

Technical Information

Izotop offers a comprehensive range of radiolabeled nucleotides and amino acids for life science research. With **over 30 years experience** in the radiolabeling of biomolecules, high quality product range has been developed. The pack sizes, formulation, and specification are intended to meet the requirements of the majority of customers.

PREPARATION AND FORMULATION

Labeled nucleotides are produced in a wide variety of specific activity, radiolabel and formulation to assure the achievement of appropriate sensitivity, resolution and convenience in assays. Nucleotides are produced by multi-stage enzymatic synthesis from carrier-free processed isotopes, followed by HPLC purification. ^{32}P , ^{33}P and ^{35}S -nucleotides are supplied as the triethylammonium salt.

^{35}S -amino acids are prepared by growing a microorganism in a medium in which the only available source of sulfur is radioactive. The ^{35}S is incorporated into the protein chain of the microorganism. After harvesting and hydrolysis, L- ^{35}S methionine is purified by high performance liquid chromatography.

^{32}P , ^{33}P and ^{35}S Nucleotides

Majority of ^{32}P , ^{33}P and ^{35}S radionucleotides are supplied in aqueous solution at **10 mCi/ml** (370 MBq/ml). The conventionally formulated nucleotides are supplied in 10 mM Tricine buffer (pH 7.8) and 5 mM DTT (^{32}P and ^{33}P radionucleotides) or 10 mM DTT (^{35}S radionucleotides). The SteadyBlue™ and SteadyClear™ nucleotides are supplied in stabilized (and colored) aqueous solution. The stabilized forms have the same performance in any application as the conventionally formulated equivalents due to the unique composition, the inert blue dye and the low salt concentration. If the visualization is important use the SteadyBlue™ series. The conventionally formulated or the SteadyClear™ series is recommended if an inert dye can cause any trouble in your application.

^{35}S -Amino Acids

The in vitro translation grade **^{35}S -Methionine** is supplied at **10 mCi/ml** (370 MBq/ml), **15 mCi/ml** (555 MBq/ml) or **50 mCi/ml** (1850 MBq/ml) radioactive concentration in 10 mM Tricine buffer (pH 7.4) containing 10 mM 2-mercaptoethanol.

IsoLabel™ is a mixture of amino acids and contains approximately 70 % L-[^{35}S]Methionine and 30 % L-[^{35}S]Cysteine. The mix is for in vitro protein labeling and supplied in a sterile aqueous solution containing 10 mM Tricine buffer pH 7.4 and 10 mM 2-mercaptoethanol at **15 mCi/ml** (555 MBq/ml). Both ^{35}S -Methionine and IsoLabel™ are also available in SteadyBlue™ formulation, i.e. stabilized and colored form.

NucleoTip™ products

NucleoTip™ is a novel carrier and delivery system in a convenient solution-free format. NucleoTip™ product are identical with the formerly available Redivue Tip™ (GE Biosciences) used to be OEM products of IoI. NucleoTip™ is a pipette tip that contains reaction-sized amounts of radiolabeled nucleotides in a highly visible yet solution-free form. An anion exchange film, which coats the inner wall of the tip, reversibly immobilizes and protects the labeled nucleotides until ready for use. Reaction-sized aliquots of radionucleotide are pre-loaded into a pipette tip and reversibly immobilized on to the interior wall for elution directly into a reaction mixture. The risk of spillage is minimized and the highly visible dye aids handling. The performance of NucleoTip™ nucleotides is equivalent to SteadyBlue products and provides a good method for delivering a set amount of radioactivity to biological assays.

STANDARD PACK SIZES

³²P, ³³P and ³⁵S Nucleotides	250 µCi	(9.25 MBq)
	500 µCi	(18.5 MBq)
	1 mCi	(37 MBq)
³⁵S-Methionine	500 µCi	(18.5 MBq)
	1 mCi	(37 MBq)
	5 mCi	(185 MBq)
³⁵S-IsoLabel™	1 mCi	(37 MBq)
	2.5 mCi	(92.5 MBq)
	7.5 mCi	(277.5 MBq)
NucleoTip™	5* 50 µCi	(5 * 1.85 MBq)
Processed Isotopes	1 mCi	(37 MBq)
	5 mCi	(185 MBq)
	10 mCi	(370 MBq)

Please inquire for larger pack sizes. Special sizes are also available.

