dNTP Set

10 mM each nucleotide | N023

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Product Information

Catalogue number: N023
Pack size: 1 mL total (4 × 250 µL)
Stock concentration: 10 mM per nucleotide
Sample pack: Not available

Storage & Handling

Store stocks at –20°C.
Thaw on ice; mix each vial gently.
Keep each nucleotide stock separate.
Use nuclease-free tubes and filtered tips.

Principle and Applications

DNA polymerases incorporate deoxynucleoside triphosphates (dNTPs) as substrates during template-directed DNA synthesis. **G2P dNTP Set (N023)** provides dATP, dCTP, dGTP and dTTP as four individual 10 mM solutions. Separate stocks allow the user to prepare balanced or application-specific nucleotide mixtures for PCR, qPCR, cDNA synthesis and other enzymatic DNA synthesis methods, as directed by the selected enzyme protocol.

Separate stocks supplied: dATP | dCTP | dGTP | dTTP

Kit Contents and Product Specifications

Component (separate vial)	Stock concentration	Supplied volume
dATP	10 mM	250 µL
dCTP	10 mM	250 µL
dGTP	10 mM	250 µL
dTTP	10 mM	250 µL

Contents: Four separate 250 µL vials (1,000 µL combined pack volume). Published G2P product information specifies >99% purity; consult lot-specific quality documentation where supplied.

Prepare a Balanced Working Mix

Combine equal volumes of all four 10 mM stocks. Because each component makes up one-quarter of the final volume, the premixed working solution contains 2.5 mM of each nucleotide.

Reagent	Volume for 100 µL working mix
10 mM dATP	25 µL
10 mM dCTP	25 µL
10 mM dGTP	25 µL
10 mM dTTP	25 µL
Nuclease-free water	0 µL
Final working mix	100 µL at 2.5 mM each

Note: Use a fresh nuclease-free microcentrifuge tube. Mix gently and keep the prepared working mix cold while assembling reactions. Each nucleotide has the concentration shown above in the final mixed solution.

Recommended Addition to PCR

For conventional PCR, 200 µM of each dNTP is a common starting concentration. The table below assumes the 2.5 mM each working mix prepared above.

Reagent	25 µL PCR	50 µL PCR	Final concentration
2.5 mM each dNTP working mix	2.0 µL	4.0 µL	200 µM each

Quick Protocol

01 Thaw. Remove the required stock vials from –20°C and thaw on ice.

02 Mix stocks. Mix each nucleotide solution gently and briefly collect any droplets from the tube cap.

03 Prepare working mix. Transfer the individual stock volumes shown in the preparation table into a clean, nuclease-free tube.

04 Assemble reaction. For a 50 µL PCR reaction at 200 µM each, add 4 µL of the 2.5 mM each working mix, then add the other assay components as directed by your polymerase protocol.

05 Store remaining stocks. Return the separate nucleotide stock vials to –20°C promptly. Minimize repeated freeze-thaw exposure.

Concentration and Volume Guide

The working mix contains 2.5 mM (2,500 µM) of each dNTP. Calculate the volume needed for your reaction using C1 × V1 = C2 × V2.

Target final conc. (each)	25 µL PCR	50 µL PCR
100 µM	1.0 µL	2.0 µL
200 µM	2.0 µL	4.0 µL
250 µM	2.5 µL	5.0 µL
300 µM	3.0 µL	6.0 µL

Example: V1 = (200 µM × 50 µL) / 2,500 µM = 4.0 µL of working mix.

Technical Guidance

Set versus mix: The four stocks are supplied separately. The premixed dNTP solution used for PCR is prepared by the user; unlike an N022 dNTP Mix, this set is not supplied premixed.

Equimolar dNTPs: Keep dATP, dCTP, dGTP and dTTP balanced for routine amplification unless your assay requires different ratios.

Magnesium: dNTPs bind Mg2+ in the reaction; changing total nucleotide concentration can alter free Mg2+ availability and reaction performance.

Pipetting: For routine PCR, the 2.5 mM each working mix gives easily measured volumes and reduces repeated additions from all four stocks.

Product handling: Keep stocks at –20°C when not in use and handle with clean, nuclease-free consumables. Nucleotide solutions do not contain polymerase, primers or reaction buffer.

Troubleshooting

Observation	Possible cause	Recommended action
Weak / absent DNA band	Incorrect stock dilution or insufficient dNTPs	Confirm the working-mix preparation and final nucleotide concentration; check all other PCR components.
Multiple bands / smear	Reaction chemistry not optimized	Review primer specificity, annealing temperature, magnesium and total dNTP levels.
Variable results	Uneven mixing or pipetting inconsistency	Mix individual stocks before use, prepare a homogeneous working solution and use a PCR master mix.
Amplification in negative control	Reagent or amplicon contamination	Replace suspect reagents, use filtered tips and separate pre-PCR and post-PCR work areas.

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