

# Encapsulation Unit – VARDBasic2Go



Lord Rayleigh has developed the following theory in the year 1878: A laminar jet of liquids falls apart into drops of equal size, if you superimpose a vibration with a wave length, longer than the girth of the undisturbed jet on the liquid. In order to superimpose the vibration either you can vibrate the nozzle itself or you can superimpose the vibration on the liquid with a suitable device before it passes the nozzle. Our single nozzle units use the first possibility.

For the **VARDBasic2Go Unit** a wide range of single nozzles (for matrix encapsulation) and coaxial nozzles (for core shell encapsulation) are available. A syringe pump or a pressurised flask system produces a steady pulsation free flow through the vibrating nozzle. The generated drops can be observed by means of an LED-stroboscopic light as a stationary chain of drops. The stroboscopic light is automatically synchronised with the adjusted vibration frequency. The bead sizes are somewhere between 0.2 and 1.5mm. The deviations between the applications depend on the density and the surface tension of the matrix. Roughly, you can estimate that the smallest achievable drop diameter is 2 times larger than the used nozzle diameter.

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The average productivity per nozzle is 400ml per hour, whereas this can significantly differ in function of the nozzle diameter and the jet speed. These factors, together with the vibration frequency determine the size of the bead you generate (within the physical limitations given by the properties of the liquid to be dropletised). Such a physical limitation is the pressure drop, which can unrealistically increase with a small nozzle diameter and high viscosity. As a conclusion, the size of the beads you want to generate greatly influences the productivity per nozzle.

The bead generator is basically made of stainless steel 1.4435 (equivalent 316L) and can withstand most chemicals and high temperatures, which makes the unit very suitable for any disinfecting / cleaning method including autoclave cleaning. As gaskets O-rings made of EPDM are delivered. Material certificates are available on request.

A range of standard accessories are available:

- Agitator for hardening solution
- Syringe pumps
- Pressurised glass tube 60ml, pressurised flasks 250, 500 and 1000ml