


Improve your performance in crimping and decapping operations while reducing the possibility of strains

 Wheaton Industries newest addition, dubbed the **CRIMPenstein™**, is a hand-held tool used to crimp and decap aluminum seals on or off of bottles and vials. This unit utilizes an ergonomic design to make crimping and decapping quick and easy. The Crimpenstein™ comes with interchangeable heads making it versatile and economical. It can be used on standard 8, 11, 13, & 20mm aluminum seals.

Not Another Lab Tool

Scientists can now seal crimp-top bottles and vials without the risk of physical fatigue. This can become increasingly concerning when crimping or decapping seals on a regular basis. A common 20mm aluminum seal can take a reported 300 pounds of pressure per square inch to remove. The gearing and leverage utilized by most hand operated crimpers and decappers absorb most of the force. Still the stress that is transferred to the user can create a great deal of fatigue and the repetitive motion can sometimes cause injury over time.

In some cases individuals crimp over 1,000 seals a day, by hand. It is imperative that each crimp be positively secure to ensure sample longevity and protection. As the process becomes more tedious towards the end of the day, seal integrity may decrease. To offset this problem, researchers may take extra time to focus on each set-up as the day comes to a conclusion. This extra time translates into lowered productivity, lowered efficiency, and ultimately an increase in cost.

Mini Case Study

It takes a person almost seven minutes to crimp 100 vials with a manual hand-held crimper. Over time the process actually slows down due to hand fatigue. When crimping the same amount of vials with a Crimpenstein™ electric crimper, the total time is reduced to approximately 5 minutes. There is no need to add additional time due to hand fatigue because the unit does all of the work.

That saves a laboratory almost two minutes for every hundred bottles or vials crimped. If a laboratory crimps 1,000 vials a day, five days a week, for 52 weeks; it would save the laboratory over 80 hours a year. That's 2 weeks of work for one laboratory technician, not to mention all of the health benefits of reducing hand and wrist strain. This new electric crimper will show even better results while decapping because that process takes even longer by hand and the amount of force needed is considerably greater.



Lyophilization / Freeze Drying Process

When freeze drying, the sample must be cooled to the eutectic point, this is the temperature at which the sample exhibits both the solid and liquid phases. To freeze dry most efficiently, the sample should go through a cyclical process of increasing and decreasing temperatures.

During the primary drying phase, pressure inside the container is controlled by a vacuum. It must be lowered while enough heat is applied to the sample to allow the water to begin to sublimate. Approximately 95% of the moisture will be drawn out of the sample during this primary phase. This portion of the process may take several days to ensure cell degradation or shearing does not occur.

The secondary drying phase removes unfrozen water molecules that still remain in the sample. The temperature is increased and can even reach 0 °C. This is done to break any physico-chemical relationships between the moisture and the sample. Once this process is complete, an inert gas, such as nitrogen, can replace the air before the container is sealed.

The end of every lyophilization process produces a container with a sample consisting of 1% to 4% of the total moisture and the freeze dried material sitting in the bottom. In order for this sample to remain dry the stopper and seal must remain airtight. Some processes call for the use of a stopper or septa, which can be manufactured from a myriad of materials including rubber, silicone, Teflon® ...ect. Wheaton offers a premium line of stoppers called Ultra Pure chlorobutyl stoppers. The lyophilization Ultra Pure stoppers exhibit low levels of moisture permeability, which coupled with a consistent and secure seal, will yield longer self lives for lyophilized samples.

Water vapor permeability g/m ² /day	
Ultra Pure Lyo Stoppers	0.0042
Typical bromobutyl	0.0300
Typical chlorobutyl	0.0146

Once a stopper has been applied, the bottle or vial will be topped with an aluminum seal, ready to be crimped. The seal is then crimped with one of several tools, including the new Wheaton Crimpenstein. The benefit of using a Crimpenstein vs. other crimpers is the increased time savings and the ergonomic advantages. Simply place the aluminum seal on the bottle or vial, over the stopper, and set the Crimpenstein jaws over the seal. Then press the run button and the Crimpenstein does the rest.

The Bottom Line

In today's global economy new innovations are needed to save time and reduce cost as well as make processes more efficient. The new Wheaton Crimpenstein™ takes the next leap in hand-held crimping and decapping technology. It adds safety to a laboratory while creating a cost savings by lowering process times. The unit adds reliability through repeatable settings that ensure seals are crimped accurately and consistently, yielding dependable results.