Storing Borate Solutions

Bora-Care®, PenaShield®, and Tim-Bor® are all used as solutions that contain water. Since time and cold temperatures affect each of these products somewhat differently, we'll address each product individually.

Bora-Care®

Unmixed Bora-Care® concentrate can remain stable for many years. **Bora-Care®** needs to be stored in a cool, dry storage area inaccessible to children and pets. Do not allow Bora-Care® to freeze. If **Bora-Care®** is allowed to freeze, then it can make it ineffective.

For proper use, **Bora-Care®** can be mixed in three different ratios, which are 1:1, 2:1, and 5:1. For example, if you are making a 1:1 ratio, you will use equal parts of **Bora-Care®** and water. Using warm water makes it easier to mix, but it's not necessary to use warm water. Once the 1:1 and 1:2 solutions are mixed with water they must be used within 24 hours. The 5:1 solution will remain stable for up to 30 days. The reason for this is after 24 hours or so borate salts will begin to drop out of solution forming white crystals on the sides and bottom of the container. If left in the spray equipment for too long these crystals will block up the spray tip and/or filter screen and once crystalized, they are very difficult to dissolve. The colder it is, the faster the borates will drop out of the solution.

If you have mixed **Bora-Care®** that you want to keep, you need to get it out of your sprayer ASAP and into a plastic container. Thoroughly rinse out your sprayer as soon as possible. Although borate crystals will form in the container, if the mixed solution is heated to about 95°F there is a good chance that the crystals will re-dissolve. Furthermore, if the solution is not used within 24 hours the borate crystals will start forming again.

PenaShield®

One common assumption about **PenaShield®** is that it is simply **Bora-Care®** that has already been mixed with water. This is not the case. PenaShield® is an entirely different formulation than mixed **Bora-Care®.** Although the chemical components are the same as those in **Bora-Care®** they are present in entirely different ratios that help keep the borate salts in solution. If **PenaShield®** is subjected to cold temperatures (less than 40°F) for extended periods of time, there is a chance that some of the borate salts will begin to coat the inside walls of the container. This is not a sign that the **PenaShield®** is freezing, it's just that the temperature has reached a point where the solubility of the borate salts has dropped below 10%. Like most salt solutions, the lower the temperature, the less salt will remain dissolved in water. Once this occurs the solution needs to be warmed up to 80 to 90°F for the borate salts to re-dissolve.

The best way to warm it up is to fill a bucket with hot water, put the container of **PenaShield®** into it, then after an hour or so take it out and shake it until the crystals disappear. With 2.5-gallon containers it's a bit more difficult to do this unless you can find a large bucket. However, you can fill a bathtub or kitchen sink with hot water and do the same thing. Just placing the containers in a warm room will not heat the solution up enough to dissolve the borate salts. You will want to ensure that you store **PenaShield®** away from areas children and pets may gain access to. **PenaShield®** should also be protected from freezing.

Tim-Bor®

Tim-Bor® is typically used as either a 10% solution by dissolving one pound of dry borate powder in one gallon of water or a 15% solution by dissolving one and a half pounds of dry borate powder in one gallon of water. Using warm water speeds up the process. It should be mixed up in a bucket, not in a pump-up sprayer. Once the solution in the bucket is clear and there are no clumps of undissolved **Tim-Bor®,** then it can be transferred to a garden sprayer. **Tim-Bor®** solution must be used as soon as possible and should not be stored for an extended length of time. Just like **Bora-Care®** and **PenaShield®, Tim-Bor®** needs to be stored in a dry place where children and pets cannot gain access to.

Solutions of **Tim-Bor®** can and will freeze if the temperature drops below 20°F. However, it is not worth trying to save or salvage **Tim-Bor®** solutions that remain unused.