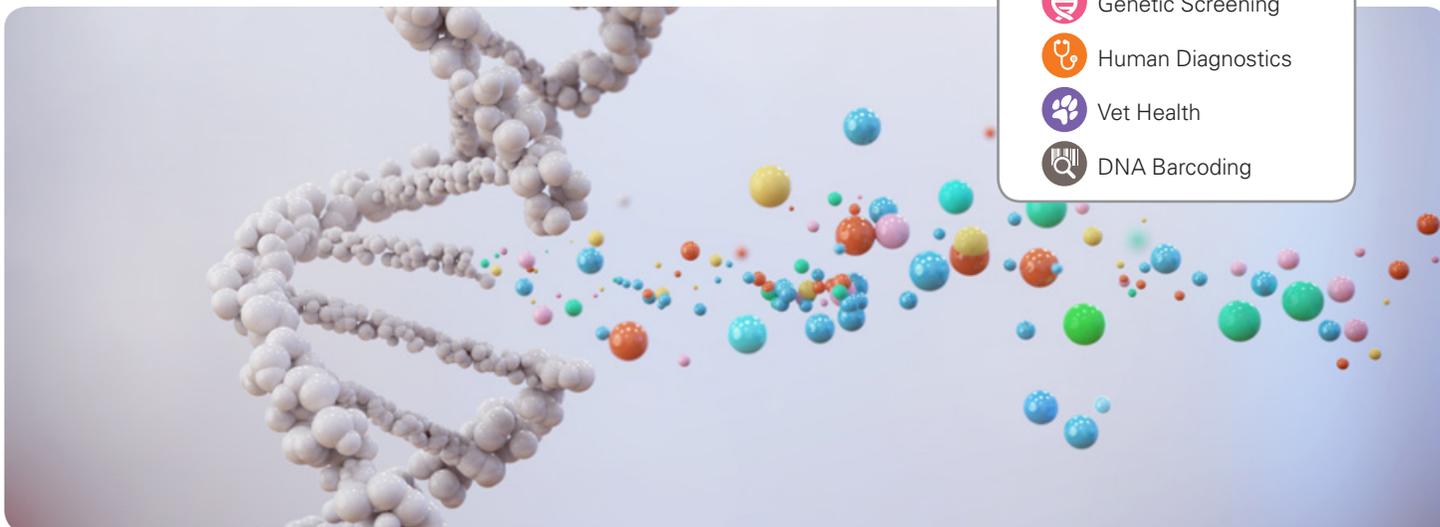


Lyophilization-Ready Enzymes & Mixes

DNA Polymerases and qPCR Master Mixes Formulated for Freeze-Drying

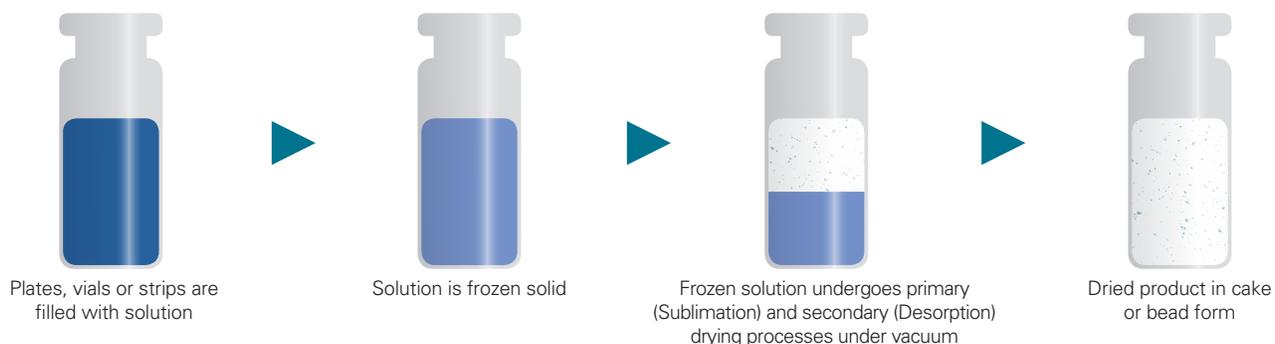
APPLICATION KEY

-  Food Testing
-  Water Testing
-  Environmental
-  Blood Banking
-  Genetic Screening
-  Human Diagnostics
-  Vet Health
-  DNA Barcoding



