

TECHNICAL DATA SHEET

FastPROBE™ 1-Step RT-qPCR Plus Hi-ROX Kit

Catalog 31-5242-0100R

Numbers: 31-5242-0300R

PRODUCT INFORMATION

Contents: 31-5242-0100R (100 rxns)

FastPROBE™ 1-Step RT-qPCR Plus Hi-ROX Master Mix (2X): 1 x 1.0 mL

M-MLV RTase / RNase Inhibitor Mix (20X): 1 x 100 µL

31-5242-0300R (300 rxns)

FastPROBE™ 1-Step RT-qPCR Plus Hi-ROX Master Mix (2X): 3 x 1.0 mL

M-MLV RTase / RNase Inhibitor Mix (20X): 3 x 100 µL

Use By: 12 months from date of receipt

DESCRIPTION

FastPROBE™ 1-Step RT-qPCR Plus Hi-ROX is a universal probe kit designed for fast, highly specific and ultra-sensitive RT-qPCR. The latest developments in reverse transcriptase technology and buffer chemistry are used to give efficient cDNA synthesis and realtime PCR in a single tube. The kit is engineered for use on a wide range of probe technologies such as TaqMan®, Scorpions® and molecular beacon probes. It can be used to quantify any RNA template including mRNA, total RNA and viral RNA sequences. FastPROBE™ 1-Step RT-qPCR Plus Hi-ROX is designed to give rapid and accurate results over a broad range of template concentrations and is ideally suited to the detection of RNA viruses including SARS-CoV-2. The kit includes a thermostable and extremely active modified MMLV reverse transcriptase and advanced RNase inhibitor that prevents degradation of RNA by contaminating RNase. Antibody-mediated hot start technology prevents the formation of primer dimers and non-specific products giving highly specific and ultra-sensitive real-time RT-PCR with unrivalled efficiency in multiplex. High-throughput screening has resulted in a buffer system that allows efficient amplification from GC-rich and AT-rich templates, under fast and standard cycling conditions.

STORAGE

On arrival the kit should be stored between -30°C and -15°C. Avoid prolonged exposure to light. If stored correctly the kit will retain full activity for 12 months. The kit can go through 30 freeze/ thaw cycles with no loss of activity.

IMPORTANT CONSIDERATIONS

Instrument compatibility: Different real-time PCR instruments require different levels of ROX passive reference. Generally, modern instruments do not require passive reference but include the option to use it for normalisation.

Primer design: For efficient amplification under fast cycling conditions we recommend amplicon lengths between 80bp and 200bp. With all manufacturers, the shorter the amplicon length, the faster the reaction can be cycled. Amplicon lengths should not exceed 400bp. Primers should have a predicted melting temperature of around 60°C, using default Primer 3 settings (<http://bioinfo.ut.ee/primer3/>). For TaqMan® probes, choose a probe close to the 5' primer and avoid terminal guanosine residues.

Template concentration: As target copy number will vary, it is important to select the correct template concentration to correctly quantify the target sequence. A good concentration will display clear separation between amplification curves (Fig.1). At lower template concentrations, the amplification curves will begin to group together and Ct values will not fit the standard curve (Fig.2).

Fig.1

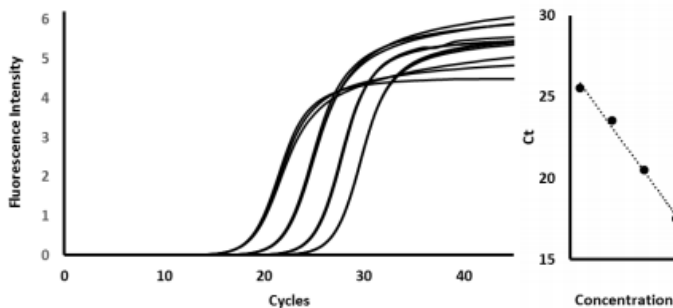
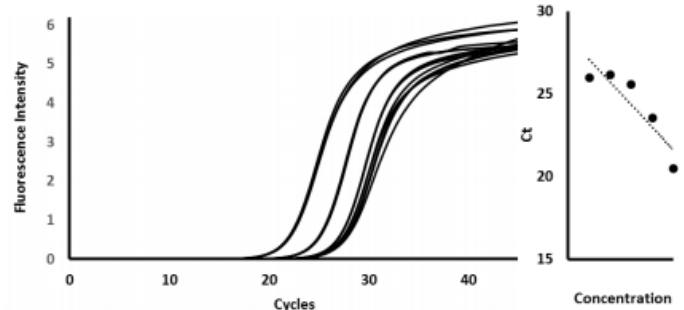


Fig.2



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REACTION SETUP

- Before starting, briefly vortex 2x FastPROBE™ 1-Step RT-qPCR Plus Hi-ROX
- Prepare a master mix based on the following table. We also recommend setting up a no-RTase control:

Reagent	20µL reaction	Final conc.	Notes
2x FastPROBE™ 1-Step RT-qPCR Plus Hi-ROX Mix	10µL	1x	See above for optimal primer design
Forward primer (10µM)	0.8µL	400nM	
Reverse primer (10µM)	0.8µL	400nM	
Probe (10µM)	0.4µL	200nM	
20x RTase Go	0.2µL	0.2x	0.2µL for sensitive SARS-CoV-2 detection. Alternatively, titrate down to 0.05µL.
Template RNA	Viral RNA: 10 to 1x10 ⁸ copies Total RNA: 1pg to 1µg mRNA: >0.01pg	Variable	Addition of sample as 2 to 5µL volumes will improve assay precision. 5µL of swab extract is recommended for SARS-CoV-2 diagnostic assays
PCR grade dH2O	Up to 20µL final volume		

- Program the instrument using the following conditions, acquiring data on the appropriate channel:

Cycles	Temperature	Time	Notes
1	45°C to 55°C	10min	Reverse transcription: 45°C is recommended for most applications. 55°C should be used only when amplicon contains regions of high secondary structure
1	95°C	2min	Polymerase activation
40	95°C	5 seconds	Denaturation
40	60°C to 65°C	20-30 seconds	Anneal/Extension: do not exceed 30 seconds, do not use temperatures below 60°C
Melt analysis	Refer to instrument instructions		Optional melt profile analysis, available for hybridisation probes only

TECHNICAL SUPPORT

Please provide the following information to support@tonbobio.com for troubleshooting and technical support:

- Catalog and batch numbers
- Reaction set-up (master mix)
- Cycling conditions
- Amplicon size
- Screen shots of amplification traces and melting profile
- Detailed description of the issue

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