

Armored RNA Quant® & Armored DNA Quant™

Internal Process Controls

Unlock High-Confidence Results with Armored Quant Molecular Controls

Armored Molecular Control technology stabilizes and protects nucleic acids from nuclease degradation by packaging them in a protective protein coat. Armored Controls have been utilized in IVD-cleared assays for more than 20 years and continue to serve as an important tool in the rapidly evolving space of molecular diagnostics. For methods ranging from qPCR to NGS there is now a convenient and inexpensive way to monitor the performance of your assays with the Armored RNA Quant® and Armored DNA Quant™ Internal Process Controls.

- Used as an onboard process control to monitor extraction through detection.
- Non-specific 1,000 nucleotide RNA or 495 base pair DNA sequence.
- Encapsulated in a coat of protein dimer armor which renders them resistant to degradation.
- Used as a spike-in to sample (e.g., urine, blood, CSF, plasma/other liquid biopsy) to monitor the overall efficiency of your process.

Reduced Complexity

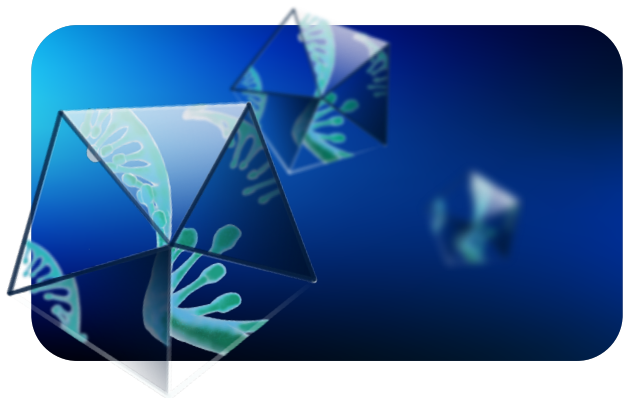
- Incorporates non-coding, non-specific non-homologous sequences.
- Simple, spike-in solutions to monitor extraction and process efficiency
- Compatible with new and existing RNA or DNA based clinical assays.
- Non-infectious, synthetic constructs simplify shipping and storage.

Optimized Workflow

- Deployable as extractable, exogenous internal positive control.
- Non-competitive sequence will not interfere with amplification/detection of target(s).
- Degradation-resistant in majority of biological matrices.
- Multiple volume and manufacturing options available.
- Available as cGMP or development lot in a range of fill volumes.

Armored Quant Internal Process Control Product Details

- NIST traceability enables usage in standardization and reproducibility assessments.
- Concentration: Available up to 1×10^{11} cp/mL
- Buffer Composition: TSM III (10 mM Tris, 100 nM NaCl, 1 mM $MgCl_2$, 0.1% Gelatin, 0.3% Microcide III, pH 7.0)
- Storage at -15 to $-30^\circ C$



Armored RNA Quant Internal Process Control Target Sequence (1,000 nt):

GTACTGACGTAAAGTCACTATTTTTTCGTGCAACGTA
CGTCTCGATGTACAACGCTCTATTACGGTTCATTTT
TTTTGTAGGGTTACGCGGCCAGATGACTCCATCTTA
TCCCCTTGAAAACATTCTTATTTGTACGCCATAGT
GGCATCGCGGTTGGATATCAATCGTATTGGACGCAA
GCGCGCTCTACTCAGTTTATAAGACCGCCAACATT
TTCGCAAGATCAGTGTATTTACGCTGACTCCAGTGG
TGAAACTCCTAAGATCTGTTTAGCTATTGCGCCGTG
CGTTTATCAAATCGGGCTTCCCAACATTCATTCTTA
GAAGGAAGCTCGATAGTTCAGAGCTGCGGAAGGCC
AATTCATATATATGTATGAGCCTGTCAATACCTG
CACCCACGAACACCACAGTACTAGAGTATGAGAGG
TCGACGATCTACGGATGGTGATGAGCACGGAGATCT
AAGCGTGGAAGTGGCTATATAGAGCAGATATATAT
ATGACGTACCAGAGGATCACCTACTAAAAGACTTTT
CGAGAATCTACACCTACTAGCAAGGGTAGCCGATTA
GTGGATCATCTAAGACATCAAGGCTCAAACATAATT
TTACCATGGACGCTGCATTTACGCTTGCACATTTTA
TGTTGGCAGCCTTTGCCGCGGCACATAGCGATATCC
CGTACCCGCTTTTCTTTAAGTTAATCGCCGATGATT
GGCTCAATAATCGCCTCACTTGTGCGATGACTAGCC
AGGCGTTTTCCCGCGTTTCTAGATATTATCGCGCTTA
TATAGTATAGACGAGTACCCTTTGTTGTTATGTCAG
CACCCAACAGAACTAAGTAATCTTTAGGCTGCGGCC
GCTTAGGTGGCAGAAGATTTGCTCGATGTTCTCAAG
TAAAGGACGTCGGGGAGTTGACGTTGGCAGGTAAC
GTATGGATCTTTAATAAATCTAGGCAACAAGTAAG
GGCCATTGAGCGCTTATATGCCGCAGTCT

