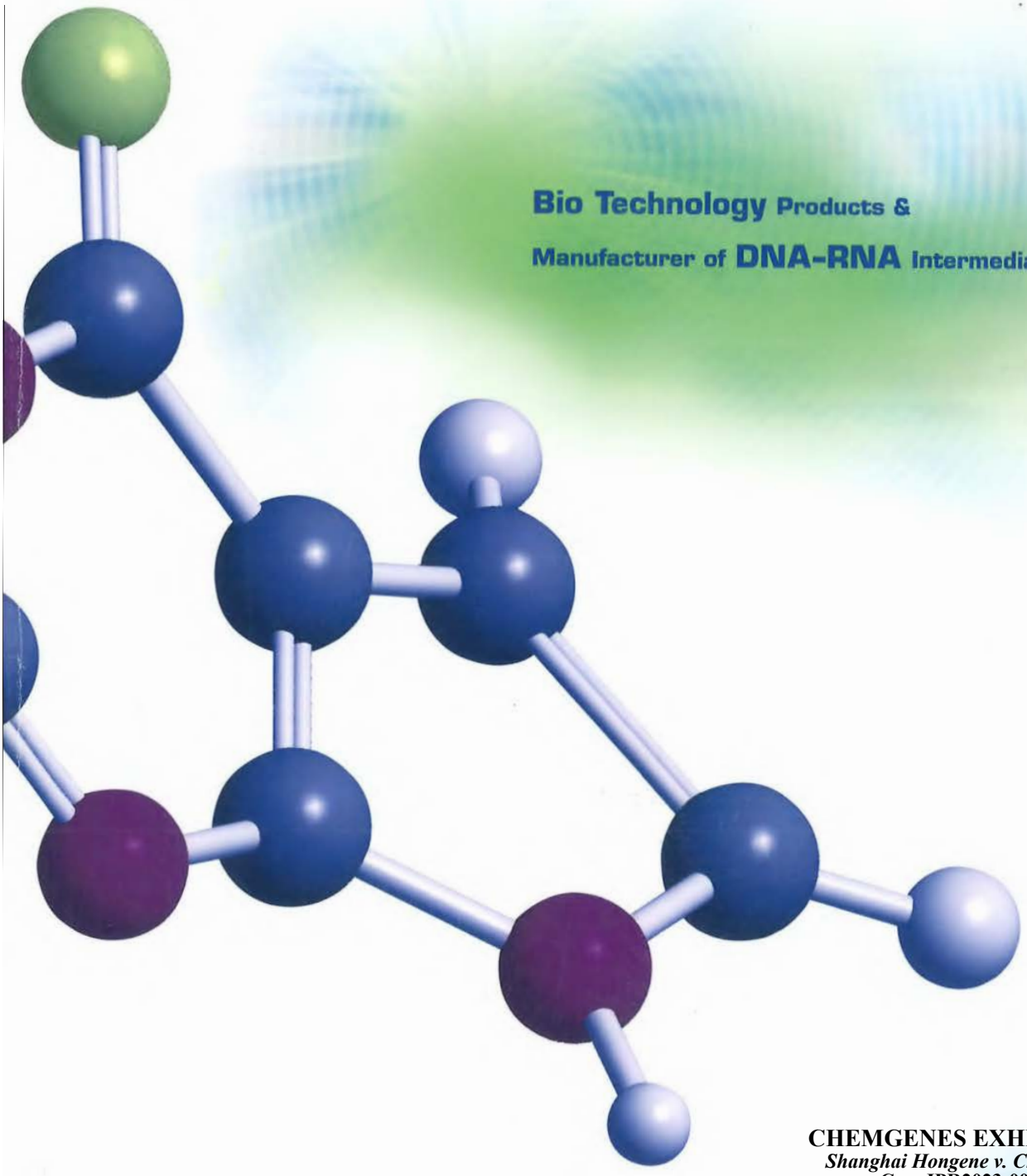
ChemGenes
CORPORATION



Bio Technology Products &

Manufacturer of **DNA-RNA** Intermediates

CHEMGENES EXHIBIT 2030
Shanghai Hongene v. ChemGenes
Case IPR2023-00490

NEW PRODUCTS

- Non-Cleavable Inert Supports for high quality oligo synthesis, combinatorial libraries, chip design, etc.
- Ammonia Free Oligo Synthesis Reagents including Oxalyl CPGs
- N-Alkylated nucleosides and phosphoramidites for mutagenesis studies & reversal of mutation
- 5-Azauridine and 5-Aza-2′-deoxyuridine nucleosides: key anticancer nucleosides
- 4-Thio & 2-Thio uridine & deoxy uridines and 2-thiothymidine as nucleosides and phosphoramidites for incorporation in DNA and RNA
- Modified 2′-O-Methyl nucleosides and phosphoramidites for incorporation in DNA and RNA
- 6-FAM NHS Ester & 5-FAM NHS Ester,
  6-FAM linker attached amidite, and
  6-FAM-dU-(C-5)-phosphoramidite
- Biotin (BB)-(urea nitrogen protected)-phosphoramidites and
  Biotin (BB)-dU-(C-5)-phosphoramidite
- 5-ethylthio tetrazole & 5-benzylthio tetrazole
- Polyethylene glycol amidites:
  Polyethylene glycols with high molecular weights (MW. 4500 and 2000)
- RNA Purification kit
- 5′-MMT nucleoside phosphoramidites (Purines: A & G)

ChemGenes CORPORATION

Biotechnology Products & Manufacturer of DNA-RNA Intermediates

The products and services provided by ChemGenes Corporation continue to accelerate the pace of DNA/RNA synthesis, research, and development in the biotechnology industry.

Extensive Product Lines:

DNA-RNA Phosphoramidites
DNA-RNA Supports
Modified 2'-O-Methyls and Antisense
ß-L-DNA & ß-L-RNA
7-Deaza Products
Deoxy & Ribo Nucleosides
Dimers
Triphosphates
and much more...

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Wilmington, MA 01887
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Fax: 978-694-4502
Email: info@chemgenes.com
Visit us at: www.chemgenes.com

ChemGenes Corporation

Background

ChemGenes Corporation, a biotechnology company located in Wilmington, Massachusetts, has been a strong partner to researchers engaged in the field of DNA and RNA synthesis for more than 20 years. By starting out as a supplier of 'Ultra Pure Products' and then also by becoming an active Contract Researcher, ChemGenes Corporation has achieved unparalleled expertise in the field of DNA and RNA synthesis. Thus, all of us at ChemGenes have the opportunity and great pleasure to serve a vast number of scientists in the US and all over the world.

ChemGenes holds a number of patents in the field of standard, modified, as well as backbone modified DNA and RNA synthesis products. ChemGenes has a worldwide licensing agreement on US patent No.s 4,415,732 and 4,458,066, pioneering patents on the discovery of DNA and RNA synthesis by Caruthers and Beaucage. We have another worldwide licensing agreement on US patent No. Re 34,069, the presently popular cyanoethyl (CED) phosphoramidite version for DNA and RNA synthesis.

ChemGenes' product lines include phosphoramidites for DNA and RNA synthesis, Antisense phosphoramidites, modified bases for DNA, as well as RNA modification. In addition, we produce a variety of modified phosphoramidites for the introduction of chromophores and ligands. The availability of prepacked disposable columns of various pore sizes, loadings, low volume columns, ancillary reagents in configurations suitable for each synthesizer, and DNA purification cartridges is another way ChemGenes meets its customers' needs.

ChemGenes has a strong, dedicated, and talented team of professionals engaged in the manufacturing of many natural and modified nucleoside bases. Included in these natural and modified bases are DMT protected deoxy and ribo nucleosides, 2'-O-methyl and 2'-O-propargyl nucleosides, and silyl protected ribonucleosides.

A large variety of reagents for the synthesis of DNA and RNA are also available. These include 5-thioethyltetrazole, benzylthiotetrazole, DMT-chloride, MMT-chloride, and several types of phosphorylating reagents such as cyanoethyl chloro phosphitylating reagent, cyanoethyl tetra isopropyl phosphitylating reagent, cyanoethyl dichloro phosphitylating reagent, and 5', 3'-bis silylating reagent.

As the market for oligonucleotides continues to grow, ChemGenes remains committed to introducing novel products, while maintaining its existing product mix. We also have the capacity to custom synthesize products on request. Our highly trained technical staff is always available and happy to help you with your special needs and demands in this area. For information regarding the full range of products and their applications, please call us at 978-694-4500 or toll-free 800-762-9323, fax: 978-694-4502, or e-mail: info@chemgenes.com

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Special Gratitude

The nucleoside phosphoramidites available in this catalog are the result of the classical research contribution by Professor M.H. Caruthers and colleagues (University of Colorado, Boulder, CO) (S.L. Beaucage and M.H. Caruthers, Tet. Letters, 22,1859-1862, 1981). Other enormous contributions in this field have been made by Professor K.K. Ogilvie and colleagues (Acadia University, Acadia, Canada), Professor R.L. Letsinger and colleagues (Northwestern University, Evanston, IL), and Professor H. G. Khorana, Noble Laureate and colleagues (Massachusetts Institute of Technology, Cambridge, MA).

Licensing & Trademarks

The DNA phosphoramidite products are sold with license agreement U.S. Patent No. 4,415,732 and corresponding patents issued in other countries and a license to manually practice the process claimed in U.S. Patent No. 4,458,066, and license agreement for U.S. Patent No. Re 34,069 and the corresponding patents issued in other countries.

The purchaser may use these reagents with an instrument licensed under U.S. Patent No. 4,458,066 and U.S. Patent No. Re 34,069, and the corresponding patents issued in the respective country.

ChemGenes holds patents for p-ethoxy, 2'-O-Methyl p-ethoxy, 2'-O-Methyl, and propargyl modified derivatives.

Tools for Molecular Biology Research

Oligo Synthesis Reagents

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Ordering Information

Quality

ChemGenes products are manufactured under carefully controlled conditions and whenever applicable are constantly analyzed by Ultra Violet (UV) Spectroscopy, Thin Layer Chromatography, Electrophoresis, High Performance Liquid Chromatography (HPLC), Enzymatic, and Sequential Analysis. A product analysis report is enclosed with each shipment of our products.

Conditions for Sales:

ChemGenes products are sold for laboratory and manufacturing use only. Our products are not for use in humans for drugs or clinical diagnostics. Liability for any loss or damage which may arise from the sale, storage, use, and handling of these products is solely the responsibility of the user of purchase. ChemGenes does not assume any responsibility for patent infringement which may occur with the use of these products.

Our products are of highest purity and conform to the pertinent technical data sheet enclosed with each product. However, should any of our products fail to meet the enclosed data, ChemGenes will replace the products free of charge.

Any damage, due to thawing and breakage in transit, must be reported in less than five days. Any quality related problems, which do not conform to the technical data sheet, must be reported in less than thirty days. No return authorization or credit will be allowed after thirty days. All products returned need proper authorization from us.

The information supplied in this catalog is correct to the best of our knowledge.

Errors:

ChemGenes shall not be liable for any errors of clerical nature in prices or statements contained in our catalog, product literature, labels, and product data sheet. All errors are subject to correction.

OUR COMMITMENT TO YOU
THE MOST COMPETITIVE PRICES
& HIGHEST QUALITY

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Please include the following information with each order:

- Our catalog number.
- Product name.
- Quantity.
- Your purchase order number.
- Shipping and billing address.

Quotations for quantities in excess of those listed in our catalog will be supplied upon request.

