into the water which should then be micro filtered for sensitive applications. This prevents deposits and clogging up of the system.
Because the resin particles react electrolytically, they can also cause corrosion – even of stainless steel(!).
⇨⇨⇨ Micro Filtration
Moreover, simple ion exchange resins are often heavily microbially contaminated - depending on regeneration procedures and usage time. Please avoid filling your cooling/ heating system with such „water“. You can purchase the following products to determine / prevent contamination:
a) Dip agars for colony counting
b) sterile filter cartridges for use downstream of the ion exchanger.
We will gladly help you procure these items.

Decontamination

Microbially contaminated systems are extremely hard to clean. Therefore use **ThermoClean DC** regularly to be safe and to save time and work.
Contaminated systems should be very thoroughly cleaned, disinfected and sufficiently flushed with water.
An ensuing high dose treatment with **ThermoClean** at 10× to 20× working concentration is recommended. Allow the system to circulate sufficient. Let the entire system stand at room temperature for 24 to 48 h, e. g. overnight or over the weekend.
Drain the system completely, flush sufficiently with distilled water to wash out dead organisms. Repeat this high dose procedure once more.
After completing both high dose treatments, refill the system and protect with **ThermoClean** at normal working concentration.
⇨⇨⇨ Water Quality
⇨⇨⇨ Water Exchange

Deposits

If deposits start showing in the system, e. g. because **ThermoClean** was not used or **ThermoClean was** not adequately replenished and microbes have now spread through the system, then running a decontamination is necessary.
⇨⇨⇨ Decontamination

Micro Filtration

Depending on the application, using micro filtered distilled or deionized water is recommended. In special cases – e. g. cooling delicate microstructures – using sterile filtered water (≤ 0.22 µm) may be advised; this is also the case for microbially contaminated water.

Re-dosing

If the water is not completely exchanged anyway, **ThermoClean** should be replenished every months to the original filling volume.
⇨⇨⇨ Degradation
⇨⇨⇨ Turbidity

Stability

As a concentrate, **ThermoClean** has a long shelf life and can be used up to the expiry date printed on the label. Do not use beyond this point.
At working concentrations, **ThermoClean** is effective for several months - depending from cleanness and contamination.
⇨⇨⇨ Re-dosing

Bioanalytic GmbH
● biomedical & analytical chemical reagents • medical laboratory diagnostics
● in vitro diagnostics (IVD) • biomedical science & analysis technology
● Waldmatten 10-13 • 79224 Umkirch/Freiburg i. Br. • Germany

Phone: +49 7665 5951
Fax: +49 7665 5683
E-Mail: office@bioanalytic.de
Internet: www.bioanalytic.de

Turbidity

Clouding of water mostly results from contamination. The cause should be clarified as the remedy and should be performed immediately to avoid damages.

The following causes are likely:

- Microbial contamination (e. g. bacteria, fungi, mold, protozoa).
  ⇨⇨⇨ Decontamination.
- External contaminations (e. g. from leaked or spilled chemicals/reagents).
  ⇨⇨⇨ Water exchange.
- Chemical precipitation of substances contained in the water; chemical reaction with CO_2, O_2 from the air.
  ⇨⇨⇨ Water exchange.

Water Quality

Water used for water circulation systems should fulfill certain quality standards: Electrolytic conductivity < 5.00 µS/cm (25 °C) [*1)], particle free (micro-filtered) and free from germs (e. g. water from ion exchange).

⇨⇨⇨ Micro Filtration
⇨⇨⇨ Ion Exchange

Water Exchange

Open water circulating systems and all systems prone to contamination with organic or anorganic materials should be cleaned roughly every month or sooner, if necessary.

We recommend to clean and/or exchange water in completely closed water circulating systems - which also have negligible evaporation - at least every half year.

Notes

Ordering Information

Please refer to our document **ThermoClean - Overview & Compatibility** for the combination possibilities and usability of our **ThermoClean** products. This document also contains detailed ordering information on the product and package sizes.

Download from our Internet pages under all ThermoClean products.

Literature & Footnotes

Legends for the graphic symbols and tags used follow relevant norms or are available on our internet pages.

*1) If no other information is provided by the equipment manufacturer.