Armored DNA Quant Internal Process Control Target Sequence (495 bp):

GACATCAAGGCTCAAACATAATTTTACCATGGACGCT
GCATTTACGCTTGACATTTTATGTTGGCAGCCTTT
GCCGCGGCACATAGCGATATCCCGTACCCGCTTTT
TTTAAAGTTAATCGCCGATGATTGGCTCAATAATCG
CTCACTTGTGCGATGACTAGCCAGGCGTTTCCCGCG
TTTCTAGATATATCGCGCTTATATAGTATAGACGAG
TACCCTTTGTTGTTATTGTCAGCACCCAACAGAATA
GTAATCTTTAGGCTGCGGCCGCTTAGGTGGCAGAAG
ATTTGCTCGATGTTCTCAAGTAAAGGACGTCGGGGA
GTTGACGTTGGCAGGTAACGTATGGATCTTTAATA
TAATCTAGGCAACAAGTAAGGGCCATTGAGCGCTTA
TATGCCGAGTCTAAACATGAGGATTACCCATGTAA
GCTTATCCCTTTAGTGAGGGTTAATTTTAGCTTGG
CACTGGCCGCTGTTTTACAACGTCG

Ordering Information

Product Description	Concentration	Part Number	Volume
Armored RNA Quant® Internal Process Control	2x10 ⁶ cp/mL	49650	0.5mL
Armored DNA Quant™ Internal Process Control	2x10 ⁸ cp/mL	52003	0.5mL

REFERENCES

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2. Beld M, Minnaar R, Weel J, Sol C, Damen M, van der Avoort H, Wertheim-van Dillen P, van Breda A, Boom R. 2004. Highly sensitive assay for detection of enterovirus in clinical specimens by reverse transcription PCR with an armored RNA internal control. *J Clin Microbiol.* 2004 Jul;42(7):3059-64.
3. Okello JB, Rodriguez L, Poinar D, Bos K, Okwi AL, Bimenya GS, Sewankambo NK, Henry KR, Kuch M, Poinar HN. 2010. Quantitative assessment of the sensitivity of various commercial reverse transcriptases based on armored HIV RNA. *PLoS One.* 2010 Nov 10;5(11):e13931.
4. Stevenson J, Hymas W, Hillyard D. 2008. The use of Armored RNA as a multi-purpose internal control for RT-PCR. *J Virol Methods.* 2008 Jun; 150(1-2):73-6.

Armored RNA Quant® is a technology developed jointly by Ambion, Inc. and Cenetron Diagnostics, LLC (US patents #5,677,124, #5,919,625, #5,939,262, #6,214,982, and #6,399,307). Armored RNA Quant® is a registered trademark of Ambion and Cenetron Diagnostics.

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Global Developer, Manufacturer, and Supplier of High-Quality Reagents, Analytical Instruments, and Precision Diagnostics.

INCLUDES R&D Systems™ Novus Biologicals™ Tocris Bioscience™ ProteinSimple™ ACD™ ExosomeDx™ Asuragen™ Lunaphore™

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