Delivery:

Orders for the products listed in our catalog will be filled promptly from our stock. When complete shipments can not be made, partial shipments will be made at our discretion.

All products are shipped freight paid with ChemGenes Corporation reserving the right to choose the best possible shipping method, unless buyer provides their own shipping account number.

Shipping dates provided by ChemGenes Corporation are given on the basis of the best available information on hand. However, ChemGenes Corporation shall not be liable for any loss, damage, expense (consequential or otherwise) incurred by the buyer if ChemGenes Corporation fails to meet specified delivery.

Title of Products & Shipment:

The title of goods and products sold hereunder shall pass to the buyer upon delivery of products to the carrier.

Oligo Synthesis Products

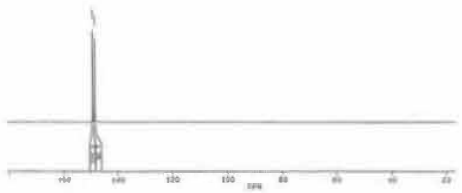
Phosphoramidites and Supports for Natural DNA Synthesis

Quality Control Criteria for UltraPure DNA Phosphoramidites

Thin Layer Chromatography
- Sharp doublet in most cases, or a single spot
- Detection Limit 0.5%
- No visible impurity observed

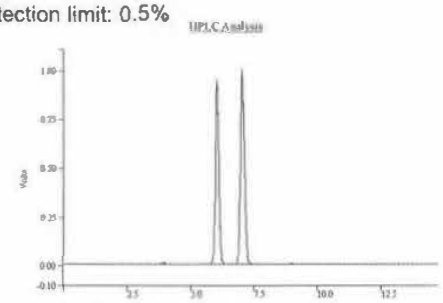
Solubility Test
- 200 mg of pure dry product in 1.0 ml of dry acetonitrile (H_2O Content < 0.004-0.005 gm / 100 ml)

^{31}P NMR
- Consistent purity > 99%
- Single or double peak
- Detection Limit: 0.08%



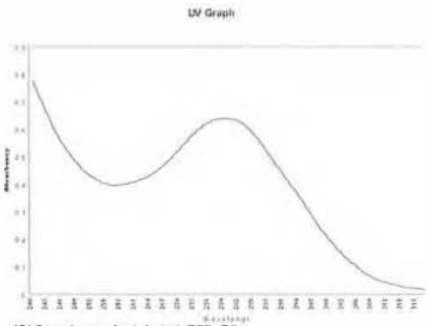
^{31}P NMR of deoxy Guanosine (n-ibu) CED OP

HPLC
- Consistent purity > 98%
- Single or double peak
- Detection limit: 0.5%



HPLC Graph of deoxy Guanosine (n-ibu) CED OP

UV Characterization
- Used to characterize the purine or pyrimidine structure and substituent



UV Spectrum of dA (n-bz) CED OP

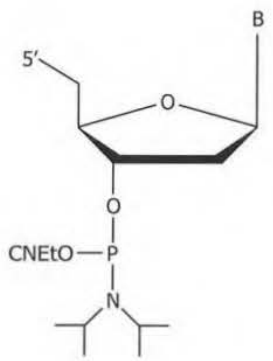
Coupling Test
- Greater than 99% under set conditions specified in the data sheet supplied with compound.

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Phosphoramidites and Supports for Natural DNA Synthesis



Amidites for Natural DNA Synthesis with Standard Base Protection

5'	B	Protection	Catalog#
DMTO	A	n-bz	ANP-5551
DMTO	C	n-bz	ANP-5552
DMTO	G	n-ibu	ANP-5553
DMTO	T	n/a	ANP-5554
DMTO	C	n-ibu	ANP-5559
DMTO	C	n-acetyl	ANP-5560
MMTO	A	n-bz	ANP-5556
MMTO	G	n-ibu	ANP-5557

Catalog #	Product Name	250mg	500mg	1gm	2gm	5gm	10gm	30gm
ANP-5551	deoxy Adenosine (n-bz) CED phosphoramidite, *M.W. 857.92*	$11	$21	$40	$65	$145	$270	$ 750
ANP-5552	deoxy Cytidine (n-bz) CED phosphoramidite, *M.W. 833.89*	$11	$21	$40	$65	$145	$270	$ 750
ANP-5553	deoxy Guanosine (n-ibu) CED phosphoramidite, *M.W. 839.90*	$11	$21	$40	$65	$145	$270	$ 750
ANP-5554	Thymidine CED phosphoramidite, *M.W. 744.80*	$11	$21	$40	$65	$145	$270	$ 750
ANP-5559	deoxy Cytidine (n-ibu) CED phosphoramidite, *M.W. 799.89*	$14	$26	$40	$65	$145	$270	$ 750
ANP-5560	deoxy Cytidine (n-acetyl) CED phosphoramidite, *M.W. 771.84*	$14	$26	$40	$65	$145	$270	$ 750
ANP-5556	MMT-deoxy Adenosine (n-bz) CED phosphoramidite, *M.W. 827.91*	$15	$28	$54	$95	$210	$375	$1,010
ANP-5557	MMT-deoxy Guanosine (n-ibu) CED phosphoramidite, *M.W. 809.89*	$15	$28	$54	$95	$210	$375	$1,010

Mixed Bases (equimolar amount)

(premixed deoxy Adenosine, deoxy Cytidine, deoxy Guanosine, and Thymidine)

Catalog #	Quantity	Prices	Quantity	Prices
ANP-1070	250mg	$18	1gm	$ 60
	500mg	$34	2gm	$105

Deprotection Conditions

- 45 minutes at R.T. for cleavage of oligo from support with concentrated ammonium hydroxide.
- Cleavage of base protection can be accomplished by either:
  - using concentrated ammonium hydroxide at 37°C for 16-24 hours, or
  - using concentrated ammonium hydroxide at 55°C for 16-18 hours.

(time ranges are dependant on the oligo chain length)

For faster deprotection conditions please see pages 5 & 7

Advantages and Applications of 5'-MMT in Purine Bases for Oligo Synthesis

Due to the use of 5-ethylthio Tetrazole (in most DNA/RNA synthesis protocols), which is more acidic in nature compared to 1-H Tetrazole, the DMT group from purine bases is removed to a certain extent in the coupling step during oligo synthesis, thereby causing undesired M+1 oligo growth.

Since purine bases, A & G, cleave at the 5'-DMT at a much higher rate than 5'-MMT, the 5'-MMT protected nucleoside phosphoramidite is preferred, offering a minimal level of M+1 impurities.

Oligo Synthesis Products

Phosphoramidites and Supports for Natural DNA Synthesis

Solid Supports & Columns

CPG's have a C-17 spacer (lcaa) between the succinate and Silyl group on the CPG supports. The long chain spacer arm is ≈ 18 Å long. The longer arm facilitates the synthesis of longer oligomers, where steric effects and surface repulsions are problems. The drop in coupling yield during the attachment of 1st and 2nd phosphoramidite is minimal and thus the formation of N-1 chain is negligible.

We are proud that the ChemGenes CPG Supports have out-performed equivalent products available on the market. All the functional groups available on the derivatized CPGs have been carefully blocked to minimize possibilities of side reactions. CPGs are available in three pore diameters and each have been functionalized in three different loading levels.

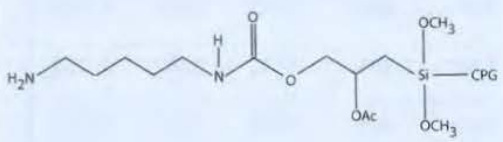
Amino CPG Long Chain Alkyl (lcaa) Support

The particle sizes for CPG's available at ChemGenes are: 80-200 mesh, 80-120 mesh, and 120-200 mesh. However, the most common is 120-200 mesh and is used to derivatize our listed CPGs. Please enquire about the other two mesh sizes, which are available on a custom basis.

Selection Chart of lcaa CPG Supports for optimum oligo chain length

Trityl Value Codes	Synthesis Scales	Loading (µm/gm)	Recommended Pore Size	Oligo Chain Length (mer)
VL: Very Low	0.05 µm	1.75	2000Å	100-150
L: Low	0.2 µm	6-7	1000Å or 2000Å	61-100
M: Medium	0.2 µm	16-17	500Å or 1000Å	30-60
H: High	1.0 µm	35	500Å or 1000Å	< 30

Native Amino lcaa CPG



Catalog#	Pricing	Catalog#	Pricing
N-5100-05	$ 40.00 / 1 gm	N-5100-10	$ 40.00 / 1 gm
	$ 65.00 / 5 gm		$ 65.00 / 5 gm
	$105.00 / 10 gm		$105.00 / 10 gm
Pore Size: 500Å		Pore Size: 1000Å	

Empty Columns

Catalog#	Product Name	Synthesizer	Price for Each Empty Col. 50nm	0.2µm	1.0 µm	10 µm	15 µm
E-1007-05-ABI30	Empty Synthesis Columns & Aluminum Caps	ABI	$3	$3	$3	$30	$30
E-1007-05-ABI39	Empty Synthesis Columns & Aluminum Caps	ABI 3900	$3	$3	$3	n/a	n/a
E-1007-05-BK*	Empty Synthesis Columns & Aluminum Caps	Beckman*	n/a	$3	$3	n/a	n/a
E-1007-05-EX	Empty Synthesis Columns & Aluminum Caps	Expedite	n/a	$3	$3	$30	$30
E-1007-05-LY	Empty Synthesis Columns & Aluminum Caps	Polyplex	$3	$3	n/a	n/a	n/a
E-1007-05-PH	Empty Synthesis Columns & Aluminum Caps	Pharmacia	n/a	$3	$3	n/a	n/a
E-1007-05-MR	Empty Synthesis Columns & Aluminum Caps	MerMade	$3	$3	n/a	n/a	n/a
E-1007-05-SH	Empty Synthesis Columns & Aluminum Caps	Biosearch 8000 & Cyclone	n/a	$3	$3	n/a	n/a

* Beckman synthesizers require adapters for columns. Please see page #19.

