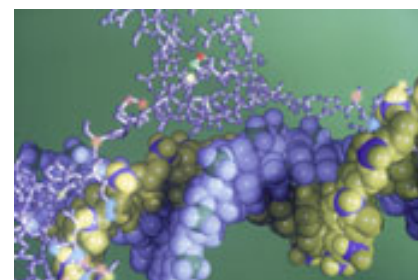


ISOTEC[®] Stable Isotopes

Accelerate Your Nucleic Acid Research

The usage of stable isotope-labeled DNA and RNA enhances spectral sensitivity and resolution, expanding the utility of NMR in structural research.⁽¹⁾ Isotopically labeled nucleic acids facilitate the measurement of residual dipolar couplings, which provides long-range distance restraints for the refinement of solution structures.^(2,3) With modern *in vitro* synthesis techniques, sufficient quantities of stable isotope-labeled DNA and RNA can be generated for NMR experimentation. For this application, ISOTEC offers a full complement of labeled ribonucleotides and deoxyribonucleotides supplied as either monophosphates or triphosphates.



NEW [U-¹³C] Labeled NTPs

Cat. No.	Description	Isotopic Purity
710695	ATP- ¹³ C ₁₀	98 atom % ¹³ C
711020	CTP- ¹³ C ₉	98 atom % ¹³ C
710687	GTP- ¹³ C ₁₀	98 atom % ¹³ C
711012	UTP- ¹³ C ₉	98 atom % ¹³ C

[U-¹⁵N] Labeled NTPs

Cat. No.	Description	Isotopic Purity
707783	ATP- ¹⁵ N ₅	98 atom % ¹⁵ N
707759	CTP- ¹⁵ N ₃	98 atom % ¹⁵ N
707775	GTP- ¹⁵ N ₅	98 atom % ¹⁵ N
707767	UTP- ¹⁵ N ₂	98 atom % ¹⁵ N

[U-¹³C, U-¹⁵N] Labeled NTPs

Cat. No.	Description	Isotopic Purity
645702	ATP- ¹³ C ₁₀ , ¹⁵ N ₅	98 atom % ¹³ C, 98 atom % ¹⁵ N
645699	CTP- ¹³ C ₉ , ¹⁵ N ₃	98 atom % ¹³ C, 98 atom % ¹⁵ N
645680	GTP- ¹³ C ₁₀ , ¹⁵ N ₅	98 atom % ¹³ C, 98 atom % ¹⁵ N
645672	UTP- ¹³ C ₉ , ¹⁵ N ₂	98 atom % ¹³ C, 98 atom % ¹⁵ N
646237	dATP- ¹³ C ₁₀ , ¹⁵ N ₅	98 atom % ¹³ C, 98 atom % ¹⁵ N
646229	dCTP- ¹³ C ₉ , ¹⁵ N ₃	98 atom % ¹³ C, 98 atom % ¹⁵ N
646210	dGTP- ¹³ C ₁₀ , ¹⁵ N ₅	98 atom % ¹³ C, 98 atom % ¹⁵ N
646202	dTTP- ¹³ C ₁₀ , ¹⁵ N ₂	98 atom % ¹³ C, 98 atom % ¹⁵ N

References:

- Dayie K.T. *J. Biomol. NMR* (2005) 32: 129-139.
- Dethoff, E. A., Hansen, A. L., Musselman, C., Watt, E. D., Andricioaei, I, and Al-Hashimi, H. *Biophys. J.* (2008) 95: 3906.
- Bailor M.H., Sun X., Al-Hashimi, H.M. *Science* (2010) 327: 202-206.

- NTPs are supplied as the sodium salt, in 100 mM solution in H₂O with 5 mM Tris buffer
- NTPs are packaged in convenient 1 mg, 10 mg, and 25 mg quantities

"We have consistently been 100% satisfied with the quality of the service and the rNTPs."

– Dr. Hashim M. Al-Hashimi
University of Michigan

For more information on nucleotides and related products, visit aldrich.com/bionmr

ISOTEC sets the industry standard for nucleotides

[U-¹⁵N] and [U-¹³C, U-¹⁵N] Labeled NMPs

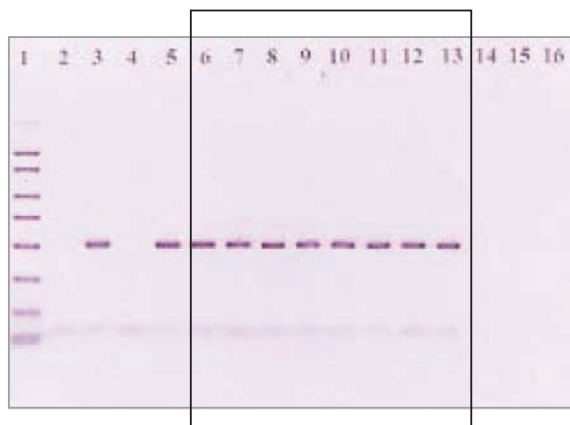
Cat. No.	Description	Isotopic Purity
662658	AMP- ¹⁵ N ₅	98 atom % ¹⁵ N
662682	CMP- ¹⁵ N ₃	98 atom % ¹⁵ N
662674	GMP- ¹⁵ N ₅	98 atom % ¹⁵ N
662666	UMP- ¹⁵ N ₂	98 atom % ¹⁵ N
650676	AMP- ¹³ C ₁₀ , ¹⁵ N ₅	98 atom % ¹³ C, 98 atom % ¹⁵ N
650692	CMP- ¹³ C ₉ , ¹⁵ N ₃	98 atom % ¹³ C, 98 atom % ¹⁵ N
650684	GMP- ¹³ C ₁₀ , ¹⁵ N ₅	98 atom % ¹³ C, 98 atom % ¹⁵ N
651370	UMP- ¹³ C ₉ , ¹⁵ N ₂	98 atom % ¹³ C, 98 atom % ¹⁵ N
648620	dAMP- ¹³ C ₁₀ , ¹⁵ N ₅	98 atom % ¹³ C, 98 atom % ¹⁵ N
648612	dCMP- ¹³ C ₉ , ¹⁵ N ₃	98 atom % ¹³ C, 98 atom % ¹⁵ N
648604	dGMP- ¹³ C ₁₀ , ¹⁵ N ₅	98 atom % ¹³ C, 98 atom % ¹⁵ N
648590	TMP- ¹³ C ₁₀ , ¹⁵ N ₂	98 atom % ¹³ C, 98 atom % ¹⁵ N

- NMPs are supplied as a sodium salt powder
- Rigorous analytical testing confirms the product's isotopic and chemical purity:

– Structure verification and isotopic enrichment are determined by ¹³C-NMR and ¹H-NMR.

– The chemical purity of each NTP and NMP is demonstrated to be a minimum of 90% of the sum of the individual NTP, NDP, and NMP components by HPLC.

High purity nucleotides are suitable for downstream applications such as PCR, as seen below:



PCR reactions utilizing ISOTEC's dNTPs

Lane 1: PCR Marker

Lane 2: D7295, control (-)

Lane 3: D7295, control (+)

Lane 4: Individual Nucleotides, control (-)

Lane 5: Individual Nucleotides, control (+)

Lane 6 & 7: ISOTEC dATP

Lane 8 & 9: ISOTEC dTTP

Lane 10 & 11: ISOTEC dCTP

Lane 12 & 13: ISOTEC dGTP

For more information, please contact:

Stable Isotopes Technical Service

Phone: (937) 859-1808

US and Canada: (800) 448-9760

Fax: (937) 859-4878

isosales@sial.com