

Buffer solutions

Standardized reference for APC assays



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Standardized solutions for reliable APC assay conditions

Modern electrophysiology workflows require reliable, ready-to-use solutions that simplify daily work without compromising data quality. Nanion Buffer Solutions are stable, long-life, and produced under ISO-certified and GMP-compliant conditions, supporting consistent performance and confidence in your research.

Buffer variability can impact assay consistency in automated patch clamp (APC) workflows. Nanion Buffer Solutions are manufactured to defined specifications and verified through batch-to-batch testing for reproducible assay conditions across sites and over time. This supports reliable assay transfer, validation, and data comparability.

Our solutions are manufactured in cooperation with award-winning and certified production facilities (PAN-Biotech GmbH, Germany and Ampliqon A/S, Denmark).



Key benefits at a glance

1 Controlled specification ranges

2 Verified batch-to-batch consistency

3 Cross-site comparability

4 Performance-verified stability

5 Flexible implementation

6 ISO-certified, GMP-compliant manufacturing

7 Reliable Supply for HTS

8 Practical and sustainable packaging



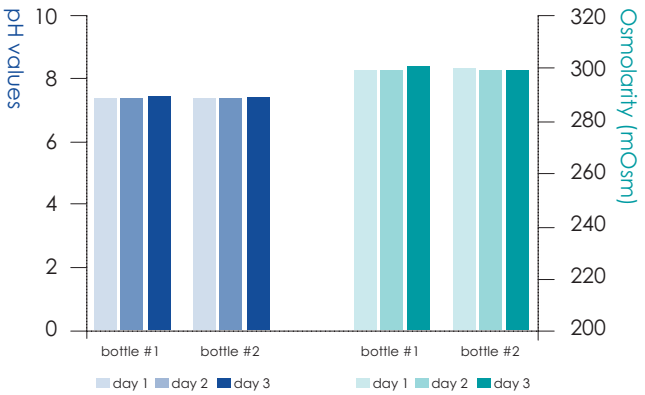
Quality is not a claim, it is a system

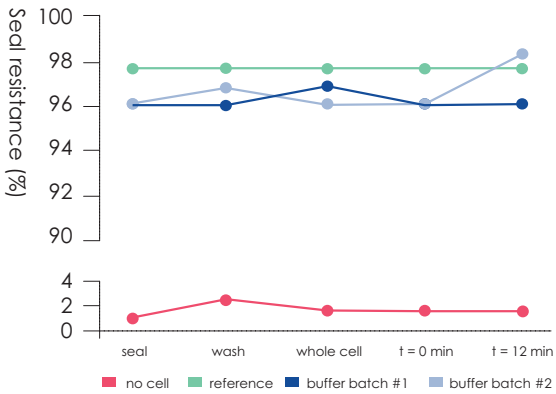
Quality is a system. In electrophysiology research, reliable results start long before an experiment begins. To turn a requirement into a reliable standard, we build quality into every step and maintain consistency throughout the entire workflow:

- Purchasing
- Manufacturing
- Quality control
- Release testing
- Documentation

Reproducible quality can only be achieved when all steps are aligned and controlled, especially in sensitive applications such as patch-clamp assays. This approach is essential for establishing a reliable workflow with the required consistency and comparability.

- Consistent composition from batch to batch
- Verified osmolarity and pH specifications
- Quality-tested before release
- Complete documentation and traceability
- Re-testing of retained batch samples





Buffer stability you can trust

The pH and osmolarity of the buffer solution remained highly consistent across multiple days and independent bottle preparations, demonstrating high stability and batch-to-batch reproducibility.

Excellent seal reproducibility across batches

Independent buffer batches supported consistently high seal and whole-cell success rates throughout the assay, while maintaining low background signals allowing reproducible electrophysiological workflows.

Cross-site comparability and performance-verified stability

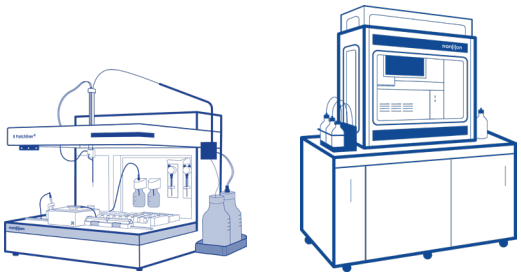
Using standardized buffer solutions across six participating sites, CiPA reference compounds were evaluated on both medium- and high-throughput automated patch clamp platforms. The close agreement of IC_{50} values for key cardiac ion channels, including hERG and $Na_V1.5$, demonstrates how consistent assay conditions contribute to highly reproducible results across instruments, laboratories, and testing environments.

These findings highlight the value of Nanion's optimized buffer systems in supporting reliable data generation, seamless assay transfer, and confident decision-making in cardiac safety screening.

Proven reproducibility across platforms and sites.

