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Frequently Asked Cannabis Homogenizing Questions

Contents

What particle size is obtainable with this equipment? 1
Can we create true nanoemulsions? 1
How does Homogenizing work, and what makes a PRO Scientific Generator Probes different than others? 2
How long do we need to mix the water, isolate, and carrier oil? 2
What if my sample is very viscous? 3
What can we do to prevent heating the mix while using the equipment? 3
For short term storage (2-3 months), do we need to use a surfactant? 3
Is it best to use a hot plate to stir oil prior to homogenization? 3
Any recommended container (wide mouth glass beaker, etc.) sizes or width work best for this process? 3
What is the ideal probe type and size? 3
Do the same size probes work for all PRO Homogenizer Models? 3
How fast should I homogenize? 4
Can I process samples all day long? 4
What is a Deflector Head and why do you recommend it? 4
PRO Scientific Inc. 5
Company Description 5
Chief Services Supported 5
Major Products 5

What particle size is obtainable with this equipment?
Can we create true nanoemulsions?

Exact particle size will be dependent upon several variables;

- Generator Probe Size
- Volume
- Viscosity

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- RPM
- Length of Processing Time
-

Under most efficient homogenizing conditions, our PRO Homogenizers can reduce down to 1 micron or 1000 nanometers which is considered “ultrafine” particles. Given that the definition of nanometers starts at 2500 nanometers which would be equivalent to 2.5 microns/micrometers our PRO homogenizers are capable of producing nanoemulsions. Overhead stirrers are not mechanical homogenizers and it is important to note that an overhead stirrer can only reduce to 100-300 microns. This is why a mechanical homogenizer like that supplied by PRO Scientific is vitally important for homogenizing your sample.

We do have shear numbers for all of our generator probes which can assist with comparing the shear rate that you are achieving with each probe and at what speed. This might be a bit better in quantifying the amount of homogenization you are achieving.

How does Homogenizing work, and what makes a PRO Scientific Generator Probes different than others?

Homogenizing/Emulsifying is the process of making samples homogeneous through mechanical homogenizing using a Rotor-Stator Method, which we call a Generator Probe. A Generator Probe provides approximately 50% mechanical breakdown and 50% cavitational breakdown of the sample during homogenizing/emulsifying. Besides PRO Scientific manufacturing high quality USA made Homogenizers, the key to your processing is the Generator Probe, and PRO Generator Probe has advantages over competitors such as;

An improved connection between PRO Homogenizer & Generator Probe, which provides stronger stability during homogenizing and longer life span of the Generator Probe, including a warranty. While competitor’s do not warranty the Generator Probe at all.

PRO Generator Probes have a very tight clearance between the Rotor Knife and Stator Tube, which results in our ability for a higher yield breakdown level of particles in a shorter period of time, while many competitors’ generator probes have larger clearance making it take longer and more difficult to get sample particles down to a smaller size.

How long do we need to mix the water, isolate, and carrier oil?

Again, this will be a function of volume, viscosity and speed. Faster isn’t always better when it comes to homogenization. A gradually increasing speed and longer processing time might be more efficient and effective.

Under the most efficient homogenizing conditions, you may find that the homogenizing time for 500ml – 1L of a flowable oil like sample would probably be around 5-10 minutes of homogenizing. However, it can vary up to a 20 minutes run time.

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What if my sample is very viscous?

If you are processing a very viscous sample (i.e. honey) that is stagnant at room temperature, it is advisable to heat up the sample during homogenization to create a "flowable" solution. A hotplate stirrer will help keep the sample flowable during processing. An important note here is that once you are done homogenizing, steps should be taken to clean the generator probe and NOT allow any remaining sample to cool and harden within the probe. Running the probe in a heated rinse and/or taking apart the generator probe for a more through cleaning will help prevent damage to the probe and motor unit. If viscosity or volume is too much for the PRO250, PRO25D or PRO400 D-Series homogenizers, all have an overheat sensor to prevent damage to the motor unit as well as a fuse.

