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25 top dispensing tips

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Welcome to 25 Top Tips, an invaluable list of do's and don'ts for fluid dispensing. Refer to them regularly, especially when starting out, using new equipment or dispensing new materials, and you'll stand a much better chance of achieving perfect results without potentially costly, messy and frustrating trial and error.



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TIP 1

When dispensing filled materials like solder paste or conductive epoxies, use a smooth flow tapered dispensing tip. The internal profile prevents clogging from the fillers, less pressure is needed, and you will get better control and repeatability.



TIP 2



Time/pressure dispensing controllers are an inexpensive but effective way to improve the dispensing process. Use a combination of air pressure, tip size and time to achieve the desired shot size or bead.

TIP 3

Light sensitive materials, like UV adhesives, may react to UV or visible light, or both. When dispensing, use black opaque barrels, pistons and tips. Use UV blocking but visible light transmissive barrels if the material cures with UV light alone; these are often amber in colour and will allow the content level to be seen.



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TIP 4

A polyethylene piston in the dispensing barrel will help prevent dripping of low and medium viscosity liquids. For high viscosity materials which do not self-level, the use of a piston in the dispensing barrel can stop ‘tunneling’, or the drilling of a hole straight through the material by the air. However, avoid using a piston in the barrel when dispensing a cyanoacrylate adhesive.



TIP 5

For greater accuracy and control, use a dispensing valve. Amongst the advantages are a positive ‘on/off’ of material flow.

TIP 6

To prevent inadvertent flow of material back into the controller, use an inline filter on the barrel air hose, always place the barrel into the barrel stand when not in use, and position your dispensing controller at a higher level than the work.



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TIP 7

Consider the use of dispensing tips which are angled, or flexible, to help deal with hard-to-reach locations.



TIP 8

Use a foot pedal to initiate the dispense cycle when looking for high location accuracy – there is an inevitable 'bounce' when using a finger-switch mounted on the barrel.

TIP 9

When dispensing cyanoacrylate adhesives (CAs), consider the use of a PTFE-lined tip, which can prevent premature curing and clogging, and reduce consumable expenditure. Wetted surfaces (parts that contact the CA) are best when made of polypropylene (PP), polyethylene (PE) or PTFE (known by the DuPont brand name Teflon).



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TIP 10

Start by using a dispensing tip about the same size as the deposit required and alter time and pressure to control the shot size. Always use the largest possible tip gauge which achieves your objective, especially with high viscosity materials. Too small a tip can cause material compression, creating back pressure and dribbling.



TIP 11

For very low viscosity materials, using a very small diameter tip can increase dripping because of capillary forces. A bigger diameter tip can solve this problem.



TIP 12

When dispensing very small amounts of material, try a 'pin-transfer' process. Dispense a small 'blob' on the end of the needle, then transfer the blob to where it is required by simply touching it down on the target location.

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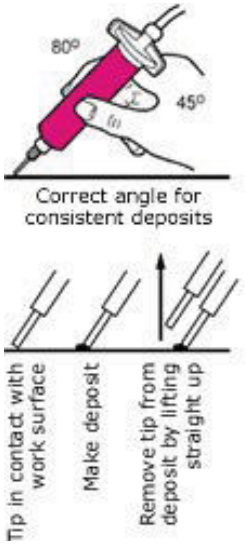
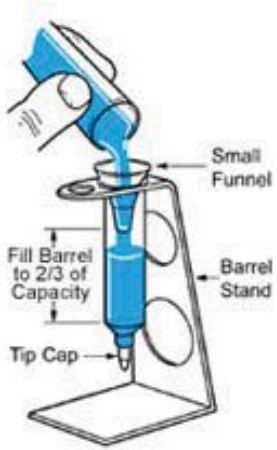
TIP 13

When using a pressure dispenser by hand, the best angle to hold the barrel is between 45º and 80º. The barrel should be lifted vertically to avoid disturbing the deposit.



TIP 14

If you want to use a time/pressure dispenser, consider asking your material supplier to package in suitable dispensing barrels or cartridges. If you are putting materials into barrels yourself, only fill to 2/3 capacity (or ½ capacity for cyanoacrylate adhesives).



TIP 15

For low or medium viscosity materials, a dispensing controller with a ‘suck back’ function can reduce dripping, mess and waste.



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TIP 16

Some materials dry very quickly, like solvent-based varnishes; tip clogging can be a problem. Try using a tip with a higher material capacity, like a smooth flow tapered tip. As these materials also tend to be low viscosity, the use of a



piston or the control of a dispensing valve may be required to make this work.

TIP 17

Single part RTV silicones are often packed in 310ml cartridges. You can accurately dispense from these using a time/pressure dispensing controller and a cartridge retainer, with a suitable dispensing tip.



TIP 18

When changing a tip on a time/pressure dispenser, detach the barrel adapter hose from the controller (it's a simple quick connect fitting). It can be easy to accidentally hit the foot pedal or finger switch in the middle of this operation. If you are using low viscosity materials, engage the safety clip on the hose before doing anything else.



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TIP 19

Many manual dispensing applications can be automated with an inexpensive desktop robot, designed for this purpose. When programming the robot, look carefully at how the operator manages this task manually – often, they will have worked out the optimal process.



TIP 20

Many two part adhesives are packaged in side-by-side double syringe cartridges; the adhesive is dispensed through a static mixing nozzle. Before attaching the nozzle, always gently squeeze the dispensing gun trigger and make sure that both of the material components are being pushed out evenly. Wipe off any excess material, and then screw on the static mixing nozzle.



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TIP 21



Metering, mixing and dispensing machines are useful for the automation and control of higher volume two-part systems. For the most part, these machines are specific to a particular material. The machine designer needs to know as much about the material as possible, including mix ratio, pot life and rheology. As well as the technical data sheet for the material, also consult the MSDS, which can reveal constituents like abrasive fillers.

TIP 22



When adjusting the pressure setting on the controller, always reduce the pressure down to below the required level, before bringing it back up to the desired range.

TIP 23

If the dispensed deposit starts becoming too small, the first thing to do is change the tip. Material curing in the tip can reduce flow. Do not increase the pressure in the first instance.



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TIP 24

Supply your dispensing controller with clean, dry compressed air. Moist air can damage the internal workings of the dispenser, and affect the curing of an adhesive or react with your material. If your air source is not clean/dry, use a regulator with a 5 micron filter, and remember to check the filter and the water trap periodically.

TIP 25

Always consult the manufacturer's health & safety data sheet and any other handling recommendations before dispensing a new material. Consider appropriate PPE and ventilation requirements.



And remember...

Whilst many dispensing applications are easily solved, some can be quite complex – sometimes surprisingly so! Consult the engineering staff at your dispensing supplier. The good ones will have both a comprehensive array of products (one of which will suit your unique application) and the expertise and years of experience with which to recommend a solution.

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Information

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Contact us

For more information about any of the tips described in this guide, please email info@intertronics.co.uk or call 01865 842842.

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