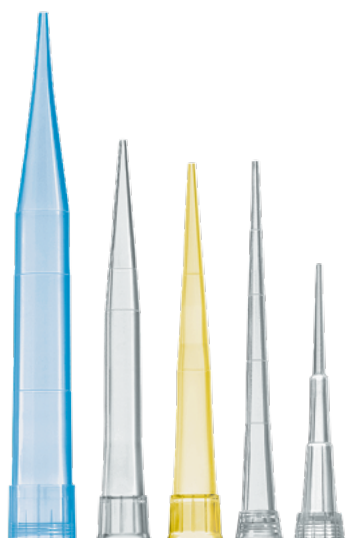


# Assessing Compatibility of BRAND® Transferpette® S Pipette with Third-Party Universal Pipette Tips

## Introduction

Pipettes are essential tools in laboratories for precise liquid handling. The compatibility of pipettes with various pipette tips can significantly impact the accuracy and precision of the volumes dispensed. Some manufacturers design their pipettes as “closed” systems that require their own branded tips. Others design “open” systems where the pipettes are compatible with tips from other manufacturers. When tips from one manufacturer are paired with a pipette from another, it is often assumed that if they appear to fit securely, then the results are accurate and reproducible. However, a secure fit alone does not guarantee accurate and reproducible pipetting. Therefore, when using pipettes and tips from different manufacturers, it is critical to confirm the fit, accuracy, and precision (coefficient of variation or CV) to ensure reliable results.

The BRAND Transferpette S line of pipettes is an open system, designed for use with BRAND pipette tips as well as high-quality third-party universal pipette tips. The performance of five (5) adjustable Transferpette S Single-Channel Pipettes with nominal volumes of 10  $\mu$ L, 20  $\mu$ L, 100  $\mu$ L, 200  $\mu$ L, and 1000  $\mu$ L were evaluated using universal pipette tips from 5 different manufacturers. The objective was to collect independent data to demonstrate the compatibility of the Transferpette S with high-quality universal tips and to highlight any notable differences between using BRAND tips and the universal tips considered. The data obtained focuses specifically on how use of these tips affect the mean percent CV and mean percent accuracy compared to BRAND's factory specifications.



## Results

Testing was conducted by an independent, ISO 17025-accredited calibration laboratory following ISO-8655 standards to evaluate the performance of the Transferpette S when used with universal pipette tips from various manufacturers. Key performance metrics include the mean percent CV (precision) and mean percent accuracy for different percentages of nominal volume compared against BRAND's specified tolerances. The volumes tested were 10%, 50%, and 100% nominal volume for each pipette.

The mean percent CV data (**Table 1**) for all tested pipette tips and pipette sizes were within the manufacturer's tolerances. This data serves as a strong statistical indicator that the tips form a proper seal with the pipettes. Poorly fitting tips may not be visually apparent, but they can cause leaks, air gaps, or inconsistent dispensing, leading to higher CV values. The consistency of dispensed volumes here suggests that the appropriate fit was achieved between the tips and the pipette nose cones, regardless of the universal tip used. This demonstrates that the Transferpette S can be used with these high-quality third-party tips reliably and with high precision, improving reproducibility.

**Table 1. Mean Percent Coefficient of Variation for Transferpette S against BRAND tolerance**

Mean CV (%)		Pipette Tested				
Tip Manufacturer	% of Nominal Volume Tested	Transferpette S, D-1000 (100-1000 µL)	Transferpette S, D-200 (20-200 µL)	Transferpette S, D-100 (10-100 µL)	Transferpette S, D-20 (2-20 µL)	Transferpette S, D-10 (0.5-10 µL)
BRAND Tolerance Limits	10	0.60	0.60	1.00	2.00	4.00
	50	0.30	0.30	0.40	0.70	1.00
	100	0.20	0.20	0.20	0.40	0.50
BRAND	10	0.10	0.06	0.12	0.41	0.82
	50	0.03	0.03	0.07	0.18	0.20
	100	0.04	0.02	0.04	0.04	0.16
Tip Manufacturer 1	10	0.17	0.10	0.14	1.06	DNT
	50	0.07	0.03	0.06	0.24	DNT
	100	0.04	0.02	0.03	0.16	DNT
Tip Manufacturer 2	10	-0.01	0.08	0.16	0.58	0.63
	50	0.08	0.04	0.06	0.14	0.19
	100	0.05	0.02	0.04	0.06	0.10
Tip Manufacturer 3	10	0.17	0.09	0.16	0.91	0.76
	50	0.09	0.03	0.07	0.21	0.22
	100	0.05	0.02	0.04	0.08	0.08
Tip Manufacturer 4	10	0.14	0.07	0.10	0.50	0.80
	50	0.06	0.04	0.04	0.12	0.19
	100	0.04	0.03	0.03	0.07	0.08
Tip Manufacturer 5	10	0.15	0.09	0.10	0.41	0.63
	50	0.07	0.03	0.04	0.11	0.16
	100	0.05	0.02	0.03	0.06	0.08

