

# USB® RubyTaq™ PCR Master Mix (2X)

## Streamlined convenience - easy-to-see, easy-to-load!

- Load directly to gel from thermal cycler.
- No additional loading buffer is needed.
- RubyTaq separates into 2 colors – magenta and yellow – during gel electrophoresis.

RubyTaq PCR Master Mix is supplied as a convenient 2X premixed formulation containing USB Taq DNA Polymerase, Ultra-pure nucleotides, reaction buffer, and two inert dyes optimized for a wide variety of PCR applications. RubyTaq greatly simplifies analysis of PCR reactions because no loading dyes or compounds that increase sample density need to be added prior to gel electrophoresis. During gel electrophoresis, RubyTaq separates into 2 colors, magenta and yellow, for easy visualization (Fig. 1). The magenta dye runs in a range between 500 bp (2% gels) and 1500 bp (0.8% gels) and the yellow dye runs at less than 10 bp.

Because the dyes are inert during PCR, RubyTaq PCR Master Mix provides the same outstanding performance as standard USB Taq PCR Master Mix (Fig. 2). In addition, the dyes do not effect the migration rates of DNA and have no effect on the following procedures:

- PCR with co-solvents (e.g., betaine and DMSO)
- Restriction digestion
- Automated or manual DNA sequencing
- Ligation-based or topoisomerase-based (TOPO®) TA cloning
- ExoSAP-IT® PCR Cleanup

If the dyes must be removed prior to another application (e.g., *in vitro* transcription), use phenol/chloroform extraction and ethanol precipitation, or a commercially available dye removal purification product.

RubyTaq PCR Master Mix has been designed to streamline high-throughput PCR applications and provides for robust and reliable performance. Since the mix is prepared from high quality reagents and is thoroughly QC tested, experimental variability is significantly reduced.

## Ultimate convenience

The mix saves time and reduces potential contamination errors by eliminating several pipetting steps. For a 50 µl reaction, simply add 25 µl of RubyTaq PCR Master Mix to primers, DNA template and PCR-Qualified H<sub>2</sub>O. Reactions can be easily performed in 10 µl, 25 µl, 50 µl or 100 µl volumes. In addition, PCR reactions are loaded directly onto agarose gels without adding any loading dyes or buffers.

## Stable

The mix withstands repeated freeze-thaw cycles and extended periods at room temperature with no observed decrease in performance (Fig. 3).

## Ideal for high throughput

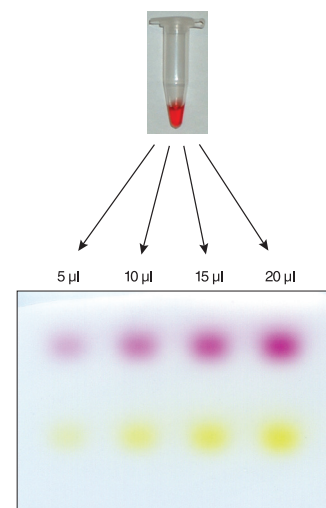
RubyTaq PCR Master Mix is ideal for high-throughput applications such as:

- Screening transformants by colony PCR
- Transgenic genotyping
- Ligation-based or topoisomerase-based (TOPO) TA cloning
- Amplification prior to *in vitro* transcription
- Routine amplification

## Sensitive and robust

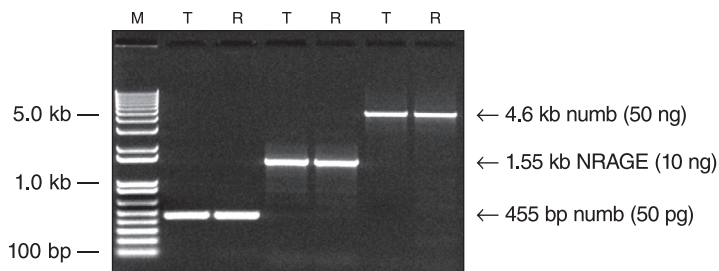
The mix may be used to amplify low-copy targets from complex templates and can also amplify a variety of product lengths (Fig. 2).

Fig. 1. RubyTaq PCR Master Mix



RubyTaq PCR Master Mix visualization during gel electrophoresis. Use of RubyTaq PCR Master Mix in PCR does not require the use of additional loading buffer. Simply load onto an agarose gel directly after cycling. During electrophoresis, RubyTaq separates into 2 colors, magenta (runs between 500 bp [2% gels] and 1500 bp [0.8% gels]) and yellow (runs less than 10 bp). The indicated volumes of RubyTaq PCR Master Mix were run on a 1% TAE agarose gel.

**Fig. 2. Performance of RubyTaq PCR Master Mix versus Taq PCR Master Mix**



Single-copy targets were amplified from the indicated amounts of human genomic DNA. For the 455 bp numb amplicon, 50 pg of template represents about 30 total target copies in the reaction. T is Taq PCR Master Mix, R is RubyTaq PCR Master Mix, and M is the DNA marker. Performance of mix is not significantly affected by including dyes.

**Tested User Friendly™ functional test:**

Functionally tested for PCR according to the standard Tested User Friendly PCR protocol. This protocol is based upon the amplification of a 500 bp lambda DNA sequence.

**RubyTaq PCR Master Mix formulation (2X):**

20 mM Tris-HCl (pH 8.6), 100 mM KCl, 4 mM MgCl<sub>2</sub>, 0.4 mM dNTPs (dATP, dCTP, dGTP, dTTP), 80 units/ml Taq DNA Polymerase, inert dyes, stabilizers.

**Components:**

4 x 625 µl RubyTaq PCR Master Mix, 2X  
Brief protocol

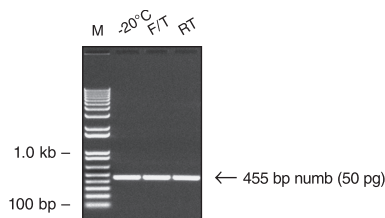
**Shipping and storage:**

Shipped on dry ice. Store at -20°C. Mix well prior to use.

**RubyTaq PCR Master Mix (2X)**

Product code	Pack size
71191	100 reactions

**Fig. 3. Stability of RubyTaq PCR Master Mix**



RubyTaq PCR Master Mix stability was assessed by comparing a reference mix stored at -20°C versus a sample subjected to 15 freeze-thaw cycles (F/T) and a sample stored at room temperature for one month (RT). The single-copy numb gene was amplified from 50 pg of human genomic DNA which represents about 30 total target copies in the reaction. Under these test conditions, performance of the master mix is not significantly affected.

For research use only. Not for use in diagnostic procedures.

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