

Volume Measurement in Corning 3657 384-Well Round-Bottom Polypropylene Microplates Using the Scarlett™ 01 Volume Analysis System

Summary

The Scarlett 01 Volume Analysis System successfully measured liquid volumes in Corning 3657 384-well round-bottom microplates across multiple liquid types and dispense volumes. Measurements demonstrated good agreement with calibrated reference volumes throughout the evaluated range.

Key Results

- Scarlett successfully measured liquid volumes in **Corning 3657** 384-well, square-well, round-bottom polypropylene microplates.
- Successful volume measurement from **10–60 µL**
- Liquids evaluated:
 - **DI H₂O**
 - **DMSO (≥99.9%)**
- Measurements demonstrated good agreement with calibrated syringe reference volumes across the tested volume range.

Performance Overview

Table 1. Test Summary

Parameter	Value
Plate Manufacturer / Model	Corning 3657
Plate Type	384-Well, Square-well, Round-bottom, Polypropylene
Volume Range Evaluated	10–60 µL
Liquids Evaluated	2
Maximum Inaccuracy, Volumes ≥30 µL	1.9%
Maximum CV, Volumes ≥30 µL	1.6%

Verification Results

Across all tested volumes in Corning 3657 microplates, volumes measured by the Scarlett 01 System showed good agreement with calibrated reference volumes. The maximum observed inaccuracy was 7.8%, and the maximum coefficient of variation (CV) was 5.4%. Performance improved at higher volumes, with inaccuracy ≤1.9% and CV ≤1.6% for the evaluated volumes at or above 30 µL.

Table 2. Measurement Performance Results

Liquid	Target Volume (μL)	n	Mean Volume (μL)	^a Inaccuracy	CV
DI H ₂ O	10.12	6	10.12	0.04%	5.43%
	20.06	6	21.19	6.61%	2.49%
	39.76	6	40.33	1.43%	1.48%
	59.94	6	60.09	0.25%	0.81%
DMSO	10.12	6	10.91	7.80%	4.97%
	20.06	6	21.19	5.65%	2.35%
	30.18	6	30.75	1.89%	1.55%
	39.76	6	40.28	1.30%	1.30%
	59.94	6	59.93	0.02%	1.03%

a – Inaccuracy (%) is calculated relative to calibrated syringe reference volumes

Measurement Method

Measurements were performed using plate- and liquid-specific calibration curves. Calibration curves were generated using reference volumes dispensed by Hamilton glass syringes calibrated by RISE (Research Institutes of Sweden) according to ISO 8655 procedures. Reported inaccuracy values are relative to calibrated reference volumes.

Conclusion

The Scarlett 01 Volume Analysis System successfully measured liquid volumes in Corning 3657 microplates across the evaluated 10–60 μL volume range using both DI H₂O and DMSO. Measurements showed good agreement with calibrated reference volumes, with inaccuracy ≤1.9% and CV ≤1.6% for the evaluated volumes at or above 30 μL.

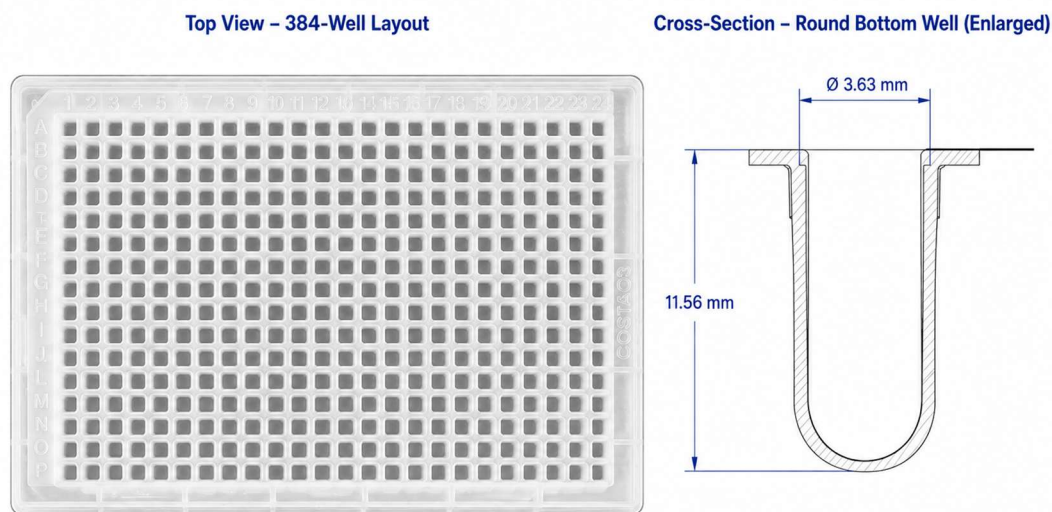


Figure 1. Corning 3657 384-well square-well, round-bottom polypropylene microplate geometry.

Ready to see Scarlett in your workflow? Contact Aventix hello@aventix.io to discuss your application, microplate format, and liquid handling requirements.