USB® MagniTaq® Multiplex PCR Master Mix (2X)

Amplification of over 20plexes of difficult templates with minimal optimization:
- Reliable—validated performance for simultaneous amplification of at least 20 targets up to 1 kb in length
- Quality results on difficult sample types—superior data even from FFPE samples or for single-copy genes
- Efficient—advanced buffer formulation that includes dNTPs and MgCl₂, which ensures rapid multiplex PCR without lengthy optimization procedures
- Convenient—single-tube, pre-mixed solution. Simply add template, primers, and water

USB MagniTaq Multiplex PCR Master Mix is a single-tube, 2X multiplex PCR master mix with validated performance for simultaneous amplification of at least 20 targets. MagniTaq Multiplex PCR Master Mix (2X) contains proprietary buffer components designed to enable multiplex PCR without lengthy optimization procedures.

Reliable and efficient multiplexing of over 20plexes
In order to enhance the specificity and sensitivity of multiplexing, the mix uses MagniTaq DNA Polymerase, a chemically modified, hot start polymerase that is completely inactive at ambient temperatures. MagniTaq DNA Polymerase minimizes the effect of off-target priming events, such as primer-dimers, which often occur at lower temperatures during reaction set-up and prior to the initial denaturation step.

In addition, MagniTaq Multiplex PCR Master Mix efficiently amplifies greater than 20 products simultaneously over a broad range of template amounts and primer concentrations.

Data generated shows 22-plex amplification from single-copy genes in the Notch signaling pathway. Even at template amounts ranging from 1 – 100 ng of human gDNA, amplification of 22 targets is observed (Fig. 1). The reaction was done without optimization in a single tube of pre-mixed solution of a proprietary buffer that includes dNTPs and MgCl₂.

Varying primer concentrations can affect the efficiency and amplification effectiveness. Typically, lower primer concentrations favor longer products, while higher primer concentrations favor shorter products. MagniTaq Multiplex PCR Master Mix is designed to work over a range of primer concentrations (Fig. 2).

Superior performance on difficult targets with minimal optimization
MagniTaq Multiplex PCR Master Mix offers quality results on difficult to amplify sample types. Genomic DNA isolated from FFPE tissue samples is often degraded, and therefore difficult to amplify using standard PCR reagents. Multiplex PCR with these sample types calls for an exceptional amount of optimization to produce consistent amplification of all sought after targets.

![Fig. 1. 22-plex amplification of low amounts of gDNA](image)

![Fig. 2. 22-plex of a wide range of primer concentrations](image)
The uniform product yield obtained when using MagniTaq Multiplex PCR Master Mix allows for more products to be amplified, especially when compared to mixes from other suppliers (Figs. 3 & 4). The mixes from other suppliers show a much more pronounced decrease in the amplification of the high molecular weight products compared to MagniTaq Multiplex PCR Master Mix (Figs. 3 & 4). MagniTaq Multiplex PCR Master Mix is, therefore, more suitable for PCR amplification of multiple primer sets from degraded FFPE gDNA template, particularly for older tissue samples.

**Fig. 3. Superior multiplexing of FFPE samples**

20-plex FFPE sample amplification competitor comparison data of normal vs. tumor sample types. 25 ng human genomic DNA input from 2008 breast FFPE samples and 2002 lung FFPE samples, normal or tumor, are added to the 20-plex notch pathway primer set. 0.2 µM primer sets are used. Comparison of MagniTaq Multiplex PCR Master Mix (MT) to competitor Q and QP were run. Samples are loaded with SYBR Green and run on 2.25% TAE-agarose gel.

**25 ng FFPE gDNA**

<table>
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<tr>
<th></th>
<th>MT</th>
<th>Q</th>
<th>QP</th>
<th>MT</th>
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<tr>
<td>Breast—2,008</td>
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<tr>
<td>Lung—2,002</td>
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<td>200</td>
<td>100</td>
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<td>200</td>
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50 ng FFPE gDNA

Normal (N) or Tumor (T)

**Fig. 4. Comparison testing of 22-plex FFPE samples**

22-plex FFPE sample amplification competitor comparison data of normal vs tumor sample types. 100 ng human genomic DNA input from 2008 breast FFPE samples and 2002 lung FFPE samples, normal or tumor, are added to the 22-plex notch pathway primer set. 0.1 µM primer sets are used. Comparison of MagniTaq Multiplex PCR Master Mix (MT) to competitor Q and QP were run. Samples are loaded with SYBR Green and run on 2% TAE-agarose gel.

**MagniTaq Multiplex PCR Master Mix**

Single tube master mix contains hot start MagniTaq DNA Polymerase, dNTPs, and MgCl₂ in a proprietary unique buffer formulation.

<table>
<thead>
<tr>
<th>Product code</th>
<th>Pack size</th>
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<tbody>
<tr>
<td>71199</td>
<td>25 reactions (25 x 50 µl rxn) 0.63 ml</td>
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<tr>
<td></td>
<td>100 reactions (100 x 50 µl rxn) 2.5 ml</td>
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