DNT = Did not test; Tip Manufacturer 1 does not manufacture universal tips for this size.

 = outside manufacturer's tolerance

 = within manufacturer's tolerance

The mean percent accuracy data (**Table 2**) shows that using BRAND tips provides the best accuracy for the Transferpette S. It also indicates that most third-party universal tips performed within BRAND tolerances for pipettes with higher nominal volumes. However, all third-party universal tips show increased variability at lower nominal volumes, highlighting the importance of careful tip selection, particularly for low-volume pipetting.

It is important to note that the Transferpette S was calibrated with BRAND tips prior to testing. For each nominal volume tested, only one lot of pipette tips per size was used, and only one Transferpette S pipette per size was tested. This, along with the data in **Table 2**, indicates that calibrating the Transferpette S with the tips that the pipette is intended to be used with is crucial for achieving the maximum possible accuracy.

**Table 2. Mean Percent Accuracy for Transferpette S against BRAND tolerance.**

**Mean Accuracy (%)**

**Pipette Tested**

Tip Manufacturer	% of Nominal Volume Tested	Transferpette S, D-1000 (100-1000 µL)	Transferpette S, D-200 (20-200 µL)	Transferpette S, D-100 (10-100 µL)	Transferpette S, D-20 (2-20 µL)	Transferpette S, D-10 (0.5-10 µL)
BRAND Tolerance Limits	10	3.00	3.00	3.00	5.00	7.00
	50	0.80	0.80	0.80	1.20	1.60
	100	0.60	0.60	0.60	0.80	1.00
BRAND	10	0.10	1.00	0.10	0.00	-1.00
	50	-0.68	-0.27	-0.44	0.20	0.40
	100	-0.35	-0.36	-0.33	0.25	0.30
Tip Manufacturer 1	10	-0.13	2.37	4.07	10.33	DNT
	50	-0.72	-0.11	0.29	2.23	DNT
	100	-0.58	-0.10	0.37	1.17	DNT
Tip Manufacturer 2	10	0.30	1.37	0.27	-1.17	14.00
	50	-1.00	-0.41	-0.30	-0.57	2.33
	100	-0.80	-0.38	-0.16	-0.45	0.93
Tip Manufacturer 3	10	-0.07	0.20	-1.47	-11.50	17.67
	50	-1.18	-0.63	-0.59	-1.53	3.07
	100	-1.01	-0.51	-0.28	-0.92	1.43
Tip Manufacturer 4	10	0.20	1.32	0.70	0.67	14.00
	50	-0.65	-0.43	-0.13	-0.20	2.80
	100	-0.51	-0.42	-0.01	0.02	1.13
Tip Manufacturer 5	10	0.33	1.48	1.43	2.67	15.33
	50	-0.79	-0.36	0.02	0.10	2.27
	100	-0.78	-0.30	0.16	0.33	0.97

DNT = Did not test; Tip Manufacturer 1 does not manufacture universal tips for this size.

 = outside manufacturer's tolerance

 = within manufacturer's tolerance

## Conclusion

Independent test data presented here demonstrates that the BRAND Transferpette S achieves the manufacturer's specifications for accuracy and precision established by BRAND when used in conjunction with BRAND tips. Further, the mean percent CV for all the third-party universal tips evaluated was within manufacturer tolerances, demonstrating that the high-quality universal tips considered have a proper fit with the Transferpette S, and that the Transferpette S is therefore compatible with these tips. The BRAND Transferpette S pipettes achieve acceptable precision and accuracy with high-quality third-party universal pipette tips, particularly at higher nominal volumes. However, increased variability at lower volumes highlights the need for calibrating the pipettes using the intended tips to maximize accuracy and optimal performance. The data here shows that achieving the best accuracy and precision of the Transferpette S out-of-the-box is achieved by pairing the Transferpette S with BRAND tips.



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