

PRODUCT INFORMATION

**Thermo Scientific**  
**Verso 1-Step qRT-PCR Low ROX**  
**Kit**

**#AB-4102/C**      400 x 25 µL

**Lot** \_      **Expiry Date** \_

**Ordering Information**

Component	#AB-4102/A 200 rxns of 25 µL	#AB-4102/C 400 rxns of 25 µL
Verso Enzyme Mix	50 µL	100 µL
RT Enhancer	250 µL	500 µL
2X 1-Step qPCR Low ROX Mix	2 × 1.25 mL	5 mL

**Store at -20°C**



[www.thermoscientific.com/onebio](http://www.thermoscientific.com/onebio)

**Description**

Thermo Scientific Verso 1-Step qRT-PCR Low ROX Kit has been developed to quantify RNA in a single step assay. With the exception of primers, template and probes, this kit contains in three vials all the components required to perform rapid, sensitive and reproducible qRT-PCR.

**Verso™ Enzyme Mix**

The Verso Reverse Transcriptase is active at high temperatures, is highly sensitive and can generate long cDNA strands. This mix also contains RNase inhibitor to protect RNA templates from degradation.

**RT Enhancer**

RT Enhancer is included to remove contaminating DNA, eliminating the need for DNase I treatment. It degrades double stranded DNA during the transcription of RNA and is inactivated during the activation step of the Thermo Scientific Thermo-Start DNA Polymerase.

**1-Step qPCR Low ROX Mix**, which contains:

- A proprietary reaction buffer which provides highly sensitive, specific and consistent fluorescence readings for real-time and end-point analysis. This buffer has been optimized to allow both reverse transcription and PCR amplification to occur in the same reaction across a wide range of templates.

- Thermo-Start™ DNA Polymerase, a chemically modified hot-start version of Thermo Scientific ThermoPrime Plus DNA Polymerase, which prevents non-specific amplification during cDNA synthesis. Thermo-Start has 5' to 3' polymerization and exonuclease activity but lacks 3' to 5' exonuclease activity (proofreading). Thermo-Start requires an **activation step at 95°C for 15 minutes**.
- An inert blue dye to assist in the visualization of the 1-Step qPCR Low ROX Mix after aliquoting into the reaction well.
- dTTP to improve reaction sensitivity and efficiency compared to dUTP.
- ROX passive reference dye to normalize the fluorescent reporter signal generated in QPCR. The concentration of ROX in the final 1X reaction is 25 nM.

### **Verso Reverse Transcriptase**

Verso is an RNA-dependent DNA polymerase with a significantly attenuated RNase H activity compared to *Reverse-iT™*. Verso synthesizes cDNA at a temperature range of 42°C to 57°C and is inactivated during the activation step of the Thermo-Start DNA Polymerase. Verso can reverse transcribe total RNA from 1 pg - 1 µg. The recommended amount of total RNA template to use in 1-step kits is between 1 pg - 100 ng.

### **Cycler Compatibility**

Verso 1-Step qRT-PCR Low ROX Kit is compatible for use with any probe system and with qPCR cyclers requiring low ROX dye levels, including ABI PRISM® 7500 and Stratagene Mx4000®, Mx3000P®, Mx3005P™.

### **Storage Conditions**

Store at -20°C until ready for use. Verso 1-Step qRT-PCR Low ROX Kit is stable for a minimum of 12 months. Avoid repeated freeze thawing. The ROX dye is light sensitive, exposure should be minimized.

### **Additional Info**

The use of disposable gloves, RNase and DNase free filter tips and plastics is recommended.

For optimal results, the recommended amplicon length is in the range of 60 to 300 bp.

As best performance is achieved with dTTP, the 1-Step qPCR Low ROX Mix contains a nucleotide mix with dTTP instead of dUTP.

RT Enhancer is not required if DNase I treatment is performed prior to qRT-PCR.

### **Tips before use**

Thaw the reagents on ice. Mix and spin down the solutions before use to recover the maximum amount. **Do not vortex the 1-Step qPCR Low ROX Mix or the Verso Enzyme Mix.** Briefly centrifuge to avoid bubbles within the wells, as these will interfere with the fluorescence. Always include a no template control (NTC) and a no enzyme control (NEC).

## Protocol

Example of reaction mix preparation.

The volume of each component is for a 25  $\mu$ L final reaction.

	Volume	Final Concentration
Verso Enzyme Mix	0.25 $\mu$ L	
2X 1-Step qPCR Low ROX Mix	12.5 $\mu$ L	1X
RT Enhancer	1.25 $\mu$ L	
Forward primer (10 $\mu$ M)*	1 $\mu$ L	400 nM
Reverse primer (10 $\mu$ M)*	1 $\mu$ L	400 nM
Probe	variable	100-250 nM
Template (RNA)	1-5 $\mu$ L	1 ng
Water, nuclease-free (#R0581)	To 25 $\mu$ L	
<b>Total volume</b>	<b>25 <math>\mu</math>L</b>	

\*For optimization, a primer titration should be performed from 100 nM to 500 nM final concentration. Scale up or down the volume and concentration as appropriate.

Example of a 1-Step qRT-PCR thermal cycling protocol:

	Temp.	Time	Number of cycles
cDNA synthesis**	50°C	15 min	1 cycle
Thermo-Start activation	95°C	15 min	1 cycle
Denaturation	95°C	15 s	40 cycles
Annealing/Extension***	60°C	60 s	

\*\*Depending on the length of template and degree of secondary structure, the efficiency of the first strand synthesis may be improved by optimizing temperature and time (42-57°C for 5-30 minutes).

\*\*\*Separate annealing (50–60°C for 30 sec) and extension steps (72°C for 30 sec) may be necessary with some probe systems (e.g. Molecular Beacons), as the optimal temperature for detecting fluorescence may be different.

## CERTIFICATE OF ANALYSIS

Verso Enzyme Mix and 1-Step qPCR ROX Mix are tested functionally for use in qRT-PCR. The product must demonstrate linearity of amplification over a specified serial dilution of control human total RNA.

Quality authorized by:  Jurgita Zilinskiene

## **NOTICE TO PURCHASER:**

- Use of this product is covered by one or more of the following US patents and corresponding patent claims outside the US: 6,127,155, 5,677,152 (claims 1 to 23 only) and 5,773,258 (claims 1 and 6 only). Use of this product in a passive reference method is covered by the following U.S. Patent: 5,928,907 (claim numbers 12-24, 27-28) and corresponding patent claims outside the US. The purchase of this product includes a limited, non-transferable immunity from suit under the foregoing patent claims for using only this amount of product for the purchaser's own internal research. No right under any other patent claim and no right to perform commercial services of any kind, including without limitation reporting the results of purchaser's activities for a fee or other commercial consideration, is conveyed expressly, by implication, or by estoppel. This product is for research use only. Diagnostic uses under Roche patents require a separate license from Roche. Further information on purchasing licenses may be obtained by contacting the Director of Licensing, Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California 94404, USA.
- Use of Verso 1-Step qRT-PCR Low ROX Kit is licensed from bioMérieux, is covered by US Patent 5,654,143, US RE39031 and equivalents, and is for Research Use Only.

## **PRODUCT USE LIMITATION**

This product is developed, designed and sold exclusively *for research purposes and in vitro use only*. The product was not tested for use in diagnostics or for drug development, nor is it suitable for administration to humans or animals.

Please refer to [www.thermoscientific.com/onebio](http://www.thermoscientific.com/onebio) for Material Safety Data Sheet of the product.

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