

# RTN / STN X

## HOW TO USE RTN / STN X



RTN/STN X is a protective treatment for corals and is effective against tissue necrosis in corals, both the fast form (RTN, Rapid Tissue Necrosis) and the slow form (STN, Slow Tissue Necrosis). RTN/STN X disrupts the microorganism development involved and at the same time strengthens the corals' defenses.

### **RTN/STN X contributes:**

- soft corals and sea anemones
- stony corals SPS/LPS
- azooxanthellate corals



## WHAT IS RTN/STN?

### **RTN (Rapid Tissue Necrosis) – ACUTE LOSS OF TISSUE**

The ciliates *Philaster lucinda* and *P. guamense* are always involved in RTN infestations in corals, but there are also others like *Helicostoma notatum* and others, which are difficult to determine.

Ciliates are small, unicellular organisms, which exist in thousands of different species. Some are very host-specific, and other coral diseases are also caused by different ciliates.

*Philaster lucinda* and *P. guamense* can also be found, for example, when corals suffer the acute tissue loss known as „brown jelly“ syndrome. Aside of the dissolving tissue, the leading symptom of this pathological process is the formation of large amounts of mucus secretion, which is often also colored brown by the decaying zooxanthellae.

Affected soft corals also degenerate and form similar slimy secretions which increase rapidly. A detachment of circumscribed tissue areas in hard corals which is accompanied by no slimy secretions has other causes (e.g. heavy metal poisoning).

Here you can occasionally see naked calcium skeleton from which the polyp tissue has detached like rags.

### **STN (Slow Tissue Necrosis) – CHRONIC LOSS OF TISSUE**

Other microorganisms are usually involved in the gradual, chronic tissue necrosis. These are *Euplotes*, *Cryptocaryon* and partly also bacterial infections with *Vibrio* species.

In STN, the coral tissue recedes slowly. There is usually no mucus forming, but often greenish and grayish discoloration of the skeleton can be seen after the tissue regression. At the edge of infested areas this tissue dissolution can often be seen even with the naked eye. This cannot be seen in tissue detachment due to a disturbed balance between alkalinity and  $PO_4$  concentration.



## APPLICATION:

We recommend a treatment period of 7–10 days. If necessary, the treatment can be extended. Before using the preparation, please read the HTU RTN/STN X (QR CODE) and follow the using instructions carefully.

RTN/STN X is used in the aquarium and is safe to use. Other aquarium inhabitants will not be affected.

## DOSAGE:

- 15 ml/100 l (26 US gal.) aquarium volume daily for 7–10 days, nadd directly into a strong current area.
- During treatment, activated carbon must be removed from the system. However, skimmer, phosphate adsorber and UV sterilizer can remain operational.
- In addition, „BACTO THERAPY“ with 3 ml/100 l (26 US gal.) aquarium volume should be added during the treatment.

<https://www.faunamarincorals.de/Bacto-Therapy/14175-VH>



## INGREDIENTS:

- Water, zinc and chelators, active ingredient: Chrysanthemum extract
- Use biocide products carefully!  
Always read label and product information before use!  
BAuA Reg. No.: N-94587

## BEST BEFORE DATE:

- RTN/STN X has a shelf life of at least three years after production and approx. 12 months after opening the bottle.

## STORING:

- The product can be stored at normal room temperatures, but must be protected from direct sunlight.

## DISPOSAL:

- After use, rinse bottle and dispose of in accordance with local regulations on household waste/recycling.



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## FURTHER INFORMATION:

The terms RTN (Rapid Tissue Necrosis) and STN (Slow Tissue Necrosis) describe two different disease phenomena caused by unicellular protozoa and fungi. The microorganisms involved are opportunistic pathogens, which are present in every aquarium and propagate strongly with reduced resistance of the corals. They can therefore be regarded as weak coral parasites. As a rule, an infestation is triggered by negative changes in aquarium chemistry, e.g. fluctuations in alkalinity, pH value and nutrient concentrations as well as an insufficient concentration of halogens.

In addition to the direct treatment of infested corals, it is therefore essential to adjust the water values correctly and to improve the corals' environmental conditions to a level that is healthy.

Please use our ICP laboratory service for this purpose: <https://lab.faunamarin.de/de>







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## RTN/STN X WORKS AGAINST:

- Acute tissue necrosis (RTN), caused by parasitic infestation with *Philaster* ciliates
- Chronic tissue necrosis (STN), caused by mixed parasitic infestation

The composition of the product supports the coral in building up defenses against the parasites and at the same time inhibits the reproduction of the parasites themselves.

RTN/STN X does not contain any prescription drugs or single active ingredients.

