



## Factors to think about when homogenizing

### Wet or dry sample

Wet samples - with some sort of liquid - best in generator system.

- Liquid allows for more cavitation breakdown.
- PTFE bearings in generators work best with some sort of liquid in sample.

Dry samples - with no liquids present - best with blade system.

### Sample size

Generators are capable of homogenizing a sample size from 0.03mL to 20L.

5mm or 7mm generators can fit into 1.5mL to 2mL Eppendorf tubes. Generator won't touch the bottom of conical micro-tubes, but substance may get pulled up into generator. The generator will touch the bottom of flat bottom micro-tubes.

The sample, if solid, should be no longer than half the diameter of the generator.

### Generator width

Ideally you want to homogenize with a generator as wide as the tube you are using.

- This will allow for faster and better homogenizing because no material will "escape" from the generator.
- Keep in mind that there is some displacement of material once the generator enters the tube or container.

### Location of generator within the sample

Place the generator off-center in the tube or container for the best results.

- This will prevent material from getting "stuck" on the walls of the tube and not being homogenized.
- Place the generator 1/3 of the sample height off of the bottom of the tube or container.

### Configuration of container and generator length

When using a generator 120mm or greater in length, it is important to remember that these generators have a mid-bearing. This bearing does not act like a normal bearing, rather it helps prevent bending or movement of the rotor within the tube.

This mid-bearing still needs to be kept moist during homogenizing and therefore must be kept covered by the substance being homogenized, not doing this will burn out the bearing and will cause the sample to become dingy and blackened.

If using too long of a generator for your sample size, you may start to pump air into the sample because the generator can not recover fast enough.

### Speed and particle size reduction

Always begin homogenizing at a low speed, then gradually increase speed. This allows you to remain in control of the whole process.

Peripheral speed (tip speed of the generator) which is affected by the size of the container and the size of the generator is more important than RPM. The peripheral speed is directly proportional to the amount of cavitation breakdown. Cavitation breakdown allows for smaller particle reduction. Talboys Bioforce homogenizers are capable of reducing particles to 0.01 microns (1 thousandth of a millimeter) when cavitation breakdown is present.

Most homogenizing can be done in 15 - 30 seconds if not, you may be:

- Using the wrong size generator
- Not locating the generator properly in the container
- Using too viscous of a material

Product Applications		
Material	Process	Equipment Used
Aribidopsis Seedlings	RNA Extraction	BF20 with 5mm Generator
Heart Cells	Isolation of Metabolite	BF20 with 5mm Generator
Mosquitoes	Virus Analysis in Mosquitoes	BF20 with 5mm Generator
E. Coli Cells	Breakage of Cells (100%)	BF20 with 5mm Generator
Powder	Homogenization of Reconstituted Polymers	BF20 with 5mm Generator
Yeast Cells	Break Down Yeast Cells	BF20 with 5mm or 7mm Generators
Citrus Bark	Extraction	BF20 with 5mm, 7mm or 10mm Generators
Frog Embryos	Cell Disruption	BF20 with 5mm, 7mm or 10mm Generators
Rat Brains	DNA Extraction	BF20 with 7mm Generator
Virus	Hand Turned Mixer	BF20 with 10mm Generator
Chlorophyllia	Water Quality Testing	BF20 with 10mm Generator
Silica Gel	Dispersion	BF25 with 20mm Generator
Soybean Cotyledon	Grinding	BF25 with 20mm Generator
Various Creams	Emulsion with Even Disbursement	BF30 with Blade and Sealed Chamber Assembly
Hair Shampoo	Mix Shampoo to Desired Consistency	BF30 with Blade and Sealed Chamber Assembly
Soil	Homogenization of Dry Soil Samples	BF30 with Blade and Sealed Chamber Assembly
Drug Tablets	Complete Dispersion	BF40 with Sealed Chamber