What can we do to prevent heating the mix while using the equipment?

If you are processing a heat sensitive sample, when proper homogenizing conditions are being followed (i.e. damaged or wearing components of the generator probe are properly maintained) then there really should be minimal amount of heat introduced from the homogenizer into the sample. Heat usually comes from metal on metal components. This happens when the wearing components are worn and not replaced or missing.

For short term storage (2-3 months), do we need to use a surfactant?

We have had customers who have and have not used a surfactant. It does seem to assist in the efficiency of the homogenization, but if this is not ideal or suited for your end product then there are ways around it.

Is it best to use a hot plate to stir oil prior to homogenization?

The most efficient means of homogenization we have found occurs when a hotplate is being used DURING the homogenization. So, the container is sitting on the hotplate while the homogenizer is being used.

Any recommended container (wide mouth glass beaker, etc.) sizes or width work best for this process?

It is ideal to select a container that allows you the most "height" of your sample.

What is the ideal probe type and size?

Depending upon your processing volume, a 20mm x 200mm or a 30mm x 200mm Generator Probe are usually the most ideal for processing in volumes from 500ml up to 2L. PRO Scientific offers convenient homogenizing packages for processing these volumes. For any processing outside of this range, our larger PRO400 D-Series Models would be needed.

Do the same size probes work for all PRO Homogenizer Models?

While our all Generator Probes physically connect to all our Homogenizers, they are not all recommended due to volume and size limitations. With this being said, the 20x200mm and 30x200mm probe would work on

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models PRO250, PRO25D, PRO400DS, and PRO400DSEL. These larger probes are not suited for use on the smaller Bio-Gen PRO200.

How fast should I homogenize?

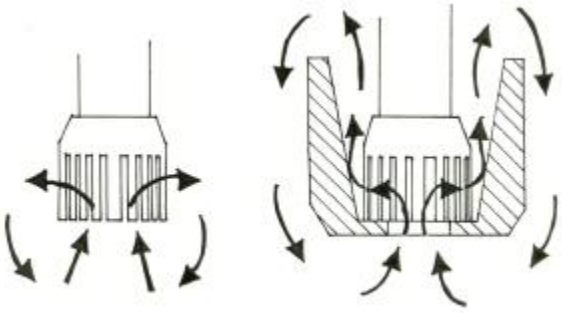
Faster isn't always better. We recommend slowly increasing speed to stay in control of your sample, but too fast would be when a void is created. In addition, your Generator Probe should be set off-center to help flow and limit a void as well as its ideal to place the generator 1/3 of the sample height off the bottom of the tube or container. Often it is only necessary to go up to mid-speed. If you are looking for fine-tuning of your speed range, you may want to consider the PRO25D or D-Series homogenizer allow for the extended speed range starting at 0 rpm.

Can I process samples all day long?

The PRO250 homogenizer is our very durable homogenizer and we have been able to run it all day without adverse effect (there is some heat introduced into the sample overtime so processing in an ice bath may be recommended for extended runs). The PRO250, PRO25D and PRO400 D-Series homogenizers all have an overheat sensor to prevent damage to the motor unit as well as a fuse. The viscosity of the sample as well as the total volume processing will tax the homogenizer as they increase respectively. If processing very viscous samples, at very high speeds for extended periods of time, it may be necessary to assist the unit in cooling off. If this is the case, simply removing the generator probe and allowing the homogenizer to run at max speed for a few seconds. This will allow air to flow through the system and cool off the homogenizer.

What is a Deflector Head and why do you recommend it?

PRO Deflector Heads are specifically designed to enhance the homogenization of larger volume and higher viscosity materials such as creams, lotions, oils, gels and much more. The deflector head design creates vertical movement of heavy materials which would otherwise stand stagnant and promotes increased flow on larger volume samples. The deflector head forces materials from the generator tip up its tapered walls, creating an increased vertical movement of the entire sample. The material is then repeatedly cycled back down to the bottom of the container and up through the deflector head until a homogeneous mixture is achieved. In addition, it takes some of the stress off the PRO Homogenizer and Generator Probe to help its efficiency too.



