

NANOSTABILIZER®-LT

USER GUIDE: WITH ISP-3000 PROCESSOR IN THE BATCH CONFIGURATION



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MATERIALS NEEDED:

- ISP-3000 ultrasonic processor configured in the batch mode (see ISP-3000 User Manual for details);
- Digital scale, ice/water bath (or immersion cooling coil), peristaltic pump (optionally provided), in-line sterilizing filter (optionally provided), 10 ml vials, IR thermometer, disposable pipettes;
- Tall 3 L beaker (process beaker), magnetic stirrer with hot-plate, stir-bar, dark-glass storage container (finished product container);
- NanoStabilizer®-LT, cannabis extract (isolate, distillate, fullspectrum oil, etc.), distilled water.

INSTRUCTIONS FOR MAKING 2000 ml OF TRANSLUCENT NANOEMULSION:

The instructions below detail the method for preparing 2000 ml of a translucent nanoemulsion with the cannabis extract concentration of **20** mg/ml. If a different concentration is desired, use the table below and substitute the bolded numbers in the instructions with the numbers in the colored boxes.

Cannabis extract concentration in nanoemulsion	10 mg/ml	20 mg/ml	30 mg/ml	40 mg/ml	50 mg/ml
Cannabis extract	20 g	40 g	60 g	80 g	100 g
NanoStabilizer [®] -LT	100 g	200 g	300 g	400 g	500 g
Distilled water	1,860 g	1,760 g	1,640 g	1,520 g	1,400 g
Total	2,000 g				
Number of 10 mg doses per 2000 ml of nanoemulsion	2,000	4,000	6,000	8,000	10,000



Mixing your cannabis extract with NanoStabilizer®-LT:

- Place the process beaker with the stir bar on the digital scale and carefully dispense 200 g of NanoStabilizer[®]-LT and then 40 g of your cannabis extract. Be careful to dispense your cannabis extract and NanoStabilizer[®] onto the bottom of the beaker and not to spill it onto the inner beaker wall or outside.
- **b.** Place the process beaker on the magnetic stirrer with hot-plate and stir until your cannabis extract has completely dissolved. Apply heat if necessary, but do not allow the liquid temperature to exceed 70 °C (158 °F). Do not remove the stir bar from the beaker.



- a. Place the process beaker on the digital scale, tare and carefully dispense **1760** g of distilled water into the beaker.
- **b.** Place the process beaker back on the magnetic stirrer with hot-plate and stir until a milky consistency is achieved (do not apply heat).

3

Ultrasonic processing:

In this step, ultrasonic processing will commence. Refer to ISP-3000 User Manual for operating instructions.

- **a.** Assemble the ISP-3000 ultrasonic processor in the batch mode. Verify that the transducer is being cooled properly (see ISP-3000 User Manual for details).
- Place the process beaker in the ice/water bath. The diameter of the bath should be at least 2 times that of the process beaker. You must be able to keep the temperature of the liquid inside the beaker below 70 °C (158 °F). The water level in the bath should be sufficient to cover the contents of the process beaker, but not so high that the ice/water could spill into the process liquid. Alternatively, use the immersion cooling coil to maintain the temperature below 70 °C (158 °F).
- c. Keeping the process beaker in the ice/water bath, place both items onto the magnetic stirrer positioned below the ultrasonic stack (transducer/HBHB-type Barbell Horn® assembly).



- **d.** Immerse the HBHB-type horn into the liquid in the process beaker down to the horn's flange (~ 6 cm). Make sure that there is a distance of at least 8 cm from the bottom of the horn to the bottom of the beaker. If you are using the immersion coil, make sure that the coil does not contact the surface of the horn.
- e. Initiate ultrasound and start timing. Allow ultrasound to run for 5 minutes and then stop. Leave the liquid stirring. Draw a sample into a 10 ml vial and notice the degree of translucency. Replenish the ice in the ice/water bath and let the temperature of the process liquid come down to 35 °C (95 °F).
- f. Repeat Step 3e until consecutive samples have approximately the same degree of translucency (most commonly 1 - 2 more times). Ultrasonic processing is now complete.
- **g.** Leave the process beaker stirring on the magnetic stirrer in the ice/water bath for 5 more minutes.



Filtration:

In this step, you will use the in-line sterilizing filter to remove any microorganisms and particulate contaminants from your nanoemulsion as you collect it in the finished product container.

PARTS NEEDED:



- **1.** In-line sterilizing filter with 1" sanitary fitting
- **2.** Peristaltic pump with 1/2" ID silicone hose
- **3.** 1" sanitary to 1/2" hose ID adapter
- 4. Sanitary clamp
- 5. Sanitary gasket



a. Assemble items 1 - 5 as shown.



b. Using your pump at a flow rate of 250 - 300 ml/min, sterilize the nanoemulsion by passing it through the in-line filter into the pre-sterilized finished product container.



- **c.** Store the finished product container with the filtered nanoemulsion in a cool and dark place.
- **d.** Flush the filter with distilled water gently in both directions until the water runs clean.





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