

³²P/³³P Technical Data Certificate of Analysis

Caution: For Laboratory Use. A research chemical for research purposes only.

NUCLEOTIDES, [³²P/³³P]-

Record Lot Specific Data from Container Label:

Catalog Number: _____
Lot Number: _____
Specific Activity: _____ TBq/mmol
 _____ Ci/mmol
Radiochemical _____ MBq/ml
Concentration: _____ mCi/ml
Calibration Date: _____

EASYTIDES® NUCLEOTIDES FEATURES

- Color Coded by Radionuclide — Emerald Green for ³²P; Amber Gold for ³³P; and Sapphire Blue for ³⁵S.
- New and Improved Temperature Stability — No dry ice, no thawing, just remove from the refrigerator and pipette!
- Pre-mixing of aliquot is recommended.
- Safe, Environmentally Friendly Packaging — No lead (BLUxxx catalog series) or Styrofoam® to recycle!
- More Value — Generous precalibration quantities.
- Consistently High Quality — Synthesized, diluted and packaged using state-of-the-art robotics.

Styrofoam® is a registered trademark of the Dow Chemical Co.

PURITY & BIOLOGICAL TESTING

Radiochemical Purity Determined by reverse phase HPLC using a C-18 column. Elution is isocratic by a mixture of 85% Solvent A (20 mM potassium phosphate buffer containing 5 mM tetrabutylammonium ions, pH 7.0), and 15% methanol. The radiochemical purity is usually greater than 99% when purified and usually greater than 95% on day of shipment.
 *NEG035C is greater than 90% on day of shipment.

Isotopic Purity All lots of ³²P are typically >99.9% pure.
 All lots of ³³P contain <0.5% ³²P.

Biological Testing Each lot of (deoxy) ribonucleotide is tested using the appropriate system, e.g.:

- Random Primer Extension-DNA Polymerase
- Transcription Assay-T7 or SP6 Polymerase
- 5'-End Labeling - T4 Polynucleotide Kinase
- 3'-End Labeling - Terminal Deoxynucleotidyl Transferase

PRODUCT PACKAGING, SAFETY & HANDLING

	Easy Tides		Frozen	
	³² P	³³ P	³² P	³³ P
Catalog Series	BLU5xx NEG5xx	NEG6xx	BLU0xx NEG0xx	NEG3xx
Calibration	9 Days	≥ 13 Days	9 Days	≥ 13 Days
Solvent	Aqueous solution buffered with Tricine, pH 7.6; containing a dye and stabilizer.*		Aqueous solution buffered with Tricine, pH 7.6; all [α- ³² P] Ribonucleotides containing a stabilizer.*	
Coloring	Green	Gold	None	
Customer Storage Conditions	Refrigerator; +4°C or below		Freezer; -20°C or below and on ice during use. Frozen product may be thawed at room temperature or quick-thawed in a 37°C water Bath. Multiple thawings and freezings will not affect product purity if care is taken to minimize time spent at room temperature, but aliquoting of the product is recommended if feasible.	

Safety At the sub-millicurie amounts used in most applications, ³³P-nucleotides can be safely manipulated on an open benchtop without any special shielding or badge dosimetry. Film badges should be used by all personnel working with ³²P. If millicurie quantities are manipulated, wrist and finger badges are recommended. Acrylic plastic (1/4 inch) is the recommended shielding for working with quantities of ³²P up to 10 mCi. A radiation protection specialist should be consulted for specific applications. Whenever handling ³²P/³³P on an open bench, the eyes should be shielded with safety glasses.

Hold for Decay; specific regulations should be addressed with your radiation safety officer.

*U.S. Patent# 5,738,836

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PC 3919-0101



HAZARD INFORMATION: WARNING: This product contains a chemical known to the State of California to cause cancer.

Specific Activity Before Calibration Date

The specific activity is specified as of the calibration date. This must be taken into consideration when calculating concentrations in mass-dependent applications. The specific activity on any day prior to the calibration date can be calculated using the formula:

$$SA = \frac{SA \text{ cal.}}{D_F + \frac{SA \text{ cal.} (1 - D_F)}{(SA \text{ Theo})}}$$

Specific Activity After Calibration Date

The specific activity on any day after the calibration date can be calculated using the formula:

$$SA = \frac{D_F}{\frac{1}{SA \text{ cal.}} - \frac{(1 - D_F)}{SA \text{ Theo}}}$$

Where:

SA cal. = Specific Activity on the calibration date.

D_F = Fraction of current radioactivity that will remain on the calibration date (from the decay chart). For example, for a date 8 days prior to the calibration date D_F = 0.678

SA Theo = 9120 for the theoretical specific activity of carrier free ³²P.
= 5200 for the theoretical specific activity of carrier free ³³P.

PHOSPHORUS - 32 DECAY TABLE

HALF-LIFE = 14.3 DAYS

days	0	1	2	3	4	5	6	7	8	9
0	1.000	0.953	0.906	0.865	0.824	0.785	0.748	0.712	0.678	0.646
10	0.616	0.587	0.559	0.532	0.507	0.483	0.460	0.436	0.418	0.396
20	0.379	0.361	0.344	0.328	0.312	0.297	0.283	0.270	0.257	0.245
30	0.233	0.222	0.212	0.202	0.192	0.183	0.174	0.166	0.158	0.151
40	0.144	0.137	0.130	0.124	0.118	0.113	0.107	0.102	0.096	0.093
50	0.088	0.084	0.080	0.077	0.073	0.069	0.066	0.063	0.060	0.057
60	0.054	0.052	0.049	0.047	0.045	0.043	0.041	0.039	0.037	0.035

PHOSPHORUS - 33 DECAY TABLE

HALF-LIFE = 25.4 DAYS

days	0	1	2	3	4	5	6	7	8	9
0	1.000	0.973	0.947	0.921	0.897	0.872	0.849	0.826	0.804	0.782
10	0.761	0.741	0.721	0.701	0.683	0.664	0.646	0.629	0.612	0.595
20	0.579	0.564	0.549	0.534	0.520	0.506	0.492	0.479	0.466	0.453
30	0.441	0.429	0.418	0.406	0.395	0.385	0.374	0.364	0.355	0.345
40	0.336	0.327	0.318	0.309	0.301	0.293	0.285	0.277	0.270	0.263
50	0.256	0.249	0.242	0.236	0.229	0.223	0.217	0.211	0.205	0.200
60	0.195	0.189	0.184	0.179	0.174	0.170	0.165	0.161	0.156	0.152