The effect is due to the inhibition of certain enzymes, which are essential for the reproduction of the ciliates. Since this effect is very specific, corals and other organisms in the aquarium are not affected.

A combination of this treatment with „**BACTO THERAPY**“ strengthens the corals additionally and supports the coral-biome. After successful treatment, „**RECON X**“ can be used to achieve faster tissue regeneration.

**In parallel, you should use as many of the following SUPPORTING MEASURES as possible. Page 7**

### General advice:

- **Never discontinue RTN/STN X too early and continue dosing for another 7–10 days, even if no new damage is visible.**
- **In case of very severe infestation, the dosage can be doubled!**
- **RTN/STN X has a specific effect and is harmless for all other tank inhabitants**



### Dosage BACTO THERAPY

- Dose 15 ml/100 l (26 US gal.) daily directly into the main tank, always at the same time.
- Skimmer, UV sterilizer, ozone and all adsorbers can continue to operate.
- But activated carbon should be removed from the system during treatment.

The dosage should be maintained over several weeks because of the mode of action. Experience shows that after 3–5 days the treated tanks show massively reduced infestation and strongly improved general condition of the corals.

<https://www.faunamarincorals.de/Bacto-Therapy/14175-VH>



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## SUPPORTIVE MEASURES:

### Temperatur

The reproduction cycle of the parasites is strongly dependent on temperature. It is advisable to reduce the tank temperature to **23-24 °C** in case of infestation. This measure will slow down the reproduction cycle of the ciliates and thus supports the treatment.

### Removal/fragmenting of corals

In case of massive infestation of larger corals with a high number of infected areas, you should consider whether the fragmentation of the coral cane makes sense. Each infected part of a coral that is removed from the tank will significantly shorten the treatment time. However, before you remove corals from the tank, you should siphon away the infected areas and dispose the water. Make sure that the pathogen-containing mucus secretions and tissue pieces do not drift in the aquarium.

### Bath in „THE DIP“:

Corals that can be removed from the aquarium should be treated with „THE DIP“ in a separate container to accelerate the treatment. Dead material can also be cleaned with fresh water rinses.



### TIPP: „THE DIP“

As a matter of principle, bathe every newly acquired coral in „THE DIP“ bathing solution (see HTU „THE DIP“) and examine the corals very carefully.

Small quarantine tanks are particularly helpful to observe the new corals during the first 4-6 weeks so that no further coral pests are introduced. RTN/STN X can be used as a preventive dose throughout the quarantine phase.

<https://www.faunamarincorals.de/The-Dip/19100-VH>



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## ... SUPPORTIVE MEASURES:

### Water values

Ciliates benefit from a weakening of the corals due to missing elements in the aquarium water. Some elements which are needed by the corals for forming defense substances are especially important, e. g. fluorine, bromine or iodine. If you detect an outbreak of Ciliates in your aquarium, check the chemical composition of your aquarium water with a FAUNA MARIN ICP analysis and make sure that the important elements are present in sufficient quantity. Also use our knowledge database for this purpose, where you will find a lot of helpful information about your measured water values and their meaning.

### Aftercare

The amino acids and organic nutrients contained in RTN/STN X support the regeneration of affected coral tissue and facilitate rapid healing. If corals are already too severely affected or show massive infestation, remove it from the aquarium. Make sure that no infected parts of those corals remain in the tank.

### Degradation

The active substances in RTN/STN X are biologically degraded in the aquarium within a short time. It is not necessary to destroy it by ozonization or to remove it by activated carbon filtration. The degradation of these active ingredients can lead to a slight increase in nutrient concentrations in aquarium water. This is due to the organic structure of the preparations and can be easily controlled by PO<sub>4</sub> adsorbers.



### TIP: „Reef ICP“

The Fauna Marin Reef ICP Test gives a quick and easy overview of 37 water values in seawater. You will receive an analysis of the most important macro and trace elements as well as pollutants with corresponding dosing and treatment recommendations. We measure your sample with the latest generation of optical emission spectrometers with inductively coupled plasma. These devices analyse the elements reliably and accurately.

<https://faunamarincorals.de/Reef-ICP/20392-VH>





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## ... SUPPORTIVE MEASURES:

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### **Sicherheit**

- RTN/STN X is non-toxic and acts specifically on certain parasitic ciliates.
- Nevertheless, keep the product away from children and store it safely!

### **Biozide:**

**Always read the label and product information before use.**

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## ADVICE:

You can find support for the product in our Facebook group:

**<https://de-de.facebook.com/groups/1490705804549503/>**

our Supportkontakt:

**Support@faunamarin.de**

**GOOD LUCK**

**FAUNA MARIN GmbH**