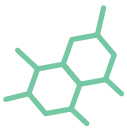
Exemplary results for three compounds on hERG and $Na_V1.5$.

** Risk of TdP*



Ion Channel	Compound	IC_{50} [µM] literature	Highest test conc. [µM]	Patchliner IC_{50} [µM] ambient temp.	Patchliner IC_{50} [µM] ambient temp.	SyncroPatch 384 IC_{50} [µM] ambient temp.	SyncroPatch 384 IC_{50} [µM] ambient temp.	SyncroPatch 384 IC_{50} [µM] ambient temp.
hERG	Sotalol*	111	300	160	151	192	217	71.4
	Diltiazem	13.2	100	13.9	15.6	4.1	8.4	5.7
	Quinidine*	0.72	10	1.02	0.92	1.54	1.02	0.78
$Na_V1.5$	Sotalol*	1180	300	>300	>300	>300	>300	>300
	Diltiazem	22.4	100	44.4	44.5	25.2	13.3	22.0
	Quinidine*	14.6	10	>10	>10	>10	>10	>10

Precision for progress



Composition control
Designed for consistent solution composition and reproducible assay conditions.



Workflow integration
Suitable for implementation in workflows or direct integration into existing assay setups.



Recyclable packaging
Ready-to-use solutions, room temperature storage, recyclable PET bottles.



Screening continuity
Ensures reliable supply for long-term screening studies.



Documented quality
Controlled manufacturing, full traceability, and documented quality standards.



Global standardization
Provides consistent assay conditions across laboratories worldwide.



Quality assurance
Each batch undergoes strict quality control to ensure consistent performance over time.



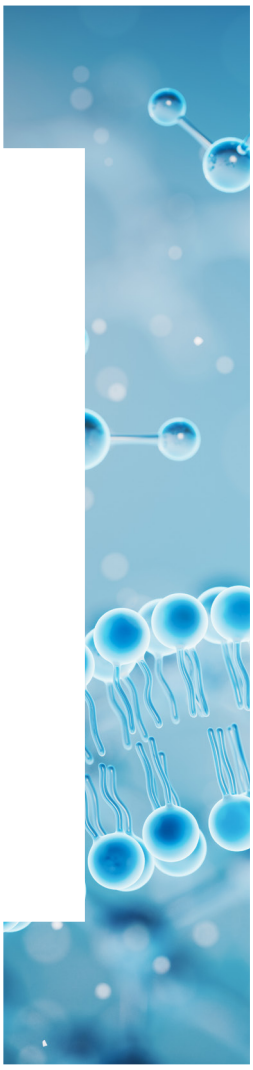
CiPA validation study
Reliable CiPA-ready reference solutions for standardized hERG and $Na_V1.5$ assays.

Ready when you are!

- **QC-tested buffer solutions available for all Nanion APC-systems**
- **Customised solutions upon request**
- **Standard and tailored bulk purchase discounts offered**

Solutions and Kits	Color code	Order #	Description
External Standard	●	08 3001	NaCl, Hepes
External Standard Ca 10	●	08 3012	NaCl, Ca^{2+}, Hepes
External [-] Ca^{2+} [-] Mg^{2+}	●	08 3003	Divalent free
External NMDG 60	●	08 3004	NMDG
External NMDG 60 Ca 10	●	08 3011	NMDG, Ca^{2+}
External NMDG 140	●	08 3014	For flouride free measurements
Internal CsF 110	●	08 3008	High CsF, EGTA
Internal KF 110	●	08 3007	High KF, EGTA
Internal K Gluconate 120	●	08 3015	For flouride free measurements
Reagent Kit Port-a-Patch standard	●	08 1001	Starter Kit with 81 vials
Reagent Kit Port-a-Patch for Na_V	●	08 1014	Starter Kit with 81 vials
Validation Reference Solution Kit hERG for SyncroPatch 384 (with chips)	●	22 3110	Reference solutions for hERG assays incl. 15 NPC-384 patch clamp chips (25 % off)
Validation Reference Solution Kit Na_V/Ca_V for SyncroPatch 384 (with chips)	●	22 3111	Reference solutions for Na_V and Ca_V assays incl. 15 NPC-384 patch clamp chips (25 % off)
Validation Reference Solution Kit hERG for SyncroPatch 384	●	22 3112	Reference solutions for hERG assays (30 % off)
Validation Reference Solution Kit Na_V/Ca_V for SyncroPatch 384	●	22 3113	Reference solutions for Na_V and Ca_V assays (30 % off)
NPC-16 FF Kit	●	22 3101	Starter kit with 10 NPC-16FF patch clamp chips and all solutions for fluoride-free recordings (15 % off)
NPC-384 FF Kit	●	22 3010	Starter kit with 10 NPC-384FF patch clamp chips and all solutions for fluoride-free recordings (20 % off)

accelerate your research



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