QUALITY CONTROL

QC is an integral part of production. IoI employs manufacturing and quality assurance systems (ISO 9001) to ensure that our products consistently meet the standards you require. Each batch of the products is analyzed for radiochemical purity (HPLC, TLC, column chromatography, etc.). Biological activity is tested by adequate methods, as random primer extension, polynucleotide kinase reaction, in vitro transcription, and in vitro translation using a standardized rabbit reticulocyte lysate cell free system.

AVAILABILITY AND REFERENCE DATE

^{32}P nucleotides are available for shipment weekly from fresh lots. All ^{32}P nucleotides are reference dated for Friday of the week following the production. ^{33}P -nucleotides and ^{35}S -compounds are available biweekly from fresh lots. All ^{33}P nucleotides are reference-dated for Friday of the week following the shipping. All ^{35}S -compounds are reference-dated for Monday 3 weeks following the production.

The products marked with * are shipped according to mutual accommodations.

STORAGE

Labeled compounds should be stored in the container in which they were shipped. Storage at $-20\text{ }^{\circ}\text{C}$ is recommended for conventionally formulated ^{32}P - and ^{33}P -nucleotides. Conventionally formulated ^{35}S labeled compounds should be stored at $-80\text{ }^{\circ}\text{C}$. SteadyBlue or SteadyClear stabilized compounds can be stored at $+4\text{ }^{\circ}\text{C}$ in a refrigerator. With $+4\text{ }^{\circ}\text{C}$ storage care must be taken to prevent bacterial contamination of the vial, which could result in the decomposition of the product.

Radiolysis of ^{35}S -compounds during storage and use may lead to the release of [^{35}S] labeled volatile impurities. Although the level of these impurities is small contamination of the internal surfaces of storage and reaction vessels may occur. Adequate precautions should be taken. Vials containing ^{35}S -compounds should be used in ventilated enclosures.

Due to the innovative product design NucleoTip does not contain chemical stabilizers and can still be stored at $+4\text{ }^{\circ}\text{C}$ without any compromise on performance. The inner wall of each tip is coated with an anion exchange film, which immobilizes the radioactivity, and protects the labeled nucleotides.

PACKAGING







The conventionally formulated ^{32}P , ^{33}P and ^{35}S radionucleotides and ^{35}S -amino acids are shipped frozen in polystyrene containers filled with dry ice. The solid carbon dioxide ensures that under normal conditions of temperature and pressure, the contents remain frozen for at least 72 hours. Stabilized products can be shipped at ambient temperature.

NucleoTip™ is available in packs of five tips, pre-loaded with reaction-sized aliquots of ^{32}P -labelled nucleotide and shipped in a specially designed container at ambient temperature.

IsoPack™ packaging system has been designed to provide optimum convenience and safety. ^{32}P -, ^{33}P - and ^{35}S -nucleotides and ^{35}S amino acids are dispensed into IsoPack system.