Replacement Filters (ABI & Expedite Columns)

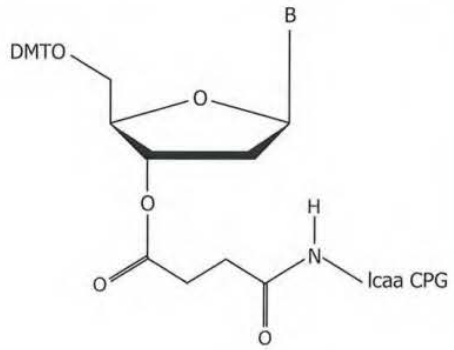
Catalog #	Quantity	Prices
EPC-1008	100	$50.00

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Phosphoramidites and Supports for Natural DNA Synthesis



Solid Supports for Natural DNA Synthesis with Standard Base Protection

B	Protection	Catalog #
A	n-bz	N-5101
C	n-bz	N-5102
G	n-ibu	N-5103
T	n/a	N-5104
C	n-ibu	N-5112
C	n-acetyl	N-5212
G	n,n-dmf	N-9898

			Bulk CPG			pack of 4 cols.			each		pack of 10 cols.		
Catalog #	Product Name	Pore Size	100 mg	1 gm	5 gm	40 nmole	0.2 µmole	1.0 µmole	10 µmole	15 µmole	40 nmole	0.2 µmole	1.0 µmole
N-5101-05	deoxy Adenosine	500Å											
N-5101-10	(n-bz) lcaa CPG	1000Å	$8	$65	$280	$26	$32	$40	$85	$120	$52	$64	$80
N-5101-20		2000Å											
N-5102-05	deoxy Cytidine	500Å											
N-5102-10	(n-bz) lcaa CPG	1000Å	$8	$65	$280	$26	$32	$40	$85	$120	$52	$64	$80
N-5102-20		2000Å											
N-5103-05	deoxy Guanosine	500Å											
N-5103-10	(n-ibu) lcaa CPG	1000Å	$8	$65	$280	$26	$32	$40	$85	$120	$52	$64	$80
N-5103-20		2000Å											
N-5104-05	Thymidine lcaa CPG	500Å											
N-5104-10		1000Å	$8	$65	$280	$26	$32	$40	$85	$120	$52	$64	$80
N-5104-20		2000Å											
N-5112-05	deoxy Cytidine	500Å											
N-5112-10	(n-ibu) lcaa CPG	1000Å	$8	$65	$280	$26	$32	$40	$85	$120	$52	$64	$80
N-5112-20		2000Å											
N-5212-05	deoxy Cytidine	500Å											
N-5212-10	(n-acetyl) lcaa CPG	1000Å	$8	$65	$280	$26	$32	$40	$85	$120	$52	$64	$80
N-5212-20		2000Å											
N-9898-05	deoxy Guanosine	500Å											
N-9898-10	(n,n-dmf) lcaa CPG	1000Å	$8	$65	$280	$26	$32	$40	$85	$120	$52	$64	$80
N-9898-20		2000Å											

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

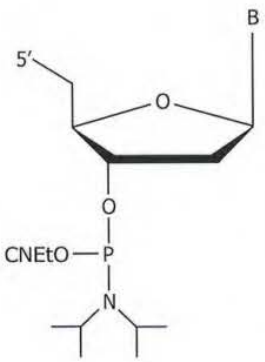
* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

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Email: info@chemgenes.com

Oligo Synthesis Products

Phosphoramidites and Supports for Natural DNA Synthesis



Amidites for Natural DNA Synthesis with Labile Base Protection

5'	B	Protection	Catalog#
DMTO	A	n-PAC	ANP-6661
DMTO	C	n-PAC	ANP-6662
DMTO	G	n-tBPAC	ANP-5668
DMTO	T	n/a	ANP-5554
DMTO	G	n,n-dmf	ANP-6769
MMTO	A	n-PAC	ANP-5116
MMTO	G	n-tBPAC	ANP-5117

Catalog #	Product name	250mg	500mg	1gm	2gm	5gm	10gm
ANP-6661	deoxy Adenosine (n-PAC) CED phosphoramidite, *M.W. 887.96*	$22	$40	$65	$135	$210	$375
ANP-6662	deoxy Cytidine (n-PAC) CED phosphoramidite, *M.W. 863.93*	$22	$40	$65	$135	$210	$375
ANP-5668	deoxy Guanosine (n-tBPAC) CED phosphoramidite, *M.W. 960.06*	$22	$40	$65	$135	$210	$375
ANP-5554	Thymidine CED phosphoramidite, *M.W. 744.80*	$11	$21	$40	$65	$145	$270
ANP-6769	deoxy Guanosine (n,n-dmf) CED phosphoramidite, *M.W. 824.90*	$22	$40	$65	$135	$210	$375
ANP-5116	MMT-deoxy Adenosine (n-PAC) CED phosphoramidite, *M.W. 857.93*	$25	$48	$72	$115	$230	$410
ANP-5117	MMT-deoxy Guanosine (n-tBPAC) CED phosphoramidite, *M.W. 930.04*	$25	$48	$72	$115	$230	$410

Deprotection Conditions

- 45 minutes at R.T. for cleavage of oligo from support with concentrated ammonium hydroxide.
- Cleavage of base protection can be accomplished by either:
  using concentrated ammonium hydroxide at 37°C for 6-8 hours, or
  using concentrated ammonium hydroxide at 55°C for 2-4 hours.

(time ranges are dependant on the oligo chain length)

For faster deprotection conditions please see page 7

For Ammonia Free Oligo Deprotection Solution (Catalog #RN-1435) and Oxalyl CPGs that can be used with the products on this page and the following page, please see page #98.

The capping reagent phenoxy acetic anhydride is available for capping during oligonucleotide synthesis, please see pages 17-24.

For a description of the advantages of using 5'-MMT nucleoside phosphoramidites, please see page #2.

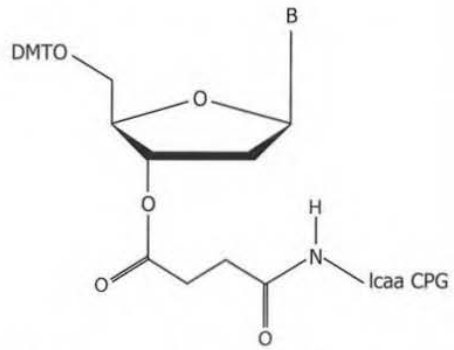
Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

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Phosphoramidites and Supports for Natural DNA Synthesis



Solid Supports for Natural DNA Synthesis with Labile Base Protection

B	Protection	Catalog #
A	n-PAC	N-P5101
C	n-PAC	N-P5102
G	n-PAC	N-P5103
T	n/a	N-5104

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	Bulk CPG 5 gm	pack of 4 cols. 40 nmole	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	each 10 µmole	each 15 µmole	pack of 10 cols. 40 nmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-P5101-05	deoxy Adenosine	500Å											
N-P5101-10	(n-PAC) Icaa CPG	1000Å	$15	$120	$550	$26	$32	$48	$144	$216	$52	$64	$96
N-P5101-20		2000Å											
N-P5102-05	deoxy Cytidine	500Å											
N-P5102-10	(n-PAC) Icaa CPG	1000Å	$15	$120	$550	$26	$32	$48	$144	$216	$52	$64	$96
N-P5102-20		2000Å											
N-P5103-05	deoxy Guanosine	500Å											
N-P5103-10	(n-PAC) Icaa CPG	1000Å	$15	$120	$550	$26	$32	$48	$144	$216	$52	$64	$96
N-P5103-20		2000Å											
N-5104-05	Thymidine Icaa CPG	500Å											
N-5104-10		1000Å	$8	$65	$280	$26	$32	$40	$85	$120	$52	$64	$80
N-5104-20		2000Å											

Please refer to deprotection conditions on previous page.

Please Indicate Synthesizer when Ordering

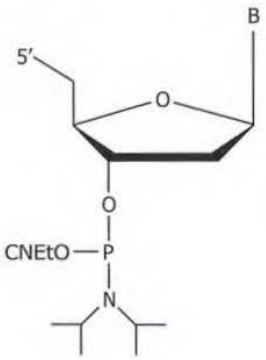
ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

Oligo Synthesis Products

Phosphoramidites and Supports for Natural DNA Synthesis



Fast Deprotection Phosphoramidites using AMA Reagent

B	Protection	Catalog#
A	n-PAC	ANP-6661
C	n-acetyl	ANP-5560
G	n-tBPAC	ANP-5668
T	n/a	ANP-5554

Catalog #	Product name	250mg	500mg	1gm	2gm	5gm	10gm
ANP-6661	deoxy Adenosine (n-PAC) CED phosphoramidite, *M.W. 887.96*	$22	$40	$65	$105	$210	$375
ANP-5560	deoxy Cytidine (n-acetyl) CED phosphoramidite, *M.W. 771.84*	$22	$40	$65	$105	$210	$375
ANP-5668	deoxy Guanosine (n-tBPAC) CED phosphoramidite, *M.W. 960.06*	$22	$40	$65	$105	$210	$375
ANP-5554	Thymidine CED phosphoramidite, *M.W. 744.81*	$11	$22	$40	$ 65	$145	$270

Deprotection Conditions

- 5 minutes at R.T. (for cleavage of oligo) using AMA Reagent. AMA (Catalog#: RN-1450 listed on pages 17-24) is a 50:50 ratio of ammonium hydroxide and methyl amine.
- Cleavage of base protection can be accomplished by either:
  using AMA at 37°C for 30 minutes, or
  using AMA at 55°C for 10 minutes.

For shorter sequences, standard base protected dA (n-bz) amidite (ANP-5551), dC (n-acetyl) amidite (ANP-5560), along with dG (n-ibu) amidite (ANP-5553) are all recommended; however, for longer sequences it is recommended to use the above Fast Deprotecting Phosphoramidites, i.e. dA (n-PAC) amidite, dC (n-acetyl) amidite, and dG (n-tBPAC) amidite.

NOTE: Ancillary reagents for DNA synthesis using Fast Deprotecting Phosphoramidites are available at ChemGenes and are listed on pages 17-24.

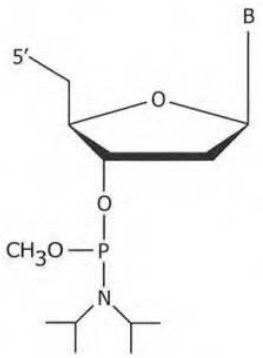
Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

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Phosphoramidites and Supports for Natural DNA Synthesis



Natural DNA Amidites with p-methoxy and Standard Base Protection

5'	B	Protection	Catalog#
DMTO	A	n-bz	ANP-3761
DMTO	C	n-bz	ANP-3762
DMTO	G	n-ibu	ANP-3763
DMTO	T	n/a	ANP-3764
MMTO	A	n-bz	ANP-3766
MMTO	G	n-ibu	ANP-3767

Catalog #	Product Name	250mg	500mg	1gm	2gm	5gm
ANP-3761	deoxy Adenosine (n-bz) p-methoxy phosphoramidite, *M.W. 818.90*	$20	$40	$75	$145	$350
ANP-3762	deoxy Cytidine (n-bz) p-methoxy phosphoramidite, *M.W. 794.87*	$20	$40	$75	$145	$350
ANP-3763	deoxy Guanosine (n-ibu) p-methoxy phosphoramidite, *M.W. 800.88*	$20	$40	$75	$145	$350
ANP-3764	Thymidine p-methoxy phosphoramidite, *M.W. 705.78*	$20	$40	$75	$145	$350
ANP-3766	MMT-deoxy Adenosine (n-bz) p-methoxy phosphoramidite, *M.W. 788.87*	$25	$45	$80	$155	$365
ANP-3767	MMT-deoxy Guanosine (n-ibu) p-methoxy phosphoramidite, *M.W. 770.85*	$25	$45	$80	$155	$365

Important: Deprotection Conditions

- For natural phosphodiester oligonucleotides, use thiopenol solution (catalog#: RN-1465 on pages 17-24) to thoroughly remove the p-methoxy group prior to ammonia base deprotection.
- To make p-methoxy phosphotriester oligonucleotides, use PAC protected p-methoxy phosphoramidites listed on page #101 in combination with our ammonia free deprotection solution listed on page #98.

Please see page #101 for p-methoxy phosphoramidites with Labile base deprotection (p-methoxy PAC Amidites).

For a description of the advantages of using 5'-MMT nucleoside phosphoramidites, please see page #2.

