

SmartNotes

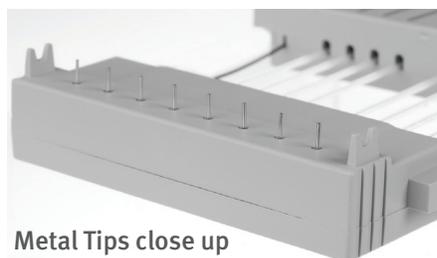
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How to choose the proper small tube dispensing cassette for Thermo Scientific Multidrop Combi?

The Multidrop Combi Reagent Dispenser handles a wide selection of microplates and volume ranges to provide fast dispensing and high-throughput operation. For small volumes there are two dispensing cassette types available either with polypropylene tips or stainless steel tips. Choosing the right cassette type depends on the properties of liquid being used, such as viscosity.

The liquids typically dispensed with Multidrop Combi are water based buffers, protein solutions, alcohols and organic solvents. When the best practices of dispensing, calibrating and cleaning are followed and properties of liquid are similar to water, it does not make a significant difference which small tube dispensing cassette is used. There are cases when the metal tip cassette could be better choice, e.g. when the liquid properties differ from the properties of water or there is risk of air bubble formation.

Materials used for the small tube dispensing cassette help you get the most out of your purchase.



Metal Tips close up



Plastic Tips close up

What effect does the cassette tip material have on dispensing?

Best practices using small tube dispensing cassettes with Multidrop Combi

Some aspects should be considered, when selecting the small tube dispensing cassette type.

- Avoid air entering into the tubing during dispensing. Proper priming (filling of the liquid lines) before dispensing into the microplates and ensuring the tubing weight is correctly positioned in the very bottom of the reagent vessel, help to prevent any air from entering into the tubing to form bubbles.
- Depending on the viscosity, some liquids have more of a tendency to form a thin film on the outside wall of the tips. This may cause droplet formation when a plastic tip cassette is used. Using a metal tip cassette for volatile liquids (e.g. alcohols, DMSO) may help to eliminate the liquid attaching itself on the outside wall of the tips.
- Letting dispensed liquid to remain in the tubing should be avoided. It is recommended to empty the dispensed liquid from the tubing and to clean the tubing properly right after dispensing into microplates is performed. Protein solutions tend to leave residue in the tubing or tips. Plastic has higher tendency to absorb peptides/ proteins than metal.
- For dispensing cell suspensions, the standard tube dispensing cassette is primarily recommended due to the larger nozzle orifice to prevent any clogging. If dispensing less than 20 μ l, the small tube plastic tip dispensing cassette may be used depending on the cell size. Metal tips may affect the charge on the cell membrane in some cell lines.
- Metal tip material is stainless steel and has wider chemical compatibility than the plastic tip which is made from polypropylene.

Dispensing precision with different liquids

Dispensing precision has been tested for a variety of liquids using both small tube plastic tip and small tube metal tip dispensing cassettes. Figure 1 reflects the precision of typical liquids dispensed with both small tube dispensing cassette types. 10 μ l of each liquid was dispensed on the 384-well plate using Multidrop Combi reagent dispenser. The precision (CV %) specifications, ≤ 3 %, are met with all liquids and both dispensing cassette types without significant difference.

Note: It is always recommended to calibrate the dispensing cassette before dispensing liquids with properties and densities differing from water, like alcohols and glycerol.

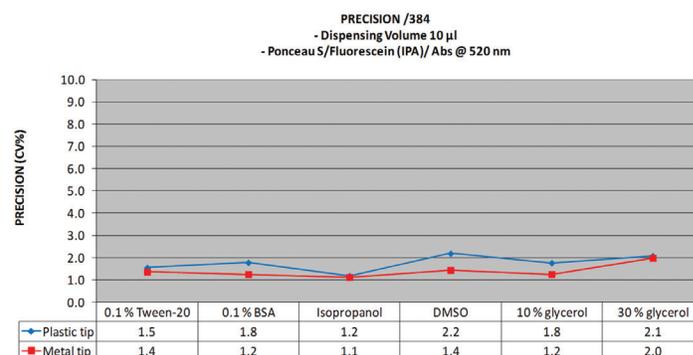


Figure 1: Precision (CV %) of typically dispensed liquids

Summary

When dispensing cassettes are routinely cleaned properly and care is taken that the tubing weight is correctly positioned in the bottom of the reagent vessel, it is possible to use either small tube dispensing cassette tip material. Plastic tip dispensing cassettes are more commonly used, but the metal tip dispensing cassettes are recommended for use with solutions that might be more troublesome and stick to plastic material. Metal tips are more resistant wear and typically have better chemical compatibility.

Find out more at thermofisher.com/multidrop