

Technical Tip

Storing Borate Solutions

Shell-Guard Concentrate, Shell-Guard RTU and Armor-Guard 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.

Shell-Guard Concentrate

Unmixed Shell-Guard Concentrate will remain stable for many years. As a concentrate it will not freeze. However as it gets colder the viscosity increases and at very cold temperatures (below 10 degrees F) it may get so thick as to appear to be solid. But it has not frozen. As it warms up it will become thinner and thinner to the point where it can be poured out of the container. Getting cold will not affect Shell-Guard Concentrate's performance and it can go through many cycles of heat and cold without a problem.

For use Shell-Guard Concentrate must be mixed with an equal volume of water (one gallon of Shell-Guard Concentrate to one gallon of water). Using warm water makes it easier to mix but it's not necessary to use warm water. Once the concentrate is mixed with water it must be used within 24 hours. 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 spray equipment too long these crystals will block up the spray tip and/or filter screen and once formed they are very difficult to dissolve. The colder it is, the faster the borate will drop out of solution.

If you have mixed Shell-Guard Concentrate that you want to keep you need to get it out of your sprayer ASAP and into a plastic container then thoroughly rinse out your sprayer. Although borate crystals will form in the container, if the mixed solution is heated to about 95 degrees F there is a good chance that the crystals will re-dissolve but if the solution is not used within 24 hours the borate crystals will start forming again.

Shell-Guard RTU

One erroneous assumption about Shell-Guard RTU is that it is just Shell-Guard Concentrate that has already been mixed with water. This is not the case. Shell-Guard RTU is an entirely different formulation than mixed Shell-Guard Concentrate. Although the chemical components are the same as those in Shell-Guard Concentrate they are present in entirely different ratios that help keep the borate salts in solution. If Shell-Guard RTU is subjected to cold temperatures (less than 40 degrees 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 RTU is freezing, it's just that the temperature has reached a point where the solubility of the borate salts have 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 degrees 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 RTU 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.

Armor-Guard

Armor-Guard is typically used as a solution by dissolving one pound (two of the enclosed scoops) of dry 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 Armor-Guard, then it can be poured into a sprayer. Like Shell-Guard Concentrate once it is dissolved in water you have about 24 hours before any borate salts begin to drop out of solution. The colder it is, the more rapidly the salts will crystallize.

Solutions of Armor-Guard can and will freeze if the temperature drops below 20 degrees F. However, it is not worth trying to save or salvage Armor-Guard solutions that remain unused.