Please Indicate Synthesizer when Ordering

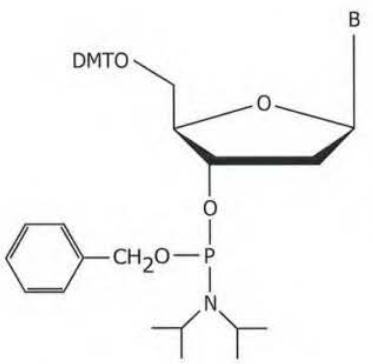
ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

ChemGenes Exhibit 2030 - Page 8

Oligo Synthesis Products

Phosphoramidites and Supports for Natural DNA Synthesis



p-o-benzyl Phosphoramidites

B	Protection	Catalog#
A	n-bz	ANP-6731
C	n-bz	ANP-6732
G	n-ibu	ANP-6733
T	n/a	ANP-6734

Catalog #	Product name	100mg	500mg	1gm
ANP-6731	deoxy Adenosine (n-bz) p-o-benzyl phosphoramidite, *M.W. 894.99*	$24	$68	$128
ANP-6732	deoxy Cytidine (n-bz) p-o-benzyl phosphoramidite, *M.W. 870.97*	$24	$68	$128
ANP-6733	deoxy Guanosine (n-ibu) p-o-benzyl phosphoramidite, *M.W. 876.98*	$24	$68	$128
ANP-6734	Thymidine p-o-benzyl phosphoramidite, *M.W. 781.87*	$22	$65	$115

Applications for p-o-benzyl phosphoramidite:

- Synthesis of Natural DNA fragments.
- Cleavage of p-o-benzyl phosphate occurs smoothly with aqueous ammonia.
- The synthesis of sequence specific phosphoramidites.

ref: *John Nielson and Marvin H. Caruthers, J. Am Chem Soc., 110, 6275-6276 (1988)*

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

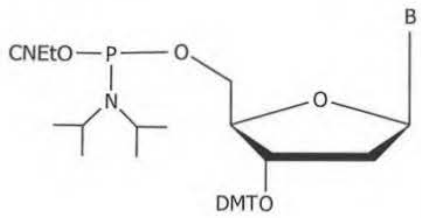
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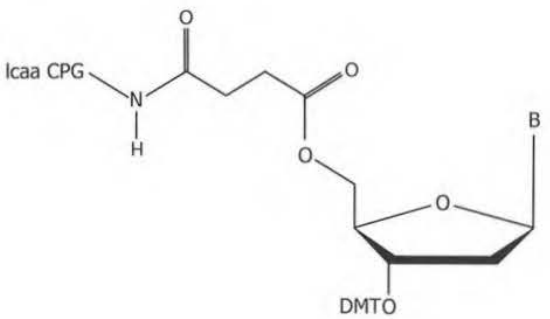
Phosphoramidites and Supports for Natural DNA Synthesis



Reverse DNA Synthesis

B	Protection	Catalog#
A	n-bz	ANP-4671
C	n-bz	ANP-4672
G	n-ibu	ANP-4673
T	n/a	ANP-4674

Catalog #	Product Name	250mg	500mg	1gm	2gm
ANP-4671	3'-DMT deoxy Adenosine (n-bz) 5'-CED phosphoramidite, *M.W. 857.92*	$55	$100	$195	$380
ANP-4672	3'-DMT deoxy Cytidine (n-bz) 5'-CED phosphoramidite, *M.W. 833.89*	$55	$100	$195	$380
ANP-4673	3'-DMT deoxy Guanosine (n-ibu) 5'-CED phosphoramidite, *M.W. 839.90*	$55	$100	$195	$380
ANP-4674	3'-DMT Thymidine 5'-CED phosphoramidite, *M.W. 744.80*	$55	$100	$195	$380



Standard CPGs for Reverse DNA Synthesis

B	Protection	Catalog #
A	n-bz	N-3351
C	n-bz	N-3352
G	n-ibu	N-3353
T	n/a	N-3354

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-3351-05	3'-DMT deoxy Adenosine	500Å	$45	$350	$100	$150	$200	$300
N-3351-10	(n-bz) 5'-lcaa CPG	1000Å						
N-3352-05	3'-DMT deoxy Cytidine	500Å	$45	$350	$100	$150	$200	$300
N-3352-10	(n-bz) 5'-lcaa CPG	1000Å						
N-3353-05	3'-DMT deoxy Guanosine	500Å	$45	$350	$100	$150	$200	$300
N-3353-10	(n-ibu) 5'-lcaa CPG	1000Å						
N-3354-05	3'-DMT Thymidine	500Å	$45	$350	$100	$150	$200	$300
N-3354-10	5'-lcaa CPG	1000Å						

Application of Reverse Phosphoramidites:

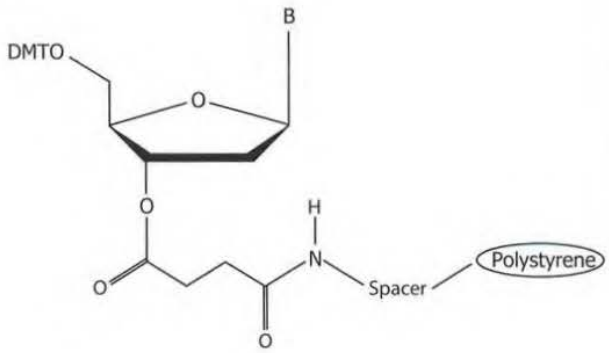
- Synthesis of 3'-3'-linked DNA.
- Synthesis of special oligonucleotide required to be coupled at the 5'-end selectively.
- Synthesis of oligonucleotides from left to right (5'-3' direction)

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ChemGenes Exhibit 2030 - Page 10

Oligo Synthesis Products

Phosphoramidites and Supports for Natural DNA Synthesis



Natural DNA with Succinyl Polystyrene

B	Protection	Catalog #
A	n-bz	N-7501
C	n-bz	N-7502
G	n-ibu	N-7503
T	n/a	N-7504
C	n-acetyl	N-7505

Catalog #	Product Name	Pore Size	Particle Size	Bulk Polystyrene Loading 30-40 μm/gm 100 mg	1 gm	5 gm	pack of 4 cols. 40 nmole	.02 μmole	1.0 μmole	pack of 10 cols. 40 nmole	0.2 μmole	1.0 μmole
N-7501-05	deoxy Adenosine (n-bz) succinyl Polystyrene	500Å	60-70 microns	$22	$110	$440	$26	$32	$40	$52	$64	$80
N-7502-05	deoxy Cytidine (n-bz) succinyl Polystyrene	500Å	60-70 microns	$22	$110	$440	$26	$32	$40	$52	$64	$80
N-7503-05	deoxy Guanosine (n-ibu) succinyl Polystyrene	500Å	60-70 microns	$22	$110	$440	$26	$32	$40	$52	$64	$80
N-7504-05	Thymidine succinyl Polystyrene	500Å	60-70 microns	$22	$110	$440	$26	$32	$40	$52	$64	$80
N-7505-05	deoxy Cytidine (n-acetyl) succinyl Polystyrene	500Å	60-70 microns	$22	$110	$440	$26	$32	$40	$52	$64	$80

ChemGenes offers unique polystyrene supports and columns that have special appeal due to rigidity, swelling, and inertness towards moisture and water.

Our polystyrenes have a special linker and pore size (500Å). This unique cross-linking nature matches very closely with the commonly used CPG (500Å).

Our supports have consistently displayed outstanding performance for the synthesis of medium length oligos of varying sizes.

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

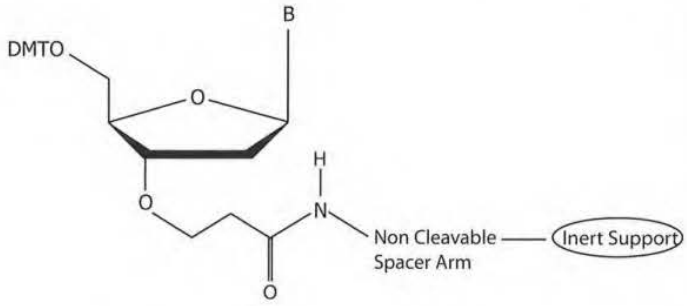
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Phosphoramidites and Supports for Natural DNA Synthesis



Non Cleavable Supports and Columns

B	Protection	Catalog #
A	n-bz	N-7521
C	n-bz	N-7522
G	n-ibu	N-7523
T	n/a	N-7524

Catalog #	Product Name	Pore Size	Particle Size	Bulk loading 30-40 µm/gm 100 mg	Bulk loading 30-40 µm/gm 1 gm	pack of 4 cols. 40 nmole	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 40 nmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-7521-15 N-7521-60	deoxy Adenosine (n-bz) 3'-non-cleavable long chain spacer	300Å	15-20 µM 60-70 µM	$55	$280	$110	$130	$150	$220	$260	$300
N-7522-15 N-7522-60	deoxy Cytidine (n-bz) 3'-non-cleavable long chain spacer	300Å	15-20 µM 60-70 µM	$55	$280	$110	$130	$150	$220	$260	$300
N-7523-15 N-7523-60	deoxy Guanosine (n-ibu) 3'-non-cleavable long chain spacer	300Å	15-20 µM 60-70 µM	$55	$280	$110	$130	$150	$220	$260	$300
N-7524-15 N-7524-60	Thymidine 3'-non-cleavable long chain spacer	300Å	15-20 µM 60-70 µM	$55	$280	$110	$130	$150	$220	$260	$300

Non Cleavable Supports and Columns

(Applications include Affinity Chromatography & One bead one compound combinatorial libraries)

ChemGenes has developed a non-cleavable support, which is inert in nature and is amenable to oligonucleotide synthesis. Using our irreversible support leads to oligo synthesis of coupling efficiencies of 98-99% per step for a chain length of 20-40 mers.

Our Inert beads are uniform particles. The support bound oligonucleotides, which are irreversibly bound, have extensive applications in molecular biology. Some of the common applications are as follows:

- Affinity based chromatography for oligonucleotides, proteins, and other macromolecules.
- Design and construction of one bead one compound libraries by split sythesis methods.[1]
- PCR amplification is possible with the support attached to oligonucleotides. See photo to the right for bead based aptamer library screening, sequencing analysis of PCR products.
- Molecular Biology R&D experiments on bead bound oligonucleotides have performed beyond expectations.

1. This method has been used by Gorenstein & Coworkers *(Xianbin Yang, Suzanne E. Bassett, Xin Li, Bruce A. Luxon, Norbert K. Herzog, Robert E. Shope, Judy Aronson, Tari W. Prow, James F. Leary, Romy Kirby, Andrew D. Ellington, and David G. Gorenstein, Nucleic Acid Research, 2002, vol 30, e 132)* for the selection of combinatorial oligonucleotides aptamer and PCR amplification followed by sequencing.