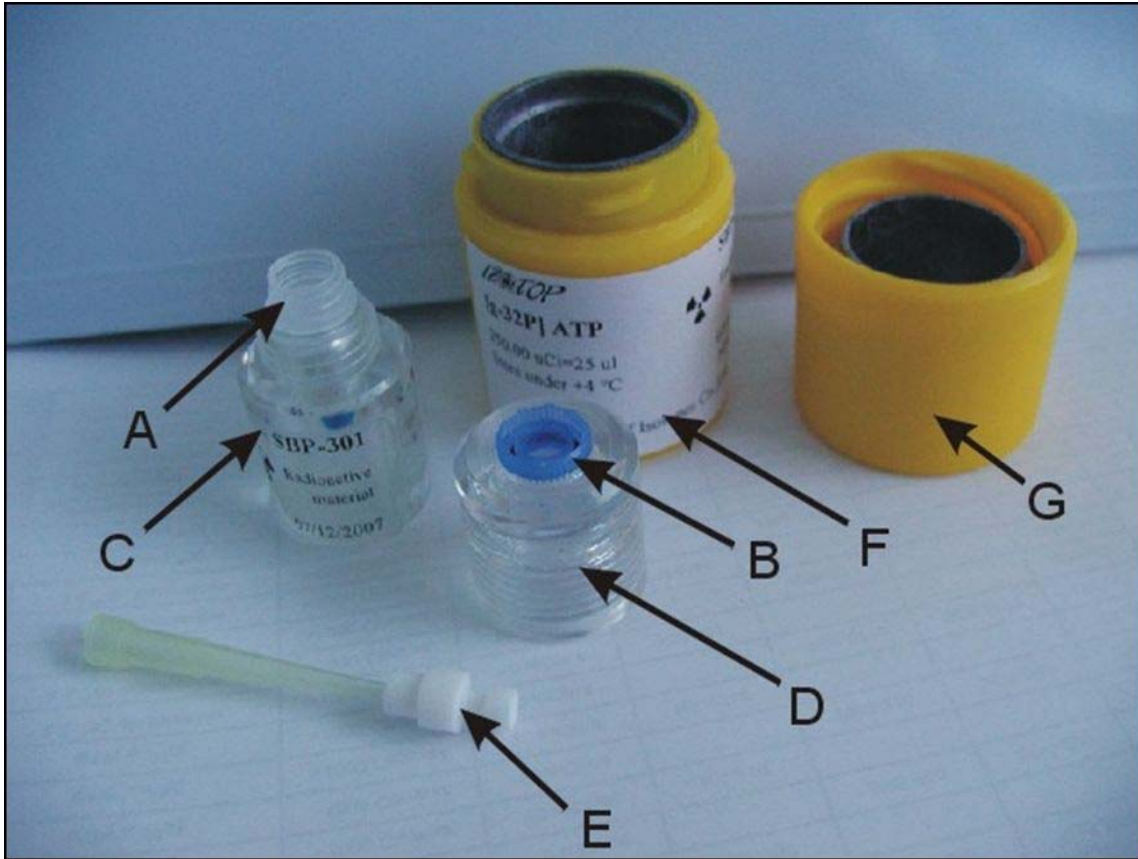
IsoPack™ packaging system consists of the following parts:

- a) Color-coded and screw capped (**B**) polypropylene V-vial (**A**) containing the radioactive material.
- b) Color code of caps:

$[\gamma\text{-}^{32}\text{P}]$ RIBONUCLEOTIDES		BLUE CAP
$[\alpha\text{-}^{32}\text{P}]$ DEOXYRIBONUCLEOTIDES		RED CAP
$[\alpha\text{-}^{32}\text{P}]$ RIBONUCLEOTIDES		GREEN CAP
$[\text{}^{33}\text{P}]$ NUCLEOTIDES		WHITE CAP
$[\text{}^{35}\text{S}]$ NUCLEOTIDES		YELLOW CAP
$[\text{}^{35}\text{S}]$ AMINO ACIDS		PURPLE CAP

- c) SteadyBlue and SteadyClear stabilized compounds shipped at ambient temperature are supplied with a splashguard (**E**) made of PTFE. The splashguard is inserted into the screw capped V-vial and it covers the bottom of the V-vial, ensuring that the radioactive solution remains in the enclosed space, so minimizing contamination of the inner surfaces of the vial and cap during ambient shipment. The single use disposable splashguard is easily removed using a laboratory pipette tip or forceps and it is disposed of as radioactive waste. Standard products shipped on dry ice do not require a splashguard.
- d) The inner container made of transparent polycarbonate holding V-vial and it consists of a screw top (**D**) and a bottom part (**C**) protecting from beta radiation. The top part of the inner container unscrewed and inverted upside-down is a tool for opening the screw capped V-vials and provides hand protection while opening the vial.
- e) The inner container containing V-vial is packed into a protective outer container made of yellow polyamide, which held firmly in place the transparent inner container. It consists of a screw top (**G**) and a bottom (**F**) part. The yellow outer container is leaded in case of ^{32}P labeled nucleotides to minimize radiation exposure.
- f) The containers ready for shipment are sealed in shrink-wrap film. The film is perforated for easy tear off opening.

IsoPack™ PACKAGING SYSTEM



NucleoTip™ PACKAGING



IsoPack™

How to use

