

KAPA dNTPs

KR0356_S – v1.17

Product Description

KAPA dNTPs are high-quality, molecular grade dNTPs, containing dATP, dCTP, dGTP, and dTTP. They are supplied as individual components in the KAPA dNTP Kit (100 mM each), or as a ready-to-use KAPA dNTP Mix (10 mM of each dNTP).

KAPA dNTP Kit components may be diluted with PCR-grade water to formulate a standard dNTP mix at the required concentration of each dNTP, or may be used to produce customized mixtures at concentrations necessary for the desired application.

KAPA dNTPs are subjected to strict quality control to ensure high performance, particularly with B-family polymerases that are sensitive to poisoning by uracil.

Product Applications

KAPA dNTPs are suitable for the following applications:

- Standard PCR
- High fidelity PCR
- Quantitative PCR
- End-repair or A-tailing
- cDNA synthesis
- DNA sequencing
- DNA labeling
- Microarrays

Product Specifications

Shipping and Storage

KAPA dNTPs are shipped on dry ice or ice packs, depending on the country of destination. Upon arrival, store kit components at -20°C in a constant-temperature freezer. When stored under these conditions and handled correctly, full activity of the kit is retained until the expiry date indicated on the kit label.

Quality Control

KAPA dNTPs are >99% pure by HPLC and are free of DNase, RNase, protease, phosphatase, and nicking activity. All kit components are subjected to stringent functional quality control, and meet strict requirements with respect to DNA contamination.

Kit Codes and Components

KK1007 (4 x 250 µL)	KAPA dNTP Kit dATP (100 mM) dCTP (100 mM) dGTP (100 mM) dTTP (100 mM)
KK1017 (2 x 250 µL) KK1041 (5 mL)	KAPA dNTP Mix Mixture of dATP, dCTP, dGTP and dTTP (10 mM each)

Quick Notes

- KAPA dNTPs are available as individual dNTPs or as a ready-to-use dNTP Mix.
- The KAPA dNTP Kit contains dATP, dCTP, dGTP and dTTP, as 100 mM solutions.
- The KAPA dNTP Mix contains a mixture of dATP, dCTP, dGTP and dTTP, at 10 mM each.
- KAPA dNTPs are suitable for use in any molecular biology application requiring high-quality dNTPs.
- KAPA dNTP Mix is supplied with KAPA Taq, KAPA2G Fast, KAPA2G Robust, KAPA LongRange and KAPA HiFi PCR Kits.

Handling

Always ensure that the product has been fully thawed and mixed before use. KAPA dNTPs may be stored at 4°C for short-term use (up to 1 month). Return to -20°C for long-term storage. Provided that the sample has been handled carefully and not contaminated, the samples are not expected to be compromised if left (unintentionally) at room temperature for a short period of time (up to 3 days). Long-term storage at room temperature and 4°C is not recommended. Please note that storing the reagents at temperatures above -20°C makes them more prone to degradation when contaminated during use, and therefore storage at such temperatures is at the user's own risk.

Standard PCR Protocol

KAPA dNTPs are typically used in polymerase chain reaction (PCR), and are compatible with any commercially-available DNA polymerases. A general PCR protocol is provided here. For more information on the use of KAPA dNTPs with any of Kapa Biosystems' engineered DNA polymerases, contact Technical Support at sigma-aldrich.com/techservice, or visit our website (www.sigmaaldrich.com).

NOTE: The protocol described below should be used as a general guideline only and should not be applied for specialized products or applications. Follow manufacturer's instructions for reaction setup and cycling.

1: Reaction setup

Component	Final conc.
PCR-grade water	N/A
Reaction buffer	1X
MgCl ₂	1.5 mM
10 mM dNTP Mix	0.2 mM each
Forward primer	0.1–0.5 µM
Reverse primer	0.1–0.5 µM
DNA polymerase	0.5 U/25 µL reaction
Template DNA	As required

2: Cycling protocol

Step	Temperature	Duration	Cycles
Initial denaturation ¹	95°C	3–10 min	1
Denaturation	95°C	15–30 sec	25–35
Annealing ²	T _a	15–30 sec	
Extension ³	72°C	1 min/kb	
Final extension	72°C	1 min/kb	1

¹ Initial denaturation for 3 min at 95°C is sufficient for most applications. Some polymerases require an initial activation of 10 min at 95°C.

² Determine the optimal annealing temperature with gradient PCR, or follow manufacturer's instructions to determine T_a.

³ Extension time is dependent on the extension rate of the DNA polymerase. Follow manufacturer's instructions to determine optimal extension time.

Compatible Kapa Kits

KAPA Taq PCR Kits

KAPA Taq DNA Polymerase is the single-subunit *Taq* DNA polymerase of the thermophilic bacterium *Thermus aquaticus*, and is supplied with novel buffers designed for optimal enzyme activity and performance.

KAPA2G Fast PCR Kits

KAPA2G Fast DNA Polymerase is a second-generation enzyme, engineered for higher processivity and speed, offering significantly faster extension rates and improved PCR success rates compared to wild-type *Taq* DNA polymerase.

KAPA2G Robust PCR Kits

The second-generation KAPA2G Robust DNA Polymerase was evolved for improved processivity and inhibitor tolerance.

KAPA HiFi PCR Kits

KAPA HiFi DNA Polymerase is a second-generation polymerase engineered for extreme fidelity, robustness, and uniform amplification of AT- and GC-rich amplicons. Its fidelity is 100x higher than *Taq* DNA polymerase.

KAPA LongRange PCR Kits

KAPA LongRange DNA Polymerase possesses 3–4x higher fidelity compared to *Taq* DNA polymerase, and is capable of amplifying long targets up to 20 kb.

All enzymes are available as HotStart formulations, prepared with proprietary antibodies to inactivate the enzyme prior to the first denaturation step.



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