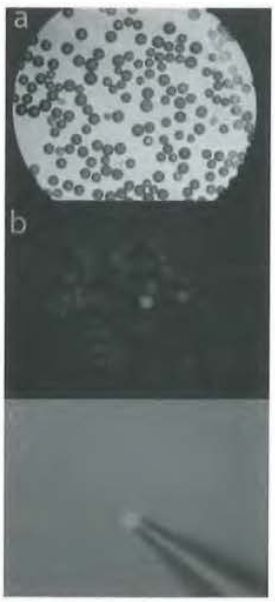
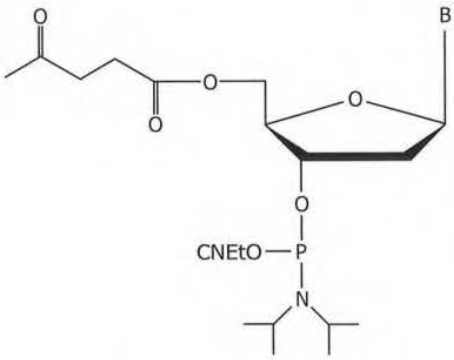


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Oligo Synthesis Products

Phosphoramidites and Supports for Natural DNA Synthesis



Levulinyl DNA Phosphoramidites with Standard Base Protection

B	Protection	Catalog#
A	n-bz	ANP-5001
C	n-bz	ANP-5002
G	n-ibu	ANP-5003
T	n/a	ANP-5004

Catalog#	Product Name	250mg	500mg	1gm	2gm
ANP-5001	5'-Levulinyl deoxy Adenosine (n-bz) CED phosphoramidite, *M.W. 653.67*	$50	$90	$160	$350
ANP-5002	5'-Levulinyl deoxy Cytidine (n-bz) CED phosphoramidite, *M.W. 629.64*	$50	$90	$160	$350
ANP-5003	5'-Levulinyl deoxy Guanosine (n-ibu) CED phosphoramidite, *M.W. 635.65*	$50	$90	$160	$350
ANP-5004	5'-Levulinyl Thymidine CED phosphoramidite, *M.W. 540.55*	$50	$90	$160	$350

Levulinyl Deprotection Solution

Catalog#	Pricing
CLP-7171	$22.00 / 5 ml
	$36.00 / 10 ml

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

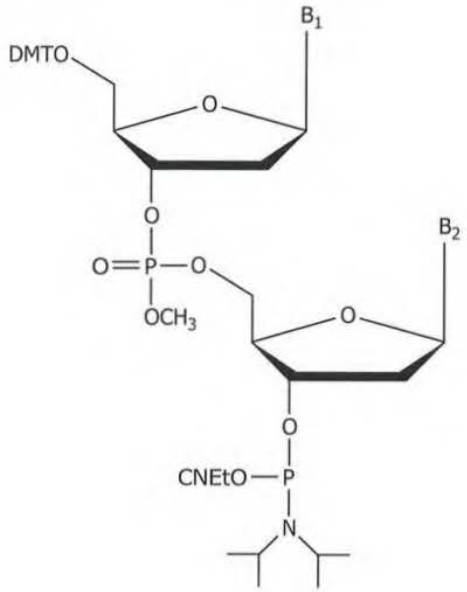
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Phosphoramidites and Supports for Natural DNA Synthesis



Dimers

Catalog#	Pricing (per Dimer)
Pricing applies to all dimers listed below	$ 600.00 / 100 µmole $1,100.00 / 250 mg

B_1	B_1 Protection	B_2	B_2 Protection	Catalog #	M.W.	Chemical Formula
A	n-bz	A	n-bz	ANP-2501	1289.27	$C_{65}H_{70}N_{12}O_{13}P_2$
A	n-bz	C	n-bz	ANP-2502	1265.25	$C_{64}H_{70}N_{10}O_{14}P_2$
A	n-bz	G	n-ibu	ANP-2503	1271.26	$C_{62}H_{72}N_{12}O_{14}P_2$
A	n-bz	T	n/a	ANP-2504	1176.15	$C_{58}H_{67}N_9O_{14}P_2$
C	n-bz	A	n-bz	ANP-2505	1265.25	$C_{64}H_{70}N_{10}O_{14}P_2$
C	n-bz	C	n-bz	ANP-2506	1241.22	$C_{63}H_{70}N_8O_{15}P_2$
C	n-bz	G	n-ibu	ANP-2507	1247.23	$C_{61}H_{72}N_{10}O_{15}P_2$
C	n-bz	T	n/a	ANP-2508	1152.13	$C_{57}H_{67}N_7O_{15}P_2$
G	n-ibu	A	n-bz	ANP-2509	1271.26	$C_{62}H_{72}N_{12}O_{14}P_2$
G	n-ibu	C	n-bz	ANP-2510	1247.23	$C_{61}H_{72}N_{10}O_{15}P_2$
G	n-ibu	G	n-ibu	ANP-2511	1253.24	$C_{59}H_{74}N_{12}O_{15}P_2$
G	n-ibu	T	n/a	ANP-2512	1158.14	$C_{55}H_{69}N_9O_{15}P_2$
T	n/a	A	n-bz	ANP-2513	1176.15	$C_{58}H_{67}N_9O_{14}P_2$
T	n/a	C	n-bz	ANP-2514	1152.13	$C_{57}H_{67}N_7O_{15}P_2$
T	n/a	G	n-ibu	ANP-2515	1158.14	$C_{55}H_{69}N_9O_{15}P_2$
T	n/a	T	n/a	ANP-2516	1063.03	$C_{51}H_{64}N_6O_{15}P_2$

Dimer Phosphoramidites:

Due to the presence of p-methoxy in oligonucleotide chains, thiophenol deprotection of the p-methoxy group must be carried out prior to ammonia deprotection of bases. See pages 17-24 for thiophenol solution.

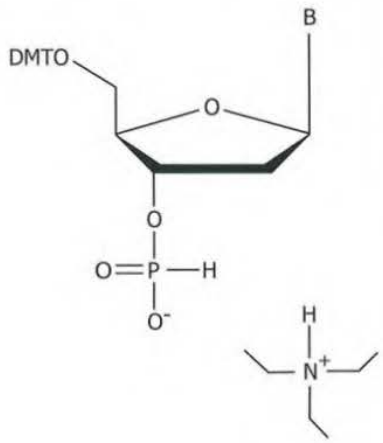
Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

Oligo Synthesis Products

Phosphoramidites and Supports for Natural DNA Synthesis



H-Phosphonate Monomers

B	Protection	Catalog#
A	n-bz	ANP-3410
C	n-bz	ANP-3411
G	n-ibu	ANP-3412
T	n/a	ANP-3413

Catalog#	Product name	250mg	500mg
ANP-3410	deoxy Adenosine (n-bz) H-Phosphonate TEA Salt, *M.W. 822.87*	$30	$50
ANP-3411	deoxy Cytidine (n-bz) H-Phosphonate TEA Salt, *M.W. 798.84*	$30	$50
ANP-3412	deoxy Guanosine (n-ibu) H-Phosphonate TEA Salt, *M.W. 804.86*	$30	$50
ANP-3413	Thymidine H-Phosphonate TEA Salt, *M.W. 709.76*	$30	$50

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

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Ancillary Reagents for Automated DNA Synthesizers
(For H-Phosphonate Chemistry)

Catalog #	Product Name	Qty.	Price
RN-6464	Dipentafluorophenyl Carbonate* (Highly efficient coupling reagent for H-phosphonate chemistry and superior to Adamantane Carbonyl Chloride)	2 gm 5 gm	$ 85 $190
RN-6664	Activator for monomers and Capping Reagent (Adamantane Carbonyl Chloride)	2 gm	$ 20
RN-4523-P	Acetonitrile/Pyridine(50:50), Anhydrous (Diluent for Monomers)	100 ml	$ 28
RN-1356-P2	Acetonitrile/Pyridine(95:5), Anhydrous (Diluent for Activator)	100 ml	$ 28
RN-7684-AP	Acetonitrile/Pyridine (Wash Solvent)	960 ml	$ 77
RN-6645-IP	Capping Reagent (Isopropyl Phosphite/Acetonitrile/Pyridine)	45 ml	$ 37
RN-1210-PHT	**Oxidation Solution 1 (Iodine in Pyridine/H_2O/THF)	45 ml	$ 18
RN-1220-THT	**Oxidation Solution 2 (THF/H_2O/TEA)	45 ml	$ 18

* *V.A. Efimov,A.L. Kalinkina, and O.G. Chakhmakhcheva, Nucl. Acids. Res., Vol. 2 5337-5344 (1993).*

** Note: Both oxidation solutions 1 & 2 are needed for H-phosphonate oxidation.

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

ABI Oligonucleotide Synthesizers

Catalog #	Product Name	Qty.	Price
RN-1447-S-AB30	***Acetonitrile Anhydrous	45 ml	$ 9
RN-1447-M-AB30	(Phosphoramidite Diluent & Washings)	100 ml	$ 14
RN-1447-L-AB30		450 ml	$ 20
RN-1448-M-AB30	Acetonitrile Wash Grade	1 L	$ 32
RN-1448-L-AB30		4 L	$ 90
RN-1451-SS-AB30	***Activation Reagent	45 ml	$ 35
RN-1451-S-AB30	(0.45 M Tetrazole/Acetonitrile)	200 ml	$ 87
RN-1451-M-AB30		450 ml	$140
RN-1451-L-AB30		2 L	$410
RN-1466-SS-AB30	***Activation Reagent	45 ml	$ 35
RN-1466-S-AB30	(0.25 M 5-Ethylthio Tetrazole/Acetonitrile)	200 ml	$ 87
RN-1466-M-AB30		450 ml	$140
RN-1466-L-AB30		2 L	$410
RN-1467-SS-AB30	***Activation Reagent	45 ml	$ 35
RN-1467-S-AB30	(0.25 M 4,5-Dicyanoimidazole/Acetonitrile)	200 ml	$ 87
RN-1467-M-AB30		450 ml	$140
RN-1467-L-AB30		2 L	$410
RN-1458-SS-AB30	CAP A	45 ml	$ 15
RN-1458-S-AB30	(Acetic Anhydride/Pyridine/THF)	200 ml	$ 25
RN-1458-M-AB30		450 ml	$ 54
RN-1458-L-AB30		2 L	$230
RN-1173-S-AB30	CAP A for PAC Chemistry (Phenoxy Acetic Anhydride)	180 ml	$125
RN-1481-SS-AB30	CAP B	45 ml	$ 15
RN-1481-S-AB30	(10% N-Methylimidazole/THF)	200 ml	$ 25
RN-1481-M-AB30		450 ml	$ 54
RN-1481-L-AB30		2 L	$260
RN-7776-SS-AB30	CAP B	45 ml	$ 15
RN-7776-S-AB30	(16% N-Methylimidazole/THF)	200 ml	$ 25
RN-7776-M-AB30		450 ml	$ 54
RN-7776-L-AB30		2 L	$260
RN-1468-M-AB30	DMT Removal Reagent	450 ml	$ 47
RN-1468-L-AB30	(3% Dichloroacetic Acid/Dichloromethane)	2 L	$220
RN-1462-M-AB30	DMT Removal Reagent	450 ml	$ 27
RN-1462-L-AB30	(3% Trichloroacetic Acid/Dichloromethane)	2 L	$108
RN-1455-S-AB30	Oxidation Solution	200 ml	$ 20
RN-1455-M-AB30	(0.02 M Iodine/Pyridine/H_2O/THF)	450 ml	$ 40
RN-1455-L-AB30		2 L	$168
RN-1456-S-AB30	Oxidation Solution	200 ml	$ 20
RN-1456-M-AB30	(0.1 M Iodine/Pyridine/H_2O/THF)	450 ml	$ 40
RN-1456-L-AB30		2 L	$168
RN-1465-AB30	*Thiophenol/Triethylamine/Dioxane	10 ml	$ 38
RN-1535-L-AB30	**Sulfurizing Reagent (Beaucage Reagent) for Introduction of Phosphorothioate (S-oligonucleotide)	2 gm	$ 90
BL-1536-S-AB30	Silanized Bottles for Beaucage Reagent	100 ml	$ 8
BL-1536-M-AB30		250 ml	$ 8
BL-1536-L-AB30		500 ml	$ 8
RN-1450-AB30	AMA Reagent	25 ml	$ 25

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ABI 3900 Oligonucleotide Synthesizers

