

Flow rate at a glance



What is flow rate?

By definition, flow rate is the measure of how quickly or slowly a liquid drops from a dispensing system over a period of time.

How is it monitored?

The most accepted dispensing solution for precise, measured drops is the EuroDrop® system. With one product orifice and one air orifice, the dropper insert uses hydro-static action to transfer product from the bottle.

Why does flow rate matter?

The flow rate of your product is a determining factor in user experience.

Too fast: the dispensing will be messy and wasteful

Too slow: Your customers will assume it does not work

Just right: Your customers are happy and return for more



How to determine the flow rate of your dropper inserts.

To give your customers the best experience, you should optimize the dropper insert choice for each essential oil to get the best flow rate.

The dropper insert is highly effective for controlling the flow of the liquid from the bottle.

Once inserted correctly, drops will start to flow within 3 seconds of holding the bottle upside-down or at a side angle, depending on the orientation of dropper insert being used.

No flow or slow flow.

If the product doesn't start flowing in about 3-5 seconds or—once flowing—the drops take longer than 3 seconds to dispense, then maybe the surface tension or viscosity of the product are coming into play.

Change the dropper insert to increase or decrease the flow rate to give the best experience to your customer.

- Choose a larger liquid exit (orifice size) to increase the flow of drops or to handle thicker products.
- To reduce the flow or to handle thinner viscosity products, choose a smaller orifice size.
- In addition to the liquid orifice, different air orifice sizes can be selected to increase or decrease the flow of the drops.

See page 2 for more proven steps to ensure the optimal flow rate.

Viscosity matters

It's important to consider how the viscosity of each essential oil blend varies. You will need to test dropper inserts with different orifice sizes to find the perfect flow rate. Carow Packaging offers 9 different sizes of dropper inserts with orifice sizes ranging from .55mm to 2.0mm.



- **Essential oils with a thinner viscosity** include tea tree oil, orange, lemon, eucalyptus, lime, cypress, ginger, lavender, peppermint, and wintergreen. For these you might choose a smaller orifice size (.55mm-1.0mm).
- **Oils with a thicker viscosity** include vanilla, patchouli, cedarwood, vetiver, clary sage, jasmine sambac, and ylang ylang. These oils would work best with a larger orifice size (1.0mm-2.0mm).

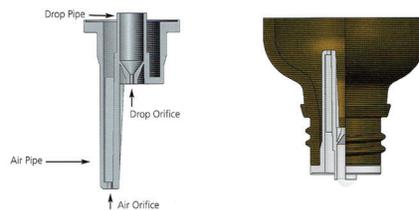
Using droppers

If you're in the business of essential oils, you know that the tendency of the user is to turn the bottle upside down and start shaking it to release product. Since that is not how the product is designed to work, it can lead to user frustration.

The key to ensuring great customer satisfaction with your oils is to indicate on your packaging how to use the product, and encourage the user to let the dropper insert do all the work.

Vertical droppers

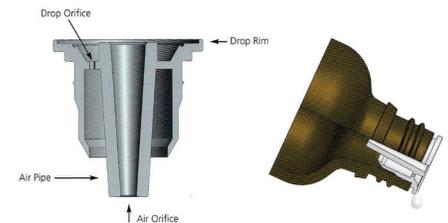
If your product is using vertical droppers, instruct the user to turn the bottle upside down, 180 degrees. They should then let the pressure differential take place. Air will go in as the drop falls out with just the right amount of oil dispensing.



Horizontal droppers

If your product uses horizontal droppers, instruct the user to turn the bottle like they are pouring a bottle of wine—about 135 degrees.

The pressure differential will take place again, as the air goes in and the drop falls right out.



Key characteristics

Regardless of which dropper insert your product uses, the flow rate for your essential oils should have these characteristics:

- **First drop** dispensed in 3-5 seconds
- **Subsequent drops** flow every 1-3 seconds

Talk to the flow rate experts at Carow Packaging.

We have been helping customers find the perfect flow rate for over 30 years.

We know the essential oil market and offer the widest range of products

for your dispensing success. And, now, we are the only provider

to make EuroDrop® caps and inserts in the USA!

Contact us today at 815.455.4600 or sales@carowpackaging.com