Molecular diagnostic tests are progressively moving towards a lyophilized format. There are several advantages for this, including room temperature shipping and storage, extended shelf-life and increased flexibility in sample volume. In order to be compatible with lyophilization however, enzyme preparations must be glycerol-free and include specialized lyophilization-excipients that preserve the mixture as it is exposed to various lyophilization conditions including freezing, temperature ramps, vacuum and dehydration. An ideal lyophilization formulation should stabilize an enzyme in a freeze-dried format and allow very fast rehydration and reactivation of the enzyme preparations, without impacting its performance post rehydration.

Key Steps in Lyophilization Process



qPCR Master Mixes

Lyo-Ready qPCR

- Ready-to-use and glycerol-free qPCR master mix formulated with a specialized blend of excipients
- Ideal for multiplex assays on automated high-throughput instruments
- Compatible with a range of lyophilization protocols to produce freeze-dried beads or cakes

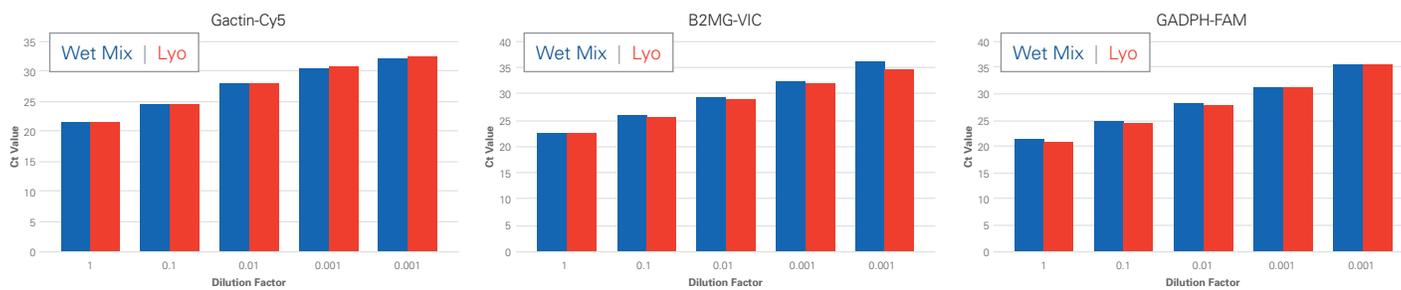
Applications:    

PRODUCT	CAT NO.	VOLUME	REACTIONS
Lyo-Ready qPCR Mix	MDX021	5 mL	500 Rxn
		100 mL	10,000 Rxn
Lyo-Ready qPCR Mix 2.6x	MDX023	4 mL	500 Rxn
		100 mL	12,500 Rxn

Product highlights

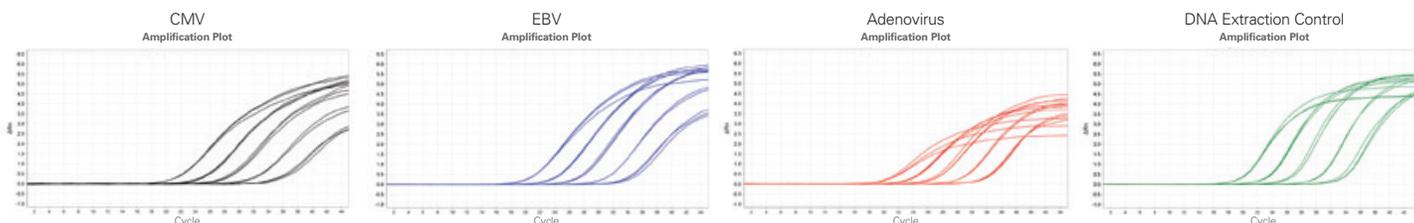
Lyophilized mixes remain stable stored at ambient temperature for 2 years

Lyo-Ready qPCR mix, primers, and probes were added to a 96-well plate, lyophilized and stored at room temperature for 24 months. The mix was rehydrated (red) and tested against a freshly prepared wet mix (blue) in a duplex qPCR assay using mouse cDNA. The results illustrate that long-term room temperature storage does not have an effect on the quality of qPCR assays.