Catalog #	Product Name	Qty.	Price
RN-1447-L-AB39	***Acetonitrile Anhydrous (Phosphoramidite Diluent & Washings)	450 ml	$ 20
RN-1448-M-AB39	Acetonitrile Wash Grade	1 L	$ 32
RN-1448-L-AB39		4 L	$ 90
RN-1451-M-AB39	***Activation Reagent	450 ml	$140
RN-1451-L-AB39	(0.45 M Tetrazole/Acetonitrile)	2 L	$410
RN-1466-M-AB39	***Activation Reagent	450 ml	$140
RN-1466-L-AB39	(0.25 M 5-Ethylthio Tetrazole/Acetonitrile)	2 L	$410
RN-1467-M-AB39	***Activation Reagent	450 ml	$140
RN-1467-L-AB39	(0.25 M 4,5-Dicyanoimidazole/Acetonitrile)	2 L	$410
RN-1458-M-AB39	CAP A	450 ml	$ 40
RN-1458-L-AB39	(Acetic Anhydride/Pyridine/THF)	2 L	$168
RN-1173-S-AB39	CAP A for PAC Chemistry (Phenoxy Acetic Anhydride)	180 ml	$125
RN-1481-M-AB39	CAP B	450 ml	$ 40
RN-1481-L-AB39	(10% N-Methylimidazole/THF)	2 L	$168
RN-7776-M-AB39	CAP B	450 ml	$ 40
RN-7776-L-AB39	(16% N-Methylimidazole/THF)	2 L	$168
RN-1468-M-AB39	DMT Removal Reagent	450 ml	$ 47
RN-1468-L-AB39	(3% Dichloroacetic Acid/Dichloromethane)	2 L	$220
RN-1462-M-AB39	DMT Removal Reagent	450 ml	$ 27
RN-1462-L-AB39	(3% Trichloroacetic Acid/Dichloromethane)	2 L	$108
RN-1455-M-AB39	Oxidation Solution	450 ml	$ 60
RN-1455-L-AB39	(0.02 M Iodine/Pyridine/H_2O/THF)	2 L	$250
RN-1456-M-AB39	Oxidation Solution	450 ml	$ 60
RN-1456-L-AB39	(0.1 M Iodine/Pyridine/H_2O/THF)	2 L	$250
RN-1465-AB39	*Thiophenol/Triethylamine/Dioxane	10 ml	$ 38
RN-1535-L-AB39	**Sulfurizing Reagent (Beaucage Reagent) for Introduction of Phosphorothioate (S-oligonucleotide)	2 gm	$ 90
BL-1536-S-AB39	Silanized Bottles for Beaucage Reagent	100 ml	$ 8
BL-1536-M-AB39		250 ml	$ 8
BL-1536-L-AB39		500 ml	$ 8
RN-1450-AB39	AMA Reagent	25 ml	$ 25

* Used in selective removal of p-methoxy groups in oligos.

** For the separate listing of Beaucage Reagent see page 134.

*** Moisture Content: less than 50 ppm. Bottles are prepacked with drying traps for an extra moisture free environment.

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Beckman Oligonucleotide Synthesizers

Catalog #	Product Name	Qty.	Price
RN-1447-S-BK	***Acetonitrile Anhydrous	45 ml	$ 9
RN-1447-M-BK	(Phosphoramidite Diluent & Washings)	100 ml	$ 14
RN-1447-L-BK		450 ml	$ 20
RN-1448-M-BK	Acetonitrile Wash Grade	1 L	$ 32
RN-1448-L-BK		4 L	$ 90
RN-1451-S-BK	***Activation Reagent	180 ml	$ 80
RN-1451-M-BK	(0.45 M Tetrazole/Acetonitrile)	450 ml	$140
RN-1466-S-BK	***Activation Reagent	180 ml	$ 80
RN-1466-M-BK	(0.25 M 5-Ethylthio Tetrazole/Acetonitrile)	450 ml	$140
RN-1467-S-BK	***Activation Reagent	180 ml	$ 80
RN-1467-M-BK	(0.25 M 4,5-Dicyanoimidazole/Acetonitrile)	450 ml	$140
RN-7778-SS-BK	CAP A	180 ml	$ 25
RN-7778-S-BK	(Acetic Anhydride/THF/2,6 Lutidine)	450 ml	$ 54
RN-7780-S-BK	CAP 2	180 ml	$ 28
RN-7780-M-BK	(17% N-Methylimidazole/THF)	450 ml	$ 60
RN-1173-S-BK	CAP A for PAC Chemistry (Phenoxy Acetic Anhydride)	180 ml	$125
RN-1468-M-BK	DMT Removal Reagent	450 ml	$ 47
RN-1468-L-BK	(3% Dichloroacetic Acid/Dichloromethane)	2 L	$220
RN-1462-M-BK	DMT Removal Reagent	450 ml	$ 27
RN-1462-L-BK	(3% Trichloroacetic Acid/Dichloromethane)	2 L	$108
RN-1455-S-BK	Oxidation Solution	200 ml	$ 20
RN-1455-M-BK	(0.02 M Iodine/Pyridine/H_2O/THF)	450 ml	$ 40
RN-1456-S-BK	Oxidation Solution	200 ml	$ 20
RN-1456-M-BK	(0.1 M Iodine/Pyridine/H_2O/THF)	450 ml	$ 40
RN-1465-BK	*Thiophenol/Triethylamine/Dioxane	10 ml	$ 38
RN-1535-S-BK	**Sulfurizing Reagent (Beaucage Reagent) for	100 mg	$ 15
RN-1535-M-BK	Introduction of Phosphorothioate (S-oligonucleotide)	1 gm	$ 50
RN-1535-L-BK		2 gm	$ 90
BL-1536-S-BK	Silanized Bottles for Beaucage Reagent	100 ml	$ 8
BL-1536-M-BK		250 ml	$ 8
BL-1536-L-BK		500 ml	$ 8
AD-1536-BK	Column Support Adapter	Each	$ 30
RN-1450-BK	AMA Reagent	25 ml	$ 25
RN-1430-BK	Syringes	box of 100	$ 45
RN-1431-BK	Vials	box of 100	$ 30

* Used in selective removal of p-methoxy groups in oligos.

** For the separate listing of Beaucage Reagent see page 134.

*** Moisture Content: less than 50 ppm. Bottles are prepacked with drying traps for an extra moisture free environment.

The Beckman oligonucleotide synthesizer oligo 1000 series was designed to perform multiple oligo synthesis and utilizes ultrafast DNA synthesis technology. The total cleavage time of oligonucleotide from the solid support followed by deprotection requires 10 min.

When ordering Beckman supports and columns, please order AB30 supports and columns and then order the adapter so that they can be utilized by the Beckman Synthesizer.

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BioSearch Oligonucleotide Synthesizers, Including Biosearch 8000 Series and BioSearch Cyclone Instruments

Catalog #	Product Name	Qty.	Price
RN-1447-S-SH	***Acetonitrile Anhydrous	45 ml	$ 9
RN-1447-M-SH	(Phosphoramidite Diluent & Washings)	100 ml	$ 14
RN-1447-L-SH		450 ml	$ 20
RN-1448-M-SH	Acetonitrile Wash Grade	1 L	$ 32
RN-1448-L-SH		4 L	$ 90
RN-1451-S-SH	***Activation Reagent	150 ml	$ 70
RN-1451-M-SH	(0.45 M Tetrazole/Acetonitrile)	450 ml	$140
RN-1451-L-SH		2 L	$410
RN-1466-S-SH	***Activation Reagent	150 ml	$ 70
RN-1466-M-SH	(0.25 M 5-Ethylthio Tetrazole/Acetonitrile)	450 ml	$140
RN-1466-L-SH		2 L	$410
RN-1467-S-SH	***Activation Reagent	150 ml	$ 70
RN-1467-M-SH	(0.25 M 4,5-Dicyanoimidazole/Acetonitrile)	450 ml	$140
RN-1467-L-SH		2 L	$410
RN-7777-S-SH	CAP A	100 ml	$ 20
RN-7777-M-SH	(Acetic Anhydride/THF)	450 ml	$ 40
RN-7777-L-SH		2 L	$168
RN-1173-S-SH	CAP A for PAC Chemistry (Phenoxy Acetic Anhydride)	180 ml	$125
RN-7779-S-SH	CAP B	100 ml	$ 20
RN-7779-M-SH	(10% N-Methylimidazole/THF/Pyridine)	450 ml	$ 40
RN-7779-L-SH		2 L	$168
RN-1579-M-SH	DMT Removal Reagent	450 ml	$ 47
RN-1579-L-SH	(2.5% Dichloroacetic Acid/Dichloromethane)	2 L	$220
RN-1462-M-SH	DMT Removal Reagent	450 ml	$ 27
RN-1462-L-SH	(3% Trichloroacetic Acid/Dichloromethane)	2 L	$108
RN-1455-S-SH	Oxidation Solution	240 ml	$ 25
RN-1455-M-SH	(0.02 M Iodine/Pyridine/H_2O/THF)	450 ml	$ 40
RN-1455-L-SH		2 L	$168
RN-1456-S-SH	Oxidation Solution	240 ml	$ 25
RN-1456-M-SH	(0.1 M Iodine/Pyridine/H_2O/THF)	450 ml	$ 40
RN-1456-L-SH		2 L	$168
RN-1465-SH	*Thiophenol/Triethylamine/Dioxane	10 ml	$ 38
RN-1535-S-SH	**Sulfurizing Reagent (Beaucage Reagent) for	100 mg	$ 15
RN-1535-M-SH	Introduction of Phosphorothioate (S-oligonucleotide)	1 gm	$ 50
RN-1535-L-SH		2 gm	$ 90
BL-1536-S-SH	Silanized Bottles for Beaucage Reagent	100 ml	$ 8
BL-1536-M-SH		250 ml	$ 8
BL-1536-L-SH		500 ml	$ 8
RN-1450SH	AMA Reagent	25 ml	$ 25

* Used in selective removal of p-methoxy groups in oligos.

** For the separate listing of Beaucage Reagent see page 134.

*** Moisture Content: less than 50 ppm. Bottles are prepacked with drying traps for an extra moisture free environment.

Although Biosearch 8000 series and Biosearch Cyclone instruments are presently discontinued, these instruments are still being used in many laboratories. ChemGenes provides the compatible ancillary reagent solutions, columns, and phosphoramidites for these instruments.

