

FOR RESEARCH USE ONLY!

# FireTaq™ DNA Polymerase

11/20

(Catalog # M1506-400; 400 Rxns; Store at -20°C)

## I. Introduction:

Biovision's FireTaq™ DNA Polymerase™ is a strategically-engineered, next generation Taq Polymerase that has rapid expansion rates, robust performance and contains a proprietary antibody that blocks polymerase activity at low temperatures. FireTaq™ Hot start Polymerase allows for a convenient reaction set-up at room temperature without non-specific amplification and primer-dimer formation. With specialized reaction conditions, this polymerase provides increased processivity, yields and sensitivity while shortening reaction times by upto 70%, compared to wild-type Taq DNA Polymerase.

During the initial denaturation step, the antibody dissociates from the DNA polymerase and restores enzyme activity. This feature significantly reduces non-specific product formation that would otherwise compete for reagent availability offering higher specificity and improved yield of PCR products. FireTaq™ has 5'-3' polymerase and 5'-3' exonuclease activities, lacks 3'-5' exonuclease activity, and produces 3'-dA-tailed amplicons. PCR products made with FireTaq™ can be used with TA cloning vectors.

## II. Contents:

| Components              | M1506-400        | Part Number |
|-------------------------|------------------|-------------|
| FireTaq™ DNA Polymerase | 200 µl (400 rxn) | M1506-400-1 |
| 5X FireTaq™ Buffer*     | 2 x 1.0 ml       | M1506-400-2 |

Buffer contains \* 1.5 mM Mg<sup>2+</sup>

## III. Key Features:

- reduces non-specific product formation and primer-dimer formation
- Hot start DNA Polymerase
- Superior Performance
- High Sensitivity

## IV. Shipping and Storage Conditions:

The kit is shipped in dry ice. All the components of the kit should be stored at -20 °C.

## V. Protocol:

1. Mix individual components before use.

| Component                      | Volume                        |
|--------------------------------|-------------------------------|
| 5X FireTaq™ Buffer             | 5 µl                          |
| dNTP Mix (10 mM)               | 0.5 µl                        |
| Forward Primer (10 µM)         | 1 µl                          |
| Reverse Primer (10 µM)         | 1 µl                          |
| Template DNA                   | Variable (100 ng genomic DNA) |
| FireTaq™ DNA Polymerase        | 0.5 µl <sup>#</sup>           |
| Nuclease-free H <sub>2</sub> O | up to 25 µl                   |

<sup>#</sup>0.5 µl of UpTaq™ DNA Polymerase is recommended for reaction volumes of 25 µl. Increase the volume to 1 µl for difficult targets or crude samples

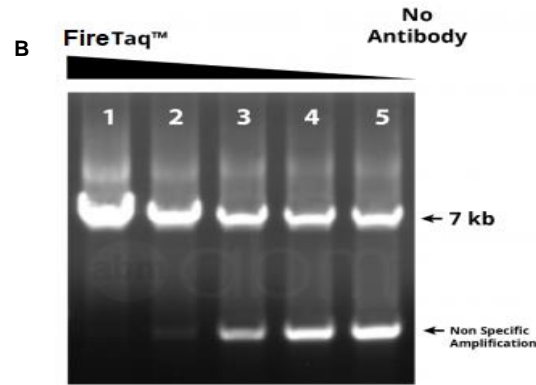
2. Gently mix the reaction components and briefly centrifuge. Run thermocycling conditions for standard PCR.

| Step                 | Temperature        | Duration  |
|----------------------|--------------------|-----------|
| Initial Denaturation | 95 °C              | 10 min    |
| 25-35 cycles         | 95 °C              | 15 sec    |
|                      | 60 °C <sup>†</sup> | 15 sec    |
|                      | 72 °C              | 15 sec/kb |
| Final Extension      | 72 °C              | 1 min     |

<sup>†</sup> FireTaq™ Buffer allows for primer annealing at 60 °C for most primers, adjust only if needed.

3. After PCR, maintain the reaction at 4°C or store at -20°C until use.
4. Analyze the amplification products by agarose gel electrophoresis.
5. Visualize by ethidium bromide or Safe Image™ Basic DNA Stain (Cat. No. M1193) staining.

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**Fig A. FireTaq™ DNA Polymerase has extension speeds of 6 kb/min.** FireTaq™ DNA Polymerase was used to amplify different size amplicons (500 bp, 1 kb, 2 kb and 5kb). Total reaction times are listed based on a 30-cycle program using the recommended reaction protocol for each enzyme. **Fig. B. FireTaq™ DNA Polymerase eliminates non-specific amplification.** FireTaq™ DNA Polymerase was used to amplify 7 kb target. The antibody concentration was decreased incrementally from Lane 1-5. Lane 1 is our FireTaq™ DNA Polymerase formulation and lane 5 does not contain antibody.

**VI. Related Products:**

| BioVision Product Name     | Cat. No. | Sizes           |
|----------------------------|----------|-----------------|
| ExpressTaq™ DNA Polymerase | M1504    | 400 Rxns        |
| HiFidelity™ DNA Polymerase | M1505    | 400 Rxns        |
| Taq DNA Polymerase         | 9001     | 500, 2500 units |
| PFU DNA Polymerase         | 9003     | 500, 2500 units |
| Laq™ DNA Polymerase        | 9004     | 500, 2500 units |

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