

Product Name and Catalog Number

1-Step 2X RT-PCR Master Mix-SYBR Green-HP (High Processibility), Cat. No. W142

Intended Use

- The 1-Step 2X RT-PCR Master Mix is used for qualitative and quantitative RT-PCR amplifications with SYBR Green dye.
- The master mix is a premixed, 2X concentrated solution that has all the components except for gene-specific primers and RNA template.

Kit Characterizations

- For the reverse transcription step, this kit uses a highly efficient thermophilic Reverse Transcriptase (US patent pending), which is a thermophilic type A polymerase with optimal temperatures of 60-62°C, and it can be heat-inactivated at ≥90°C.
- The thermophilic enzyme highly efficiently synthesizes a complementary DNA strand on RNA template, *one unit per 20µL of reaction.*
- The kit can detect single digit copies of target RNA depending on assay design and optimization.
- The concentrations of the primers are variable depending on specific assays and thermo-cycling protocols (Table 1).
- In the 1x reaction mix, 1.2mM MgCl₂ is preset.
- SYBR Green is included in the mix.
- The preferable PCR product size is ≤150bp.
- **No ROX passive reference dye** is in the master mix.

Kit Contents

2X Master Mix (1000 µL) for 100 or 200 RT-PCR reactions.

Transportation and storage

The kit can be transported at ≤4°C for up to 3 days. The kit should be stored in the dark at -20°C for 12 months without more than 10 times of freeze-thaw cycles. The kit can be stored at ≤4°C for a short time.

Table 1. Setting up a 20 µL or 10 µL reaction

Component	Volume per 20µL	Volume per 10µL	Final concentration
2X Master Mix	10µL	5µL	1X
Primers ^a	Variable	Variable	Each 150-900 nM
RNA template ^b	Variable	Variable	As low as single digit copies of target RNA to ≤1 µg total RNA
H ₂ O	To 20µL	To 10µL	

^aThe primer's T_m should be designed ≥60°C using primer3 software for high efficiency at the optimal temperature.

^bRNA templates should be extracted by a qualified silica-based kit and eluted with low EDTA TE buffer (10mM Tris-HCl, 0.1mM EDTA, pH 8.0-8.3).

After setting up the reactions, seal the 96-well plate/8-tube strip(s).

- Vortex to fully mix the components, and centrifuge shortly to remove air bubbles.
- Then put the 96-well plate/8-tube strip(s) into the real-time fluorescence PCR instrument.
- Note: Preferably operate on ice. Avoid prolonged exposure to intense light to avoid bleaching the fluorescence.

Applicable Instruments

This kit is compatible with Bio-Rad real-time PCR detection systems, Applied Biosystems/ThermoFisher real-time PCR instruments, Roche LightCycler LC480, QIAGEN Rotor-Gene Q, Eppendorf Mastercycler EP realplex, and Stratagene Mx real-time PCR systems.

Note: **Turn off ROX passive reference dye button** when setup assays on Applied Biosystems/ThermoFisher instruments.

Setting Up Thermal Cycling

Table 2. Standard Thermo-Cycling Protocol

Stage	Temperature	Period	Number of cycles
I	60°C	10 min	1
II	95°C	2 min	1
III	95°C	12 sec	35-40
	60°C, signal acquisition	60 sec	
IV	60°C to 95°C	Various	1

Table 3. Fast Thermo-Cycling Protocol

Stage	Temperature	Period	Number of cycles
I	60°C	10 min	1
II	95°C	1 min	1
III	95°C	10 sec	35-40
	60°C, signal acquisition	30 sec	
IV	60°C to 95°C	Various	1

Quality control

Not detectable DNase and RNase activities.

Related Products

- Thermophilic Reverse Transcriptase, Cat. No. W140
- 1-Step 2X RT-PCR Master Mix-SYBR Green Dye-HY (High Yield) Cat. No. W141
- 1-Step 2X RT-PCR Master Mix-TaqMan probe, Cat. No. W143