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Expedite Oligonucleotide Synthesizers

Catalog #	Product Name	8905 Qty.	8905 Price	8909 Qty.	8909 Price
RN-1447-S-EX	***Acetonitrile Anhydrous	45 ml	$ 9	45 ml	$ 9
RN-1447-M-EX	(Phosphoramidite Diluent & Washings)	100 ml	$ 14	100 ml	$ 14
RN-1447-L-EX		450 ml	$ 20	450 ml	$ 20
RN-1448-M-EX	Acetonitrile Wash Grade	1 L	$ 32	1 L	$ 32
RN-1448-L-EX		4 L	$ 90	4 L	$ 90
RN-1451-SS-EX	***Activation Reagent	60 ml	$ 40		
RN-1451-S-EX	(0.45 M Tetrazole/Acetonitrile)	200 ml	$ 87	200 ml	$ 87
RN-1451-M-EX		450 ml	$140	450 ml	$140
RN-1451-L-EX		2 L	$410	2 L	$410
RN-1466-SS-EX	***Activation Reagent	60 ml	$ 40		
RN-1466-S-EX	(0.25 M 5-Ethylthio Tetrazole/Acetonitrile)	200 ml	$ 87	200 ml	$ 87
RN-1466-M-EX		450 ml	$140	450 ml	$140
RN-1466-L-EX		2 L	$410	2 L	$410
RN-1467-SS-EX	***Activation Reagent	60 ml	$ 40		
RN-1467-S-EX	(0.25 M 4,5-Dicyanoimidazole/Acetonitrile)	200 ml	$ 87	200 ml	$ 87
RN-1467-M-EX		450 ml	$140	450 ml	$140
RN-1467-L-EX		2 L	$410	2 L	$410
RN-1458-SS-EX	CAP A	60 ml	$ 17		
RN-1458-S-EX	(Acetic Anhydride/Pyridine/THF)	90 ml	$ 19	200 ml	$ 25
RN-1458-M-EX		450 ml	$ 54	450 ml	$ 54
RN-1458-L-EX		2 L	$230	2 L	$230
RN-1173-S-EX	CAP A for PAC Chemistry (Phenoxy Acetic Anhydride)	180 ml	$125	180 ml	$125
RN-1481-SS-EX	CAP B	60 ml	$ 17		
RN-1481-S-EX	(10% N-Methylimidazole/THF)	90 ml	$ 19	200 ml	$ 25
RN-1481-M-EX		450 ml	$ 54	450 ml	$ 54
RN-1481-L-EX		2 L	$260	2 L	$230
RN-7776-SS-EX	CAP B	60 ml	$ 17		
RN-7776-S-EX	(16% N-Methylimidazole/THF)	90 ml	$ 19	200 ml	$ 25
RN-7776-M-EX		450 ml	$ 54	450 ml	$ 54
RN-7776-L-EX		2 L	$260	2 L	$230
RN-1468-M-EX	DMT Removal Reagent	180 ml	$ 25	180 ml	$ 25
RN-1468-L-EX	(2.5% Dichloroacetic Acid/Dichloromethane)	900 ml	$ 85	900 ml	$ 85
RN-1462-M-EX	DMT Removal Reagent	180 ml	$ 15	180 ml	$ 15
RN-1462-L-EX	(3% Trichloroacetic Acid/Dichloromethane)	900 ml	$ 75	900 ml	$ 75
RN-1455-S-EX	Oxidation Solution	60 ml	$ 10	60 ml	$ 10
RN-1455-M-EX	(0.02 M Iodine/Pyridine/H_2O/THF)	200 ml	$ 20	200 ml	$ 20
RN-1455-L-EX		450 ml	$ 40	450 ml	$ 40
RN-1456-S-EX	Oxidation Solution	200 ml	$ 20	n/a	n/a
RN-1456-M-EX	(0.1 M Iodine/Pyridine/H_2O/THF)	450 ml	$ 40	n/a	n/a
RN-1456-L-EX		2 L	$168	n/a	n/a
RN-1465-EX	*Thiophenol/Triethylamine/Dioxane	10 ml	$ 38	10 ml	$ 38
RN-1535-S-EX	**Sulfurizing Reagent (Beaucage Reagent) for	100 mg	$ 15	100 mg	$ 15
RN-1535-M-EX	Introduction of Phosphorothioate (S-oligonucleotide)	1 gm	$ 50	1 gm	$ 50
RN-1535-L-EX		2 gm	$ 90	2 gm	$ 90
BL-1536-S-EX	Silanized Bottles for Beaucage Reagent	100 ml		100 ml	$ 8
BL-1536-M-EX		250 ml	$ 8	250 ml	$ 8
BL-1536-L-EX		500 ml		500 ml	$ 8
RN-1450-EX	AMA Reagent	25 ml	$ 25	25 ml	$ 25

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Pharmacia Gene Assembler Oligonucleotide Synthesizers

Catalog #	Product Name	Qty.	Price
RN-1447-S-PH	***Acetonitrile Anhydrous	45 ml	$ 9
RN-1447-M-PH	(Phosphoramidite Diluent & Washings)	100 ml	$ 14
RN-1447-L-PH		450 ml	$ 20
RN-1448-M-PH	Acetonitrile Wash Grade	1 L	$ 32
RN-1448-L-PH		4 L	$ 90
RN-1451-SS-PH	***Activation Reagent	45 ml	$ 35
RN-1451-S-PH	(0.45 M Tetrazole/Acetonitrile)	180 ml	$ 80
RN-1466-SS-PH	***Activation Reagent	45 ml	$ 35
RN-1466-S-PH	(0.25 M 5-Ethylthio Tetrazole/Acetonitrile)	180 ml	$ 80
RN-1467-SS-PH	***Activation Reagent	45 ml	$ 35
RN-1467-S-PH	(0.25 M 4,5-Dicyanoimidazole/Acetonitrile)	180 ml	$ 80
RN-7778-SS-PH	CAP A	100 ml	$ 20
RN-7778-M-PH	(Acetic Anhydride/THF/2,6 Lutidine)	450 ml	$ 40
RN-1173-S-PH	CAP A for PAC Chemistry (Phenoxy Acetic Anhydride)	180 ml	$125
RN-1481-SS-PH	CAP B	50 ml	$ 16
RN-1481-M-PH	(10% N-Methylimidazole/THF)	180 ml	$ 24
RN-1432-SS-PH	CAP B	50 ml	$ 16
RN-1432-M-PH	(17% 4-Dimethylamino Pyridine/THF)	180 ml	$ 24
RN-1433-M-PH	DMT Removal Reagent	450 ml	$ 47
RN-1433-L-PH	(2.5% Dichloroacetic Acid/Dichloroethane)	2 L	$220
RN-1434-M-PH	DMT Removal Reagent	450 ml	$ 27
RN-1434-L-PH	(3% Trichloroacetic Acid/Dichloroethane)	2 L	$108
RN-1455-S-PH	Oxidation Solution	240 ml	$ 25
RN-1455-M-PH	(0.02 M Iodine/Pyridine/H_2O/THF)	450 ml	$ 40
RN-1456-S-PH	Oxidation Solution	240 ml	$ 25
RN-1456-M-PH	(0.1 M Iodine/Pyridine/H_2O/THF)	450 ml	$ 40
RN-1465-PH	*Thiophenol/Triethylamine/Dioxane	10 ml	$ 38
RN-1535-S-PH	**Sulfurizing Reagent (Beaucage Reagent) for	100 mg	$ 15
RN-1535-M-PH	Introduction of Phosphorothioate (S-oligonucleotide)	1 gm	$ 50
RN-1535-L-PH		2 gm	$ 90
BL-1536-S-PH	Silanized Bottles for Beaucage Reagent	100 ml	$ 8
BL-1536-M-PH		250 ml	$ 8
BL-1536-L-PH		500 ml	$ 8
RN-1450-PH	AMA Reagent	25 ml	$ 25

* Used in selective removal of p-methoxy groups in oligos.
** For the separate listing of Beaucage Reagent see page 134.
*** Moisture Content: less than 50 ppm. Bottles are prepacked with drying traps for an extra moisture free environment.

MerMade Oligonucleotide Synthesizers

Catalog #	Product Name	Qty.	Price
RN-1447-S-MR	***Acetonitrile Anhydrous	45 ml	$ 9
RN-1447-M-MR	(Phosphoramidite Diluent & Washings)	100 ml	$ 14
RN-1447-L-MR		450 ml	$ 20
RN-1448-M-MR	Acetonitrile Wash Grade	1 L	$ 32
RN-1448-L-MR		4 L	$ 90
RN-1451-M-MR	***Activation Reagent	450 ml	$140
RN-1451-L-MR	(0.45 M Tetrazole/Acetonitrile)	960 ml	$218
RN-1466-M-MR	***Activation Reagent	450 ml	$140
RN-1466-L-MR	(0.25 M 5-Ethylthio Tetrazole/Acetonitrile)	960 ml	$218
RN-1467-M-MR	***Activation Reagent	450 ml	$140
RN-1467-L-MR	(0.25 M 4,5-Dicyanoimidazole/Acetonitrile)	960 ml	$218
RN-7778-M-MR	CAP A	450 ml	$ 70
RN-7778-L-MR	(Acetic Anhydride/THF/2,6-Lutidine)	960 ml	$109
RN-1173-S-MR	CAP A for PAC Chemistry (Phenoxy Acetic Anhydride)	180 ml	$125
RN-1481-SS-MR	CAP B	450 ml	$ 70
RN-1481-S-MR	(10% N-Methylimidazole/THF)	960 ml	$109
RN-7776-SS-MR	CAP B	450 ml	$ 70
RN-7776-S-MR	(16% N-Methylimidazole/THF)	960 ml	$109
RN-1468-M-MR	DMT Removal Reagent	450 ml	$ 47
RN-1468-L-MR	(2.5% Dichloroacetic Acid/Dichloromethane)	960 ml	$220
RN-1462-M-MR	DMT Removal Reagent	450 ml	$ 27
RN-1462-L-MR	(3% Trichloroacetic Acid/Dichloromethane)	960 ml	$ 85
RN-1455-S-MR	Oxidation Solution	450 ml	$ 60
RN-1455-M-MR	(0.02 M Iodine/Pyridine/H_2O/THF)	960 ml	$135
RN-1456-S-MR	Oxidation Solution	450 ml	$ 60
RN-1456-M-MR	(0.1 M Iodine/Pyridine/H_2O/THF)	960 ml	$135
RN-1465-MR	*Thiophenol/Triethylamine/Dioxane	10 ml	$ 38
RN-1535-S-MR	**Sulfurizing Reagent (Beaucage Reagent) for	100 mg	$ 15
RN-1535-M-MR	Introduction of Phosphorothioate (S-oligonucleotide)	1 gm	$ 50
RN-1535-L-MR		2 gm	$ 90
BL-1536-S-MR	Silanized Bottles for Beaucage Reagent	100 ml	$ 8
BL-1536-M-MR		250 ml	$ 8
BL-1536-L-MR		500 ml	$ 8
RN-1450-MR	AMA Reagent	25 ml	$ 25

* Used in selective removal of p-methoxy groups in oligos.

** For the separate listing of Beaucage Reagent see page 134.

*** Moisture Content: less than 50 ppm. Bottles are prepacked with drying traps for an extra moisture free environment.

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PolyPlex Oligonucleotide Synthesizers

Catalog #	Product Name	Qty.	Price
RN-1447-S-PX	***Acetonitrile Anhydrous	45 ml	$ 9
RN-1447-M-PX	(Phosphoramidite Diluent & Washings)	100 ml	$ 14
RN-1447-L-PX		450 ml	$ 20
RN-1448-M-PX	Acetonitrile Wash Grade	1 L	$ 32
RN-1448-L-PX		4 L	$ 90
RN-1451-M-PX	***Activation Reagent	200 ml	$ 87
RN-1451-L-PX	(0.45 M Tetrazole/Acetonitrile)		
RN-1466-M-PX	***Activation Reagent	200 ml	$ 87
	(0.25 M 5-Ethylthio Tetrazole/Acetonitrile)		
RN-1467-M-PX	***Activation Reagent	200 ml	$ 87
	(0.25 M 4,5-Dicyanoimidazole/Acetonitrile)		
RN-1458-M-PX	CAP A	200 ml	$ 25
	(Acetic Anhydride/Pyridine/THF)		
RN-1173-S-PX	CAP A for PAC Chemistry	180 ml	$125
	(Phenoxy Acetic Anhydride)		
RN-1481-M-PX	CAP B	200 ml	$ 30
	(10% N-Methylimidazole/THF)		
RN-7776-M-PX	CAP B	200 ml	$ 35
	(16% N-Methylimidazole/THF)		
RN-1468-M-PX	DMT Removal Reagent	2 L	$220
	(3% Dichloroacetic Acid/Dichloromethane)		
RN-1462-L-PX	DMT Removal Reagent	2 L	$108
	(3% Trichloroacetic Acid/Dichloromethane)		
RN-1455-L-PX	Oxidation Solution	200 ml	$ 30
	(0.02 M Iodine/Pyridine/H_2O/THF)		
RN-1456-M-PX	Oxidation Solution	200 ml	$ 30
	(0.1 M Iodine/Pyridine/H_2O/THF)		
RN-1465-PX	*Thiophenol/Triethylamine/Dioxane	10 ml	$ 38
RN-1535-S-PX	**Sulfurizing Reagent (Beaucage Reagent) for	100 mg	$ 15
RN-1535-M-PX	Introduction of Phosphorothioate (S-oligonucleotide)	1 gm	$ 50
RN-1535-L-PX		2 gm	$ 90
BL-1536-S-PX	Silanized Bottles for Beaucage Reagent	100 ml	$ 8
BL-1536-M-PX		250 ml	$ 8
BL-1536-L-PX		500 ml	$ 8
RN-1450-PX	AMA Reagent	25 mk	$ 25

* Used in selective removal of p-methoxy groups in oligos.

