

**FIELD NOTES**www.rockwelllabs.com

800.891.8610

Summer is here!

Handling Aprehend as the temperature rises.

Every year as the temperatures start to increase, we get phone calls and emails about how Aprehend responds to the temperatures during transit (FedEx, UPS etc.). The biggest concern is that the spores will be adversely impacted when being shipped in standard containers in the back of a delivery truck.

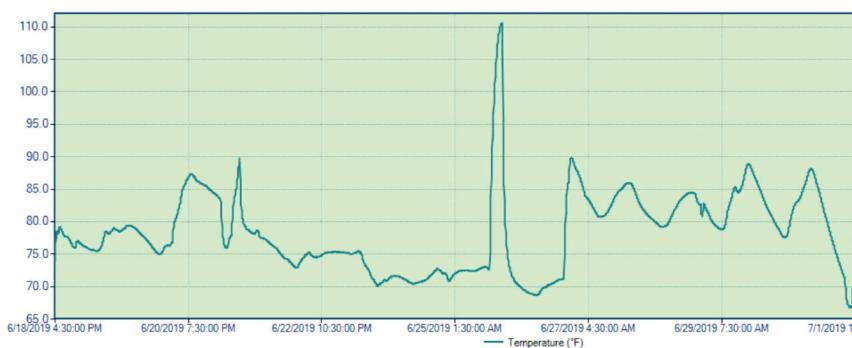
So, we did some experiments to see what really happens in the back of those trucks (at least as far as the temperature conditions). We shipped a bottle of Aprehend along with a temperature data logger to Phoenix, Arizona and Salina, Kansas and then had the bottle immediately returned to us in central Pennsylvania using the same shipping method (Figure 1). Upon return we compared the viability of the Aprehend (as measured by % germination) to the viability tested immediately after bottling.

In both cases when the Aprehend was tested upon return, the spores showed 95% viability, similar to the date they were bottled.

As a follow-up study we tested a bottle of Aprehend that was held at a temperature that averaged 107°F (range fluctuated between 105–110°F). As seen in Figure 2, Aprehend had plenty of viable spores (83% germination) after 15 days at 107°F. It wasn't until after 22 days that the viability started to drop off dramatically—enough to negatively effect the performance as a treatment.

The most important factor in maintaining the viability of Aprehend is the storage of the product once it is received by the PMP (NOT temperatures during transit), so we want to share some useful tips for the best lifetime and performance of Aprehend.

Figure 1 Temperature data logger results from shipment to Arizona (top) and Kansas (bottom) and returning to Pennsylvania. Note: the temperature spike of 111°F did not occur during transit with the carrier. This temperature spike occurred in the private vehicle when the bottle was being dropped off at the carrier for return to ConidioTec.



Recommended storage conditions

The Aprehend label states that the product should be stored between 40°F and 77°F in a cool, dry place away from heat or open flame. Under these conditions, Aprehend will remain effective for 12 months from the date of manufacture. Each bottle of Aprehend® is labeled with the batch number and the expiration date. Providing Aprehend® has been stored appropriately, the product can be used with confidence up to the printed expiration date.

Cooler temperatures

Aprehend can be stored or exposed to temperatures below 40°F. Even freezing temperatures will not affect the efficacy or expected expiration of the product. Just make sure to warm it up before trying to apply with the spray gun, since viscosity will effect the aerosol and droplet size.

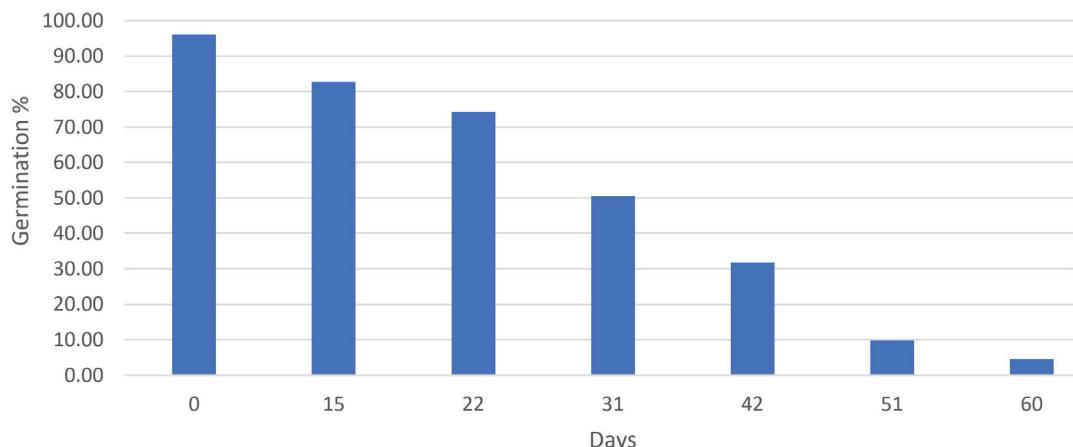
Higher temperatures

Temperatures above 80°F will begin to affect the efficacy and expected expiration date of Aprehend. Short periods of exposure to temperatures up to 95°F are unlikely to have a significant effect on efficacy of the product in the near term but will affect the long-term stability. Bottles of Aprehend that have been exposed to temperatures above 95°F are likely to have reduced shelf life and may be less effective if they are not used until close to the printed expiration date.

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Figure 2 Aprehend viability (% germination) at 107.6°F average temperature shows decline over time.



If bottles of Aprehend are exposed to temperatures above 100°F, it is likely that there will be some decline in efficacy of the product in the near term, and long-term stability will definitely have been compromised.

Where to store your Aprehend

Store your Aprehend in a cool, dry place. If your warehouse is not temperature controlled and is prone to heating up above 77°F in the hotter months, it would be best to store Aprehend in the office or other environment that is maintained at a comfortable temperature for employees.

Aprehend can be stored in a refrigerator, but this should be dedicated to non-food items. Never store any pesticide product in a refrigerator with food or beverages.

If you have difficulty in finding a suitable environment for storage of Aprehend, it may be better to purchase limited stock to ensure that all product is used well before the printed expiry date.

Traveling to and from jobs with Aprehend

During the summer, many regions of the US experience high temperatures during the day. Temperatures in cars and trucks can be even more extreme, particularly if they are parked in full sunshine. Under these conditions, it is important to ensure that Aprehend is not exposed to these extreme high temperatures. Many PMPs use a small cooler with an ice pack for transporting Aprehend during these hotter months. Providing a frozen ice pack is used each day, the cooler can be left in the car or truck during house visits and even overnight, unless temperatures are expected to remain above 80°F.

Alternatively, Aprehend can be carried into each job with the PMP to avoid exposure to high temperatures in a parked vehicle. A general rule of thumb is that if the temperature is comfortable for a human, Aprehend will remain effective. If you keep Aprehend with you in the cab it will also benefit from the A/C between jobs.

Always keep your bulk stock of Aprehend back at the office and travel with just one or two bottles, depending on the number of bed bug jobs you have planned for the day.

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