

iTaq™ Universal Probes Supermix

Catalog #	Description
1725130	iTaq Universal Probes Supermix , 2 ml (2 x 1 ml vials), 200 x 20 µl reactions
1725131	iTaq Universal Probes Supermix , 5 ml (5 x 1 ml vials), 500 x 20 µl reactions
1725132	iTaq Universal Probes Supermix , 10 ml (10 x 1 ml vials), 1,000 x 20 µl reactions
1725134	iTaq Universal Probes Supermix , 25 ml (5 x 5 ml vials), 2,500 x 20 µl reactions
1725135	iTaq Universal Probes Supermix , 50 ml (10 x 5 ml vials), 5,000 x 20 µl reactions

For research purposes only.

Storage and Stability

Guaranteed for 12 months in a constant temperature freezer at –20°C protected from light. For convenience, this supermix can be stored at 4°C for up to 3 months.

Kit Contents

iTaq Universal Probes Supermix is a 2x concentrated, ready-to-use reaction master mix containing all components, except primers, probes, and template, for probe-based real-time quantitative PCR (qPCR; simplex or duplex) on any real-time PCR instrument (ROX-independent and ROX-dependent). It contains antibody-mediated hot-start iTaq DNA Polymerase, dNTPs, MgCl₂, enhancers, stabilizers, and a blend of passive reference dyes (including ROX).

Instrument Compatibility

This supermix is compatible with all Bio-Rad and other commercially available real-time PCR systems.

Reaction Mix Preparation and Thermal Cycling Protocol

1. Thaw iTaq Universal Probes Supermix and other frozen reaction components to room temperature. Mix thoroughly, centrifuge briefly to collect solutions at the bottom of tubes, then store on ice protected from light.

2. Prepare (on ice or at room temperature) enough reaction mix for all qPCR reactions by adding all required components, except the DNA template, according to the recommendations in Table 1.
3. Mix the reaction mix thoroughly to ensure homogeneity and dispense equal aliquots into each qPCR tube or into the wells of a qPCR plate. Good pipetting practice must be employed to ensure assay precision and accuracy.
4. Add DNA samples (and nuclease-free H₂O if needed) to the PCR tubes or wells containing reaction mix (Table 1), seal tubes or wells with flat caps or optically transparent film, and vortex 30 sec or more to ensure thorough mixing of the reaction components. Spin the tubes or plate to remove any air bubbles and collect the reaction mixture in the vessel bottom.
5. Program the thermal cycling protocol on a real-time PCR instrument according to Table 2.
6. Load the PCR tubes or plate into the real-time PCR instrument and start the PCR run.
7. Perform data analysis according to the instrument-specific instructions.

Table 1. Reaction setup.*

Component	Volume/20 µl Reaction, µl	Volume/10 µl Reaction, µl	Final Concentration
iTaq Universal Probes Supermix (2x)	10	5	1x
Forward and reverse primers	Variable	Variable	150–900 nM each primer**
Fluorogenic probe	Variable	Variable	150–250 nM each probe
DNA template (add at step 4)	Variable	Variable	cDNA: 100 ng–100 fg Genomic DNA: 500 ng–5 pg
Nuclease-free H ₂ O	To 20 µl	To 10 µl	—
Total reaction mix volume	20 µl	10 µl	—

* Scale all components proportionally according to sample number and reaction volumes.

** For duplex assays with large copy number differences, decreasing the primer concentration of the higher-copy target to 150 nM and increasing low-copy target primers to 900 nM will help achieve optimal results.

Table 2. Thermal cycling protocol.

Real-Time PCR System	Setting/Block	Polymerase Activation and DNA Denaturation at 95°C	Amplification		Cycles
			Denaturation at 95°C, sec	Annealing/Extension and Plate Read at 60°C, sec*	
Bio-Rad® CFX96™, CFX384™, CFX96 Touch™, CFX96 Touch Deep Well, CFX384 Touch™, CFX Connect™	Fast	20–30 sec for cDNA or 2–5 min for genomic DNA	2–5	15–30	35–40
Bio-Rad® iQ™5, MiniOpticon™, Chromo4™, MyiQ™	Standard		10–15	15–30	
Applied Biosystems 7500, 7900HT, QuantStudio, StepOne, StepOnePlus, and ViiA 7	Fast		1	20	
	Standard		15	60	
Applied Biosystems 7300 and 7000	Standard		15	60	
Roche LightCycler 480	Fast		2–5	15–30	
	Standard		15	60	
QIAGEN Rotor-Gene and Stratagene Mx series	Fast		2–5	15–30	

* Longer annealing/extension time for low-abundance targets (up to 1 min) may be optimal for multiplexing (instrument dependent).

Recommendations for Primer and Probe Design

- The iTaQ Universal Probes Supermix and the qPCR cycling protocols have been optimized for assays with a primer melting temperature (T_m) of 60°C and designed using the open source Primer3 program (<http://frodo.wi.mit.edu/>) under its default settings. For assays designed using other tools, the primer T_m should be recalculated using Primer3 for determining annealing/extension temperature. The probe T_m must be 10°C higher than the calculated primer T_m .
- For best qPCR efficiency, design assays targeting an amplicon size of 70–150 bp. For amplicons >250 bp in length or with high GC or AT content, longer annealing/extension times (30–60 sec) can be used.

Quality Control

iTaQ Universal Probes Supermix demonstrates high PCR efficiency and a wide linear dynamic range. Stringent specifications are maintained to ensure lot-to-lot consistency. This product is free of detectable DNase and RNase activities.

Related Products

Reverse transcription reagents for real-time qPCR:

- iScript™ Reverse Transcription Supermix for RT-qPCR (1708840)
- iScript Advanced cDNA Synthesis Kit for RT-qPCR (1725037)
- iScript gDNA Clear cDNA Synthesis Kit (1725034)
- iScript cDNA Synthesis Kit (1708890)

Reagents for real-time qPCR:

- SsoAdvanced™ Universal Probes Supermix (1725280)
- iTaq Universal Probes One-Step Kit (1725140)

PCR primer and probe assays for real-time qPCR:

- PrimePCR™ Assays and Panels

Visit bio-rad.com/amplification to learn more about Bio-Rad's complete solution for amplification.

LightCycler is a trademark of Roche Diagnostics GmbH. Mx is a trademark of Stratagene Corporation. QuantStudio, ROX, StepOne, StepOnePlus, and ViiA are trademarks of Life Technologies Corporation. Rotor-Gene is a trademark of QIAGEN GmbH.

Bio-Rad's thermal cyclers and real-time thermal cyclers are covered by one or more of the following U.S. patents or their foreign counterparts owned by Eppendorf AG: U.S. Patent Numbers 6,767,512 and 7,074,367.

The use of iTaQ and SsoAdvanced Supermixes is covered by one or more of the following U.S. patents and corresponding patent claims outside the U.S.: 5,804,375; 5,994,056; and 6,171,785. The purchase of these products includes a limited, nontransferable 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. These products are for research use only. Diagnostic uses under Roche patents require a separate license from Roche. Further information on purchasing licenses may be obtained from the Director of Licensing, Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California 94404, USA.

Purchase of iTaq DNA Polymerase includes an immunity from suit under patents specified in the product insert to use only the amount purchased for the purchaser's own internal research. No other patent rights are conveyed expressly, by implication, or by estoppel. 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.