

Long-Term Quality Control Performance

Gerstel MPS — 3-MCPD and Glycidyl Ester Analysis, Verified Against FAPAS Proficiency Standards

| Prepared by LabAlliance Lab Technical Team · September 2026

Overview

FAPAS (Food Analysis Performance Assessment Scheme, run by Fera Science Ltd, UK) is an independent proficiency-testing provider. Labs worldwide analyze the same FAPAS reference material and report results back; FAPAS then publishes a consensus "assigned value" derived from all participating labs, using a variety of methods — not a value set by any single instrument or automation vendor.

This document summarizes LabAlliance's own long-term performance data, generated using our Gerstel MPS Automation system (Dualhead RoboticPro MPS Automated MPS) coupled with an Agilent 5977B GCMS System, tested against two FAPAS reference materials repeatedly over roughly 11 months of routine operation. Because the benchmark (the assigned value) comes from an external, multi-lab consensus rather than from Gerstel or LabAlliance, this is a meaningful check on accuracy and stability over time — not a one-off validation, but an ongoing record.

About the FAPAS QC Materials

Two FAPAS vegetable oil QC materials were used, each with an assigned value (Xa) set from the consensus of participating labs, plus an acceptable range corresponding to ± 2 z-scores:

QC Material	Analyte	Assigned Value (Xa)	Acceptable Range (z-score ≤ 2)	Applicable Until
T2677QC	3-MCPD Esters	1,013 $\mu\text{g/kg}$	689 – 1,336 $\mu\text{g/kg}$	Oct 29, 2025
T2677QC	Glycidyl Esters (as glycidol)	911 $\mu\text{g/kg}$	615 – 1,207 $\mu\text{g/kg}$	Oct 29, 2025
T2687QC	3-MCPD Fatty Acid Esters	373 $\mu\text{g/kg}$	235 – 512 $\mu\text{g/kg}$	Oct 2, 2027
T2687QC	Glycidyl Fatty Acid Esters (as glycidol)	391 $\mu\text{g/kg}$	247 – 535 $\mu\text{g/kg}$	Oct 2, 2027

Per FAPAS's own documentation: the assigned value is not a certified reference value, but a fit-for-purpose consensus derived from proficiency-test data across multiple labs and methods. Gerstel's results below are benchmarked against these assigned values and ranges.

Results: Gerstel MPS Performance Against FAPAS Standards

QC Material	Period	Analyte	Assigned Value	Lab Average	STDEV	RSD
T2677QC	Jun 2025 – Feb 2026 (n=36)	3-MCPD	1,013 µg/kg	1,057.5 µg/kg	27.5	2.60%
T2677QC	Jun 2025 – Feb 2026 (n=36)	GE	911 µg/kg	912.4 µg/kg	37.5	4.11%
T2687QC	Jun 2026 – Sep 2026 (n=24)	3-MCPD	373 µg/kg	390.3 µg/kg	22.6	5.79%
T2687QC	Jun 2026 – Sep 2026 (n=24)	GE	391 µg/kg	392.0 µg/kg	17.2	4.40%

Both QC materials show lab averages within the FAPAS acceptable range (z-score ≤2) for their respective analytes, across a combined period of roughly 11 months. RSD ranged from 2.60% to 5.79% — low variability sustained over routine, repeated use rather than a single validation run.

Key Takeaways

- Accuracy holds up against an external benchmark. Lab averages for both 3-MCPD and GE, across two separate FAPAS QC materials, land close to the independently-assigned consensus values — not just within the acceptable range, but consistently near the center of it.
- This is sustained performance, not a one-time result. The data spans roughly 11 months of routine testing (60 total measurements across both materials), not a single validation batch.
- Variability stayed low throughout. RSD ranged from 2.6% to 5.8% — tight enough to suggest the system isn't drifting or degrading with continued use.
- The benchmark is external. FAPAS assigned values come from a multi-lab, multi-method consensus run by Fera Science Ltd, not from Gerstel — so this isn't circular validation.

Sources

- FAPAS (Fera Science Ltd), QC Material Data Sheet T2677QC (internal file) — assigned values and acceptable ranges for 3-MCPD, 2-MCPD, and GE.
- FAPAS (Fera Science Ltd), QC Material Data Sheet T2687QC (internal file) — assigned values and acceptable ranges for 3-MCPD, 2-MCPD, and GE fatty acid esters.

