Performance Testing for Axygen® Automation Tip (PK-50-R)

Application Note

Method

The PerkinElmer Janus® liquid handling workstation was used to assess precision as coefficient of variation (% CV), and accuracy as percent deviation (% D), for Axygen 50 µL tips.

To test the ability of the tip to dispense accurately and precisely at two dispense volumes, 5 µL and 50 µL, a rack of 96 tips aspirated from an Axygen low profile reservoir (Corning Cat. No. RES-SW96-LP) and dispensed into a Corning® 96-well, black, clear bottom microplate (Corning Cat. No. 3631).

For the 5 µL test volume, each tip aspirated 5 µL of Range C solution (Artel Cat. No. MVS-205) or DMSO Range C solution (Artel Cat. No. MVS-217 solution) and dispensed 5 µL into 195 µL of diluent solution (Artel Cat. No. MVS-202) in each well. For the 50 µL test volume, each tip aspirated 50 µL of Range A solution (Artel Cat. No. MVS-203) and dispensed 50 µL into 150 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 5 µL dispense and Range A solution for 50 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 288 tip dispenses. Evaluation criteria include % D from the set dispense volume and % CV of the measured dispense volume for the 288 tip dispenses.

Results

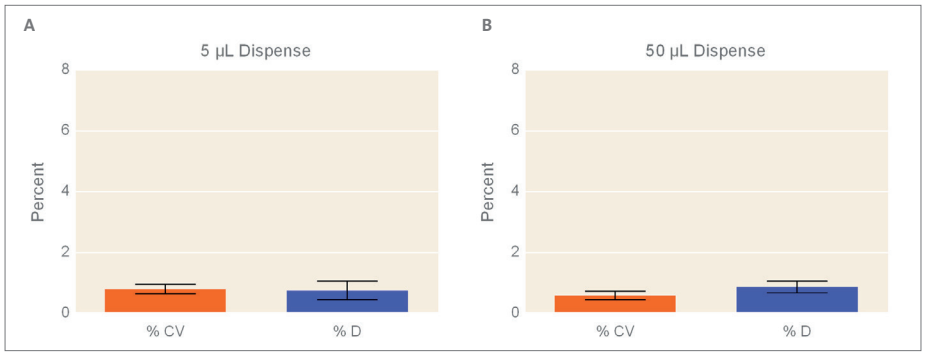


Figure 1. Analysis of PK-50-R tip with aqueous dispense. The precision (assessed by % CV) and accuracy (assessed by % D) of Axygen PK-50-R tips dispensing (A) 5 µL and (B) 50 µL volumes using the PerkinElmer Janus liquid handling workstation were determined using the Artel MVS® system. The % CV and % D were below 1% for both 5 µL and 50 µL dispenses, n = 288.

Table 1. Aqueous Dispense Results

Target Volume (µL)	5	50
n	288	288
% CV	0.80 ± 0.15	0.60 ± 0.14
% D	0.76 ± 0.31	0.87 ± 0.19
Outliers	0	0

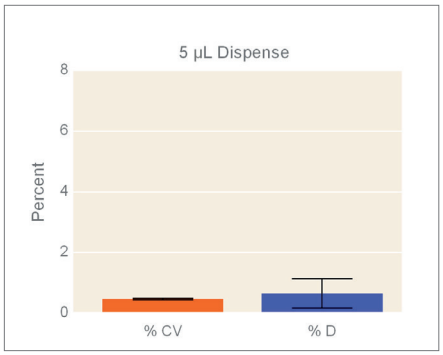


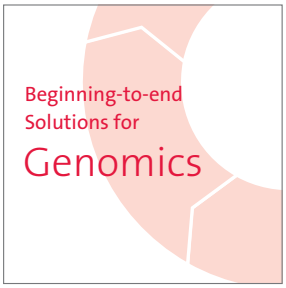
Figure 2. Analysis of PK-50-R tip with DMSO dispense. The precision (assessed by % CV) and accuracy (assessed by % D) of Axygen® PK-50-R tips dispensing 5 µL volumes using the PerkinElmer Janus® liquid handling workstation were determined using the Artel MVS® system. The % CV and % D were below 1% for the 5 µL dispense, n = 288.

Table 2. DMSO Dispense Results

Target Volume (µL)	5
n	288
% CV	0.47 ± 0.03
% D	0.65 ± 0.48
Outliers	0

Conclusion

The % CV and % D for the Axygen automation PK-50-R tips dispensing 5 µL and 50 µL were 5% or below. Therefore, Axygen automation PK-50-R tips can precisely and accurately dispense volumes as low as 5 µL and as high as 50 µL for aqueous and DMSO solutions using the PerkinElmer Janus liquid handling workstation.



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Corning Incorporated
Life Sciences Europe
Corning BV
Fogostraat 12
1060 LJ Amsterdam
The Netherlands
Phone: +31 (0) 20 659 60 51
Fax: +31 (0) 20 659 76 73
CSEurope@corning.com
www.corning.com/lifesciences

Support Offices

EUROPE

France
t 0800 916 882
f 0800 918 636

Germany
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