

# To dispense material under vacuum or dispense degassed material in atmosphere

...that is the question

Simply put, the proper system design and use of vacuum in the potting process can make the difference between a mediocre part and a perfect part. Air entrapment is inevitable whether you utilize syringes, cartridges, pails, or drums of material in the process.

## What is a Bubble and what is considered a Void

Some material by their basic chemistry have surface tension and entrap air very easily, creating unwanted bubbles in the material itself. When materials are mixed with additives, accelerators, and fillers, air bubbles can become entrapped into the mixture.

The untrained professional has a hard time distinguishing whether the air entrapment comes from air in the part to be potted or the entrapped air inside the material. Air entrapped within the part, which is not allowed to escape during the filling process, causes what is to be considered a void. These voids can have moisture and sometimes prevent material from flowing into the intricate areas that the potting medium is to reach.

## Vacuum degassing vs dispensing under vacuum

The materials themselves will expand during the degassing process. Air or moisture either inside the material or trapped inside the part will cause defects and sometimes electrical breakdown. Some mixed two component systems will generate gasses during the curing process, solvent vapors from agents on the part itself can be emitted, or even air gets introduced from mixing the resin and hardener in static mixers. Vacuum degassing is the removal of air trapped into the material media.

One must know the difference in the defect and one must know what to apply. As the old saying goes, "Do not bring a knife to a gunfight". Systems to dispense under vacuum can be expensive, limited in flexibility, and can add extra process time to the operation. On the flip side, it may be a needed step but the caution is to ensure the material is degassed properly. 50-60% of the time, the untrained professional often confuses the need to pot under vacuum with the need to just degas the material in a very simplistic matter as can be done with Scheugenpflug's A310 line.



*Degassed (left) vs non-degassed material (right) under vacuum*

The modular A310 and Barrel Agitator Stations from Scheugenpflug have optional functions such as agitation, heat, and vacuum. Agitation is stirring the material to aid degassing and as a byproduct, makes the material homogeneous. Also, agitation brings fresh material to the surface and entrapped bubbles escape. Heating not only aids degassing but also lowers the material viscosity to help dispensability. One must be careful and pay close attention to resulting change in pot life. Simple vacuum pumps are used to degas material, whereas larger and faster vacuum pumps are needed for dispensing at the proper pressure.

If you are unsure of your needs, give Scheugenpflug a call. Dispensing experts are here to help you free of charge.

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