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Company Description

PRO Scientific is a global leader in the manufacturing of homogenizers for both laboratory and industrial labs requiring sample preparation. PRO homogenizers are able to homogenize various forms of cannabis material fast and efficiently.
From micro sample volumes to larger multi-liter processing, there is a PRO Homogenizer to suit your needs. PRO Scientific even offers homogenizing solutions to address automated multi-sample homogenizing and OEM homogenizer needs too. All products manufactured by PRO Scientific are backed with over 25 years of technical experience, unmatched customer support, and made in the USA.

Chief Services Supported

PRO Scientific is the ideal source for high quality homogenizing products for sample preparation within the cannabis industry, providing assistance for both small startup and established labs with their cannabis testing and quality control. PRO Scientific homogenizers are precision homogenizers to assist in determining and monitoring the cannabinoid potency and pesticide residue. PRO Scientific Homogenizers are also ideal for the extraction of cannabis for the development of cannabis infused products. Homogenization of cannabis samples allows for a stable emulsion to be created that is shelf stable.

Major Products

Our PRO Homogenizers and generator probes are precision designed to provide reliable, reproducible results that are required for this industry. A range of setups are available depending upon your budget and processing requirements. Whether high speed shearing to dispersing, homogenizing, emulsifying, mixing, or blending.

- Economical homogenizing package kits
- Handheld or stand mounted homogenizer models
- Digital and programmable benchtop homogenizer models
- Automated and semi-automated homogenizing systems
- Precision crafted generator probes

NEXT-DAY DELIVERY ON THIS ITEM and most parts and accessories

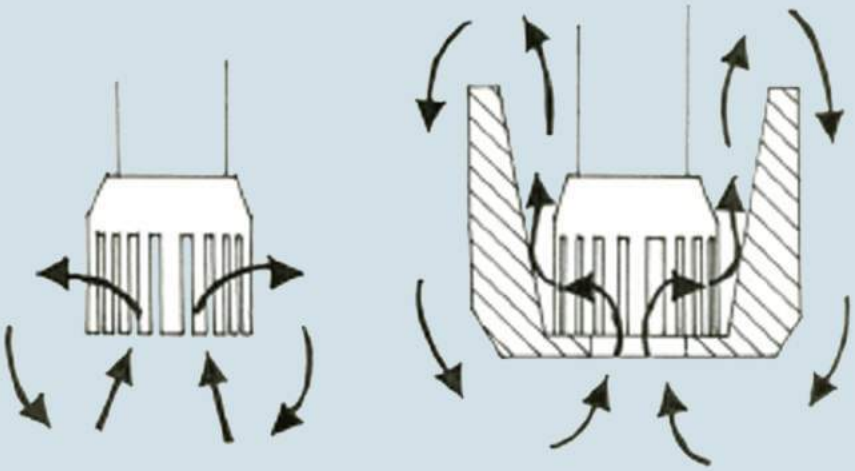
Call 1-800-584-3776 to check availability

Cannabis Homogenizing Packages

	Basic CBD Homogenizing Package Ideal for non-viscous samples up to 3L or viscous samples up to 500ml	Basic Plus CBD Homogenizing Package Ideal for non-viscous samples up to 4L or viscous samples up to 750ml	Deluxe CBD Homogenizing Package Ideal for non-viscous samples up to 5L and viscous samples up to 1L	Deluxe Plus CBD Homogenizing Package Ideal for non-viscous samples up to 5L and viscous samples up to 2-3L
PRO250 Homogenizer	✓	✓	✓	✓
20mm Generator Probe	✓	✓		
20mm Acetal Resin Deflector Head		✓		
30mm Generator Probe			✓	✓
30mm Acetal Resin Deflector Head				✓
Storage Case	✓	✓	✓	✓

PRO250

576 watts of high-power homogenization in a compact, handheld unit



Homogenization motion without deflector and with deflector head shown. Deflector Heads facilitate viscous material homogenizing. Deflector Heads are part of the Plus Packages.

