epicentre®
an Illumina® company

# Ribonucleoside Triphosphate (NTP) Solutions

# 2′-Fluorine-Nucleoside-5′-Triphosphate Solutions

# Aminoallyl-UTP Solution, Biotin-16-UTP Solution

For all shipments of Ribonucleoside Triphosphate Solutions

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## 1. Introduction

Epicentre's Ribonucleoside-5′-Triphosphate (NTPs), 2′-Fluorine-Nucleoside-5′-Triphosphates and Aminoallyl-UTP [5-(3-aminoallyl)-UTP] meet strict spectrophotometric criteria and are rigorously tested in functional assays with our RNA Polymerases.

**NTPs** are provided as sterile, neutral solutions of ATP, CTP, GTP, or UTP, each at a concentration of either 10 mM or 100 mM, or as a premixed solution of all four NTPs at a concentration of 2.5 mM each, for use in RNA synthesis reactions. The ATP Solution is also suitable for use as a cofactor with T4 DNA Ligase for ligating DNA molecules, with T4 RNA Ligase for ligating RNA molecules, with T4 Polynucleotide Kinase for phosphorylating the 5′ ends of DNA or RNA molecules, with Plasmid-Safe™ ATP-Dependent DNase for digesting linear DNA, and with Poly(A) Polymerase for poly(A)-tailing RNA transcripts *in vitro*.

**2′-Fluorine-Nucleoside-5′-Triphosphates** are provided as sterile, neutral solutions of 2′-Fluorine-dCTP or 2′-Fluorine-dUTP, each at a concentration of 50 mM. These nucleotides are efficiently incorporated into RNA transcripts *in vitro*, by Epicentre's patented T7 R&DNA™ Polymerase. Complete substitution of the 2′-Fluorine-dCTP and 2′-Fluorine-dUTP for the canonical CTP and UTP in an R&DNA Polymerase-catalyzed *in vitro* transcription reaction yields "RNA" that is completely resistant to digestion by RNase A.

**Aminoallyl-UTP (AA-UTP)** offers a cost-effective alternative to direct incorporation of a labeled NTP when preparing nonradioactive RNA probes by *in vitro* transcription for microarray analysis, *in situ* hybridization, or blotting applications. AA-UTP is readily incorporated into RNA transcripts by T7 RNA Polymerase producing aminoallyl-RNA. The aminoallyl-RNA can then be conjugated to an amine-reactive biotin, for example Biotin-X-X-NHS, or fluorescent dye to produce the labeled RNA. Aminoallyl-UTP is supplied at a convenient concentration of 50 mM.

**Biotin-16-UTP*** is a biologically active analog of uridine-5′-triphosphate that is readily incorporated into RNA during an *in vitro* transcription reaction by RNA polymerases such as phage T7 RNA Polymerase.

*For research use only (see page 3)

## 2. Product Specifications

**Storage:** Store only at –20°C in a freezer without a defrost cycle.

**Storage Solution:** Nucleotide solutions are provided in sterile deionized water and adjusted to pH 7.0 with NaOH.

## 3. Related Products

The following products are also available:

- T7 Phage RNA Polymerase
- T7 R&DNA™ Polymerase
- *E. coli* RNA Polymerase Core and Holoenzymes
- dNTP Solutions
- T4 DNA Ligase
- T4 RNA Ligase
- T4 Polynucleotide Kinase
- Plasmid-Safe™ ATP-Dependent DNase
- Biotin-X-X-NHS

## 4. Nucleotide Solutions

**ATP (Adenosine-5′-triphosphate)**

Formula (free acid).....$C_{10}H_{16}N_5O_{13}P_3$
Formula weight.....507
$A_{250}/A_{260}$ = 0.80.....$A_{280}/A_{260}$ = 0.14

**CTP (Cytidine-5′-triphosphate)**

Formula (free acid).....$C_9H_{16}N_3O_{14}P_3$
Formula weight.....483
$A_{250}/A_{260}$ = 0.44.....$A_{280}/A_{260}$ = 2.03

**GTP (Guanosine-5′-triphosphate)**

Formula (free acid).....$C_{10}H_{16}N_5O_{14}P_3$
Formula weight.....523
$A_{250}/A_{260}$ = 1.14.....$A_{280}/A_{260}$ = 0.65

**UTP (Uridine-5′-triphosphate)**

Formula (free acid).....$C_9H_{15}N_2O_{15}P_3$
Formula weight.....484
$A_{250}/A_{260}$ = 0.74.....$A_{280}/A_{260}$ = 0.36

**2′-Fluorine-dCTP**

Formula (Li salt) .....$C_9H_{11}N_3O_{13}FP_3Li_4$
Formula weight.....509
Purity .....>90%

**2′-Fluorine-dUTP**

Formula (Li salt) .....$C_9H_{10}N_2O_{14}FP_3Li_4$
Formula weight.....510
Purity .....>90%

**Aminoallyl-UTP**

Formula (Li salt) .....$C_{12}H_{20}N_3O_{15}P_3$
Formula weight.....539
Purity .....>90%

**Biotin-16-UTP**

Formula (Li salt) .....$C_{32}H_{52}N_7O_{19}P_3S$
Formula weight.....963.5
Extinction coefficient.....7,100 / M cm (292 nm)
Purity by HPLC.....>97%
Purity by $^{31}P$ NMR .....>99%

## 5. Kit Contents

| Cat. # | Concentration | Quantity |
|---|---|---|
| **NTP and 2′-Fluoro-dNTP Solutions** | | |
| **ATP Solution** | | |
| R109AT | 10 mM | 5 µmol |
| RA02825 | 100 mM | 25 µmol |
| **CTP Solution** | | |
| R109CT | 10 mM | 5 µmol |
| RC02825 | 100 mM | 25 µmol |
| **GTP Solution** | | |
| R109GT | 10 mM | 5 µmol |
| RG02825 | 100 mM | 25 µmol |
| **UTP Solution** | | |
| R109UT | 10 mM | 5 µmol |
| RU02825 | 100 mM | 25 µmol |
| **Premixed NTP Solution** | | |
| R344NT | 2.5 mM each | 10 µmoles |
| **NTP Solutions** | | |
| RN02825 | 100 mM (25 µmol/tube) of ATP, CTP, GTP, and UTP Solutions. | 1 tube each of |
| **2′-Fluorine-dCTP** | | |
| R2F110C | 50 mM | 1 µmol |
| **2′-Fluorine-dUTP** | | |
| R2F110U | 50 mM | 1 µmol |
| **Aminoallyl-UTP Solution** | | |
| AAU5202 | 50 mM | 2.5 µmol |
| **Biotin-16-UTP** | | |
| BU6105H | 50 mM | 500 nmol |

**Biotin-16-UTP: For research use only. Some applications in which this product may be used may be covered by patents or patent applications applicable in certain countries. Because purchase of this product does not include a license to perform any patented application, users of this product may be required to obtain a license, depending upon the particular application and country in which the product is used.*



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