Powerful multiplexing capacity

Three viral sequences, Cytomegalovirus (CMV) Adenovirus, Epstein Barr Virus (EBV) and a DNA Extraction Control were amplified with equal efficiency from synthetic DNA templates with Lyo-Ready qPCR Mix in a quadruplex qPCR probe assay.



RT-qPCR Master Mixes

Lyo-Ready 1-Step RT-qPCR Mix

- Glycerol-free RT-qPCR master mix formulated with a specialized blend of excipients
- Suited for multiplex assays and low-copy number targets
- Virus mix (MDX062) is optimized for amplification of RNA or DNA viruses with high secondary structure from either extracted or intact virus samples

Applications:    

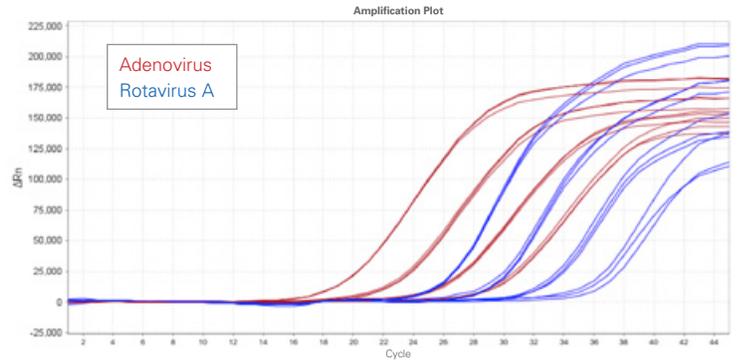
PRODUCT	CAT NO.	VOLUME	REACTIONS
Lyo-Ready 1-Step RT-qPCR Mix	MDX024	10 mL	1,000 Rxn
		100 mL	10,000 Rxn
Lyo-Ready 1-Step RT-qPCR Virus Mix	MDX062	10 mL	1,000 Rxn
		100 mL	10,000 Rxn



Product highlights

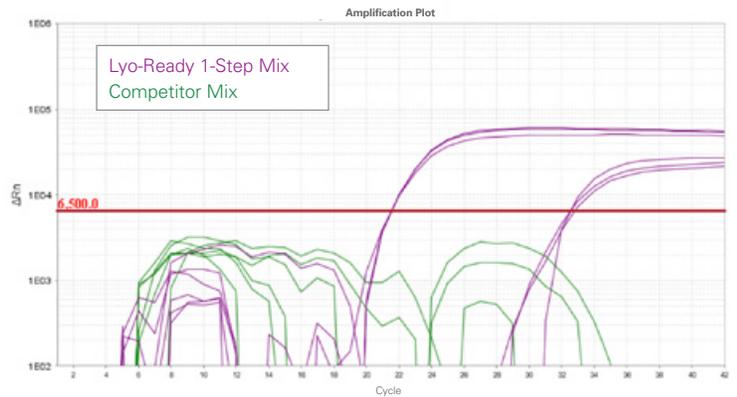
High sensitivity amplification from both DNA and RNA templates

Rotavirus A (dsRNA) and Adenovirus (dsDNA) were amplified in a single multiplexed RT-qPCR assay using inactivated crude viral lysates and Lyo-Ready 1-Step RT-qPCR Mix. The result illustrates that both viruses were amplified with high sensitivity, demonstrating the ability of Lyo-Ready 1-Step RT-qPCR Mix to detect low-copy number RNA and DNA targets simultaneously from a single sample.