Homogenizers, Accessories, Parts and Solutions

www.proscientific.com

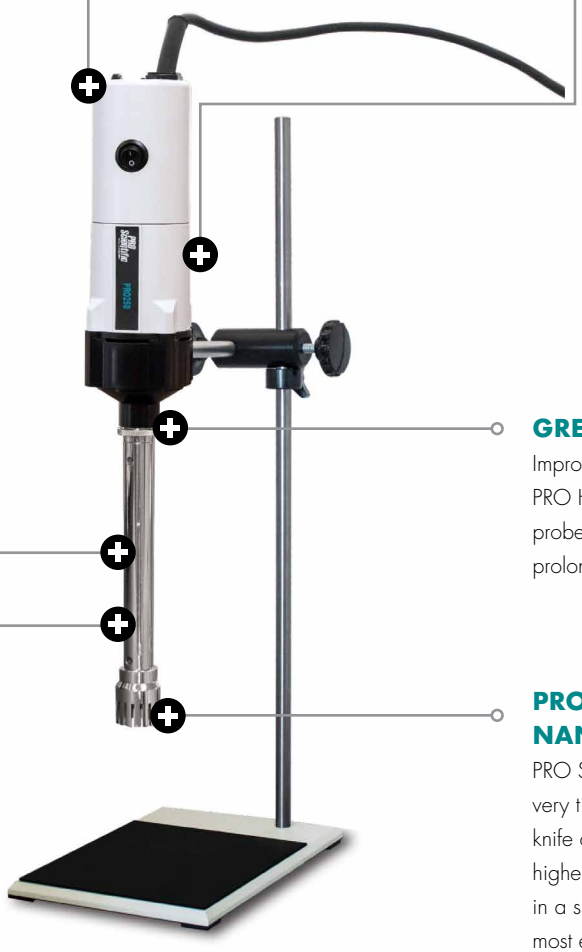
PRO Scientific Cannabis Homogenizing Package

PRO Homogenizers and generator probes are precision designed to provide reliable, reproducible results that are required for cannabis testing and quality control as well as the creation of shelf-stable cannabis infused emulsions and products.

HIGH POWER AND VARIABLE SPEED: The PRO250 homogenizer delivers 576 watts of high-power homogenization in a compact handheld unit with a variable speed range from 5000 to 30000 rpm.

HIGH QUALITY PROBES: The PRO Scientific generator probes are precision crafted to ensure efficient and effective homogenization. They are manufactured with 316SS to ensure chemical compatibility with reagents.

SUITED FOR SAMPLES RANGING FROM NON-VISCOUS TO HIGHLY VISCOUS: Maximum processing volumes for non-viscous samples (vegetable oil consistency) is 5 liters. Maximum processing volume for more viscous samples (such as lotions) is 2-3 liters, and for extremely viscous samples (such as honey) is 500 to 750 milliliters. Addition of the acetal resin deflector head enhances homogenization power.



BUILT IN SENSORS TO IMPROVE DURABILITY: The PRO250 Homogenizer is durable and can process samples for hours at a time. It is equipped with a sensor to prevent overheating and protect the motor unit from damage due to processing an overload of highly viscous samples or high volumes.

GREATER LONGEVITY: Improved 3-step connection between PRO Homogenizer and generator probe improves stability, durability, and prolongs the life of the generator probe.

PRODUCE ULTRAFINE NANO PARTICLES: PRO Scientific generator probes have very tight clearance between the rotor knife and stator tube, resulting in a higher yield breakdown of particles in a shorter period of time. Under the most efficient homogenizing conditions, it can produce "ultrafine" particles within the nanoemulsion range (1 micron/1000 nanometers).

PRO Scientific