dNTP Mix

10 mM each nucleotide | N022

www.genetoprotein.com | quote@genetoprotein.com

Product Information

Catalogue number: N022
Pack size: 1 mL total
Catalogue presentation: 250 µL each
Sample pack: Not available

Storage & Handling

Store at –20°C.
Thaw on ice; mix gently before dispensing.
Avoid repeated freeze-thaw cycles.
Use clean, nuclease-free reaction tubes.

Principle and Applications

Deoxynucleoside triphosphates (dNTPs) are the activated building blocks incorporated by DNA polymerases during DNA synthesis. **G2P dNTP Mix (N022)**, a premixed solution, contains dATP, dCTP, dGTP and dTTP at 10 mM each. The balanced nucleotide supply supports DNA amplification and other enzyme-catalysed DNA synthesis applications, including PCR, qPCR, reverse-transcription workflows and DNA labelling, subject to the requirements of the selected enzyme system.

Four nucleotides, one balanced mix

dATP	dCTP	dGTP	dTTP
10 mM	10 mM	10 mM	10 mM

Composition and Specifications

Nucleotide	Concentration in mix	Amount in 1 mL
dATP	10 mM	10 µmol
dCTP	10 mM	10 µmol
dGTP	10 mM	10 µmol
dTTP	10 mM	10 µmol

Concentration terminology: 10 mM each means each of the four nucleotides is present at 10 mM in the premixed stock (40 mM combined across all four), not 10 mM in total.

Recommended Addition to PCR

For conventional PCR, 200 µM of each dNTP is a common starting concentration. Use the volume below when the final reaction requires 200 µM each from a 10 mM each stock.

Reagent	25 µL PCR	50 µL PCR	Final concentration
G2P dNTP Mix (N022)	0.50 µL	1.00 µL	200 µM each
Other PCR components	As required	As required	Follow enzyme protocol
Nuclease-free water	To 25 µL	To 50 µL	Final volume

Important: N022 supplies nucleotides only; it is not a complete PCR master mix. Add DNA polymerase, reaction buffer, primers and template as specified for your assay.

Quick Protocol

01 Thaw. Remove the required amount from -20°C storage and thaw on ice.

02 Mix. Mix gently to make the solution homogeneous. Briefly centrifuge the tube if liquid remains on the cap.

03 Dispense. Add the calculated volume of N022 to the reaction mixture. Keep the polymerase and other heat-sensitive components cold during setup.

04 Return to storage. Close the tube promptly and return remaining dNTP Mix to -20°C. Avoid unnecessary freeze-thaw cycles.

Concentration and Volume Guide

To select a different final concentration, use C1 × V1 = C2 × V2. The examples below assume a premixed stock containing 10 mM (10,000 µM) of each nucleotide.

Target concentration (each)	25 µL reaction	50 µL reaction
100 µM	0.25 µL	0.50 µL
200 µM	0.50 µL	1.00 µL
250 µM	0.625 µL	1.25 µL
300 µM	0.75 µL	1.50 µL

Example: For 25 µL PCR at 200 µM each, V1 = (200 µM × 25 µL) / 10,000 µM = 0.50 µL of dNTP Mix.

Technical Guidance

Balanced dNTP levels: Maintain equimolar concentrations of dATP, dCTP, dGTP and dTTP unless your specific assay requires otherwise.

Magnesium availability: dNTPs bind Mg2+. Increasing total dNTP concentration may require reassessment of magnesium and reaction-buffer conditions.

Assay compatibility: Polymerase systems differ in their recommended nucleotide concentrations. Follow the validated protocol for your enzyme or kit.

Pipetting accuracy: For volumes below 1 µL, prepare a fresh working dilution with nuclease-free water if the assay permits, and adjust reaction volumes accordingly.

Storage and contamination: Keep stocks cold during setup, use filtered tips where appropriate and avoid introducing nucleases or PCR products into the reagent.

Troubleshooting

Observation	Possible reason	Recommended action
Low or no DNA product	dNTP level too low; other PCR variables	Confirm dNTP volume, enzyme activity, primer design and cycling conditions.
Nonspecific bands / smear	Reaction chemistry not optimized	Review template loading, annealing temperature, Mg2+ and total dNTP concentration.
Variable amplification	Pipetting or reagent handling	Mix dNTP Mix after thawing, use a master mix and minimize freeze-thaw cycles.
Amplification in a negative control	Carryover contamination	Replace suspect reagents and separate reaction setup from amplified DNA handling.