

Performance Testing for Axygen® Automation Tip (VT-384-10UL-R)

Application Note



A Corning Brand

Method

The Agilent® Bravo/Velocity11 liquid handling platform was used to assess precision, as coefficient of variation (% CV), and accuracy as percent deviation (% D) for Axygen 10 µL tips.

To test the ability of the tip to dispense accurately and precisely at two dispense volumes, 1 µL and 10 µL, a rack of 384 tips aspirated from an Axygen low profile reservoir (Corning Cat. No. RES-SW96-LP) and dispensed into a Corning® 384-well, black, clear bottom microplate (Corning Cat. No. 3711).

For the 1 µL test volume, each tip aspirated 1 µL of Range C solution (Artel Cat. No. MVS-205) or DMSO Range C solution

(Artel Cat. No. MVS-217 solution) and dispensed 1 µL into 54 µL of diluent solution (Artel Cat. No. MVS-202) in each well. For the 10 µL test volume, each tip aspirated 10 µL of Range A solution (Artel Cat. No. MVS-203) and dispensed 10 µL into 45 µL of diluent solution in each well. To determine the volume of liquid dispensed in each well, absorbance readings for the solutions (diluted Range C solution for 1 µL dispense and Range A solution for 10 µL dispense) were measured using an Artel ELx800NB® plate reader (Artel Cat. No. 1311197). Each study was performed 3 independent times for a total of 1,152 tip dispenses. Evaluation criteria include % D from the set dispense volume and % CV of the measured dispense volume for the 1,152 tip dispenses.

Results

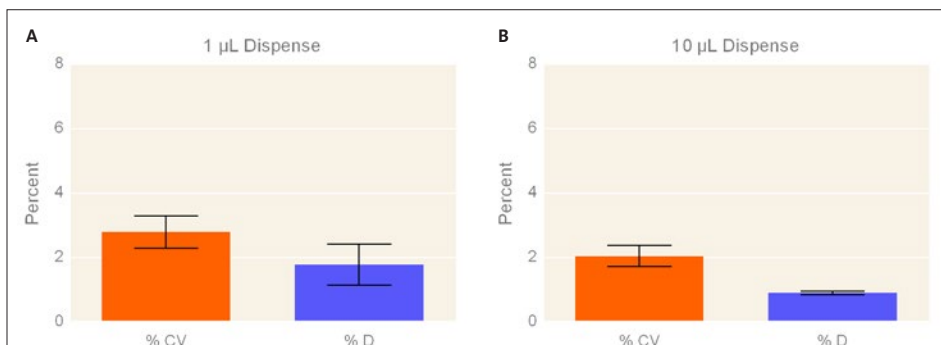


Figure 1. Analysis of VT-384-10UL-R tip with aqueous dispense. The precision (assessed by % CV) and accuracy (assessed by % D) of Axygen VT-384-10UL-R tips dispensing (A) 1 µL and (B) 10 µL volumes using the Agilent Bravo/Velocity11 liquid handling platform were determined using the Artel MVS® system. The % CV and % D were below 3.0% for both the 1 µL and 10 µL dispenses, n = 1,152.

Table 1. Aqueous Dispense Results

Target Volume (µL)	1	10
n	1,152	1,152
% CV	2.80 ± 0.50	2.05 ± 0.33
% D	1.79 ± 0.64	0.91 ± 0.05
Outliers	0	0

Conclusion

The % CV and % D for the Axygen automation VT-384-10UL-R tips dispensing 1 µL and 10 µL volumes were 5% or below. Therefore, Axygen automation VT-384-10UL-R tips can precisely and accurately dispense volumes as low as 1 µL and as high as 10 µL for aqueous and DMSO solutions using the Agilent Bravo/Velocity11 liquid handling platform.

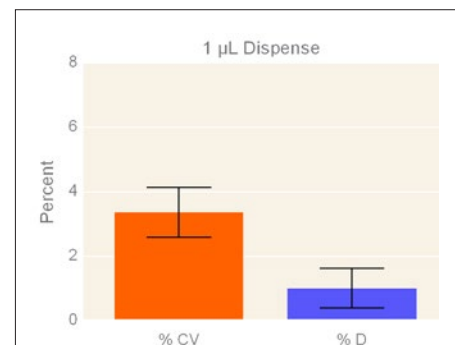
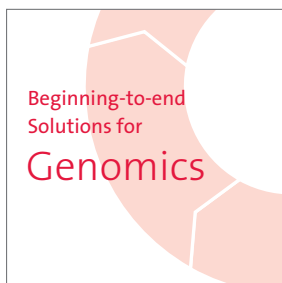


Figure 2. Analysis of VT-384-10UL-R tip with DMSO dispense. The precision (assessed by % CV) and accuracy (assessed by % D) of Axygen VT-384-10UL-R dispensing 1 µL volumes using the Agilent Bravo/Velocity11 liquid handling platform were determined using the Artel MVS system. The % CV and % D were below 4% for the 1 µL dispense, n = 1,152.

Table 2. DMSO Dispense Results

Target Volume (µL)	1
n	1,152
% CV	3.36 ± 0.77
% D	1.01 ± 0.61
Outliers	0



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Corning Incorporated
Life Sciences

836 North St.
Building 300, Suite 3401
Tewksbury, MA 01876
t 800.492.1110
t 978.442.2200
f 978.442.2476

www.corning.com/lifesciences

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