

SmartTaq DNA Polymerase, 5 U/μl

Description: SmartTaq DNA Polymerase is a genetically modified recombinant Taq DNA polymerase. SmartTaq DNA Polymerase possesses a 5' - 3' polymerase activity and generates 3'A-overhangs. The PCR products obtained with SmartTaq DNA Polymerase are free of unspecific products and primer-dimers. Due to the modification, it shows a higher processivity and stability against inhibitors compared to other Taq Polymerases (like BIORONs SuperHotTaq Polymerase). Therefore, this enzyme is recommended especially for assays with high Multiplex grade or inhibitor residues. For applications where HotStart function is required, a variant with antibody is available.

Concentration: 5 units/μl

Storage: -18 °C to - 22 °C for long term, + 2 to + 8 °C for short term

| REF | 103020 | 103022 | colour |
|---|-----------|------------|--------|
| SmartTaq DNA Polymerase | 200 units | 1000 units | blue |
| Incomplete NH ₄ ⁺ Reaction Buffer (10x) | 1.8 ml | 2x 1.8 ml | red |
| Complete NH ₄ ⁺ Reaction Buffer (10x) | 1.8 ml | 2x 1.8 ml | yellow |
| Complete KCl *** Reaction Buffer (10x) | 1.8 ml | 2x 1.8 ml | black |
| MgCl ₂ , 100 mM | 1 ml | 2x 1 ml | green |

* Incomplete NH₄ Reaction Buffer (10x): pH 8.8, 0.1% Tween 20, free of MgCl₂.

** Complete NH₄ Reaction Buffer (10x): pH 8.8, 0.1% Tween 20, 20 mM MgCl₂.

*** Complete KCl Reaction Buffer (10x): pH 8.8, 0.1% Tween 20, 15 mM MgCl₂.

Application: SmartTaq DNA Polymerase is suitable for all regular PCR applications, especially for Multiplex and Real-Time PCR with inhibitor residues or assays that need short time protocols. This polymerase effectively amplifies templates up to 5 kb length.

Unit definition: One unit of activity is defined as the amount of enzyme required to incorporate 10 nmoles of dNTP into acid-insoluble DNA fraction in 30 minutes at 72 °C.



- SmartHotTaq REF 102020/ 102022 is a variant of this product without antibody.
- Do not vortex the polymerase tube (blue) to avoid damaging the enzyme.

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Recommended Standard Protocol:

| Component | 20 µl Reaction | Final Concentration |
|-------------------------|------------------------------|---------------------------|
| 10x Reaction Buffer | 2 µl | 1 x |
| SmartTaq DNA Polymerase | 0.2 µl | 1 U |
| Forward Primer | Variable | 100 – 400 nM |
| Reverse Primer | Variable | 100 – 400 nM |
| dNTP Mix (10 mM) | 0.4 µl | 200 µM each |
| Template DNA | Variable | 0.01 – 10 ng per reaction |
| PCR Water | adjust to 20 µl final volume | -- |

Recommended Thermocycler Protocol

| Step | Time | Temperature | Cycles |
|----------------------|-------------------------------------|-------------|-----------|
| Initial Denaturation | 3 minutes | 92 – 95 °C | 1 x |
| Denaturation | 5 seconds | 92 – 95 °C | 25 – 35 x |
| Annealing | 5 seconds | 55 – 68 °C* | |
| Extension | 30 seconds per 1 kb amplicon length | 72 °C | |

* Depends on primer, the optimal annealing temperature is usually 2 – 5°C below the primer melting temperature