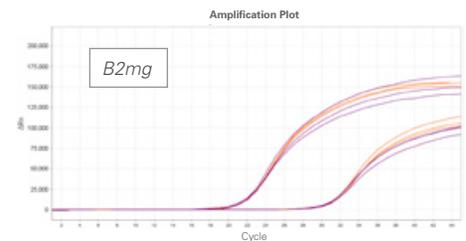
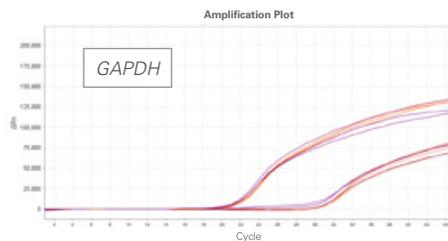
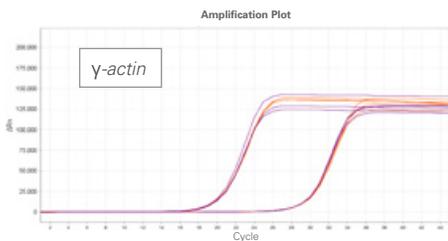
Amplification directly from blood samples

γ -actin was amplified from mouse RNA in the presence of 2% whole blood using Lyo-Ready 1-Step RT-qPCR Mix (purple traces) and a competitor mix (green traces). The results demonstrate the ability of the Lyo-Ready 1-Step RT-qPCR Mix to amplify targets from difficult samples (2% whole blood) in contrast to the competitor mix, which failed even at higher concentrations of template RNA.



Retention of reverse transcriptase activity after lyophilization

Primers and probes were added to Lyo-Ready 1-Step triplex RT-qPCR probe assay, lyophilized and immediately rehydrated (purple) and tested against a freshly prepared wet mix (orange), in a RT-qPCR probe assay on mouse RNA. The results demonstrate the same reverse transcriptase enzyme activity before and following lyophilization.



DNA Polymerase

Glycerol-Free Taq HS 50 U/ μ L

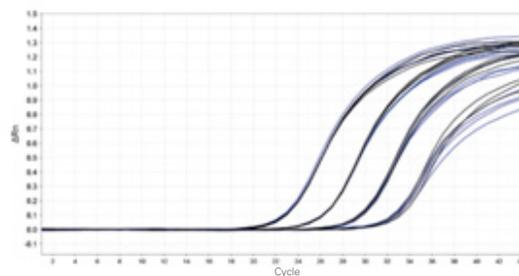
- Lyophilization-compatible DNA polymerase ideal for automated high-throughput testing
- Provided as separate 'tubes' of Taq, hot-start antibody, and enzyme dilution buffer
- Can be used with Lyo-Ready qPCR Buffer (Cat #MDX022) to develop lyophilized qPCR mixes

Comparison of freshly prepared and lyophilized glycerol-free Taq HS master mixes

A 10-fold serial dilution of template DNA was used to set up two sets of qPCR assays. One set was lyophilized (blue) and the other left as a wet mix (black). Results illustrate that lyophilization of Glycerol-Free Taq HS does not have an effect on the quality of the qPCR, as both the assays demonstrate identical efficiency and sensitivity.

Applications:    

PRODUCT	CAT NO.	VOLUME	REACTIONS
Glycerol-Free Taq HS 50 U/ μ L	MDX011	20 μ L	1,000 Units
		500 μ L	25,000 Units
Lyo-Ready qPCR Buffer 2.5x	MDX022	4 mL	1,000 Rxn
		100 mL	12,500 Rxn



Isothermal Polymerase

Glycerol-Free Bst

- Lyophilization-compatible DNA polymerase for isothermal applications
- Enhanced thermophilic strand displacement activity

Applications:      

PRODUCT	CAT NO.	VOLUME
Glycerol-Free Bst	MDX017	1 mL
		20 mL

Reverse Transcriptase

Lyo-compatible MMLV-RT

- High-concentration MMLV-RT suitable for incorporation into lyophilized RT-PCR assays
- Demonstrates high efficiency in RT-qPCR assays and high sensitivity detection of low copy number RNA targets

Applications:     

PRODUCT	CAT NO.	VOLUME	REACTIONS
Lyo-compatible MMLV-RT	MDX042	8 μ L	1,000 Rxn
		80 μ L	10,000 Rxn

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