** For the separate listing of Beaucage Reagent see page 134.

*** Moisture Content: less than 50 ppm. Bottles are prepacked with drying traps for an extra moisture free environment.

Oligo Synthesis Products

Phosphoramidites and Supports for Modified DNA Synthesis

Summary of Modified Deoxy Phosphoramidites & Supports

The incorporation of modified purines and pyrimidines has been utilized to optimize DNA-protein interactions and sequence recognition for many proteins and enzymes such as repressor proteins, restriction endonucleases, modification enzymes, and promoters *(J. W. Dubendorff, P. L. de Hasett, M. S. Rosendahl, M. H. Caruthers, J. Biol. Chem., 262, 892, 1987; C. A. Brennan, M. D. Van Cleve, R. I. Gumpert, J. Biol. Chem., 261, 7270 & 7279, 1986)*. Applications for a variety of key modifications are described on the following pages.

ChemGenes carries a wide variety of modifed DNA phosphoramidites and supports. The products are summarized below:

4-Thio and 4-Triazolyl Products
Including 4-Thio Thymidine, 4-Thio deoxy Uridine, 4-Triazolyl Thymidine, and 4-Triazolyl deoxy Uridine

deoxy Inosine and Uridine

C-5 Substituted Pyrimidines
Includes 5-Methyl dC (n,n-dmf) & 5-Methyl dC (n-bz) Amidites & Supports

Alpha deoxy Amidites

2'-O-Trifluoroacetamido propyl, 3'-TFA, and 3', 5'-Amino Products
Including 2'-Trifluoracetoamido propyl Uridine, 2'-Trifluoracetoamido propyl Cytidine, 3'-TFA Amino Cytidine, 3'-TFA Amino deoxy Uridine, 3'-Amino Trityl Thymidine, and 5'-Amino Thymidine

Arabinosides and 3'-dA
Includes ara Adenosine, ara Cytidine, and 3'-deoxy Adenosine (Cordycepin)

7-Deaza Amidites and Supports

Halogenated Amidites & Supports

N-Alkylated Bases
Including N^1-Methyl dA, N^1-Methyl dG, N^3-Methyl dC, N^3-Methyl T, N^4-Ethyl dC, N^3-Ethyl dC Amidites & Supports

Specially Modified Purines
Nebularine, 2-Amino deoxy Purine, 2-Amino deoxy Adenosine, & 2-Fluoro deoxy Inosine (O^6-trimethoxy silyl ethoxy)

2-Thio and IsoC, IsoG Amidites and Supports
Including 2-Thio Thymidine, 2-Thio deoxy Uridine, deoxy IsoGuanosine, & deoxy IsoCytidine Amidites & Supports

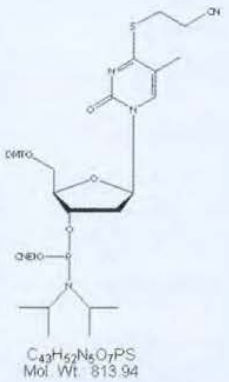
L-DNA Amidites and Supports

Abasic, Dideoxy, and 8-Oxo Products
Including Abasic & Reverse Abasic, 8-Oxo dA, 8-Oxo dG, and Dideoxy A,C,G,T Amidites & Supports

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Phosphoramidites and Supports for Modified DNA Synthesis

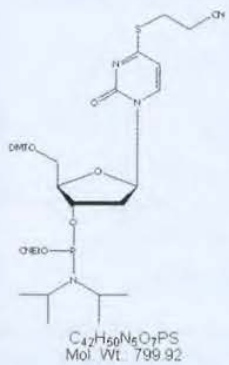
4-Thio Thymidine CED OP



Catalog#
ANP-6414

Pricing
$250.00 / 100 µmole
$600.00 / 250 mg
Purity: 98% +

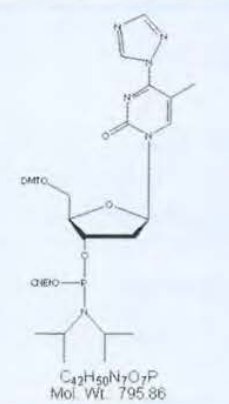
4-Thio deoxy Uridine CED OP



Catalog#
ANP-7624

Pricing
$250.00 / 100 µmole
$600.00 / 250 mg
Purity: 98% +

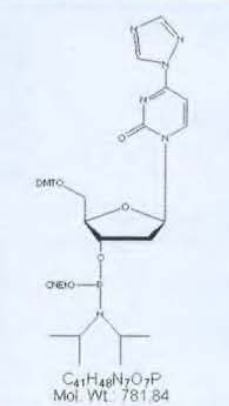
4-Triazolyl Thymidine CED OP



Catalog#
ANP-9212

Pricing
$105.00 / 100 µmole
$290.00 / 250 mg
Purity: 98% +

4-Triazolyl deoxy Uridine CED OP



Catalog#
ANP-9211

Pricing
$105.00 / 100 µmole
$290.00 / 250 mg
Purity: 98% +

4-Thio Succinyl Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9925-05	4-Thio Thymidine	500Å	$80	$735	$90	$120	$160	$240
N-9925-10	3'-Icaa CPG	1000Å						
N-9758-05	4-Thio deoxy	500Å	$90	$735	$80	$120	$160	$240
N-9758-10	Uridine 3'-Icaa CPG	1000Å						

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

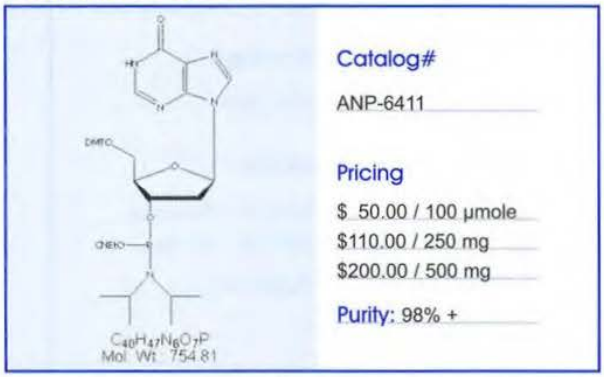
** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

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Oligo Synthesis Products

Phosphoramidites and Supports for Modified DNA Synthesis

deoxy Inosine CED OP

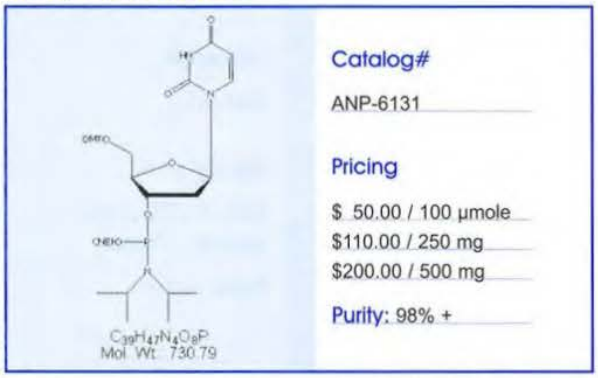


Catalog# ANP-6411

Pricing
$ 50.00 / 100 µmole
$110.00 / 250 mg
$200.00 / 500 mg

Purity: 98% +

deoxy Uridine CED OP



Catalog# ANP-6131

Pricing
$ 50.00 / 100 µmole
$110.00 / 250 mg
$200.00 / 500 mg

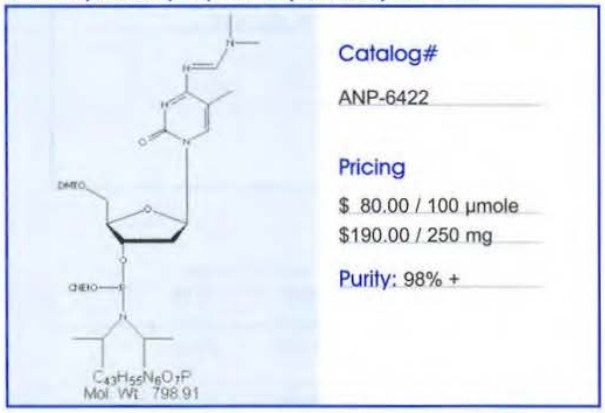
Purity: 98% +

Deoxy Inosine amidites: Universal bases hybridize non-selectively to each of the native bases. For an excellent publication in this field see: M. Berger, Y.W., A.K.Ogawa, D.L.McMinn, P.G. Schultz, and F.E. Rosenberg, Nucleic Acids Research, 2000, 28, 2911-2914.

deoxy Inosine & Uridine Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	Bulk CPG 5 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-5108-05	deoxy Inosine 3'-Icaa CPG	500Å							
N-5108-10		1000Å	$45	$185	$550	$48	$60	$96	$120
N-5108-20		2000Å							
N-5107-05	deoxy Uridine 3'-Icaa CPG	500Å							
N-5107-10		1000Å	$45	$185	$550	$48	$60	$96	$120
N-5107-20		2000Å							

5-Methyl deoxy Cytidine (n,n-dmf) CED OP

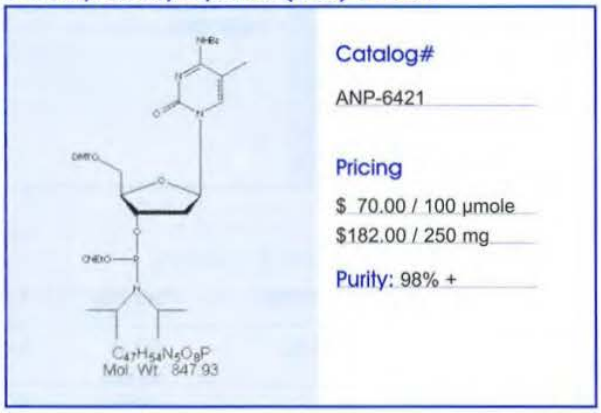


Catalog# ANP-6422

Pricing
$ 80.00 / 100 µmole
$190.00 / 250 mg

Purity: 98% +

5-Methyl deoxy Cytidine (n-bz) CED OP



Catalog# ANP-6421

Pricing
$ 70.00 / 100 µmole
$182.00 / 250 mg

Purity: 98% +

Deprotection of dmf protected 5-Methyl deoxy Cytidine takes 3-4 hours at 37°C with ammonia deprotection of oligo and is compatible with PAC chemistry.

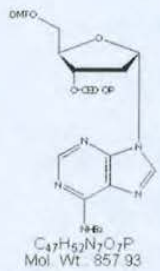
5-Methyl dC Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 gm	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-1355-05	5-Methyl deoxy Cytidine	500Å	$45	$175	$95	$135	$190	$270
N-1355-10	(n,n-dmf) 3'-Icaa CPG	1000Å						
N-1353-05	5-Methyl deoxy Cytidine	500Å	$45	$175	$95	$135	$190	$270
N-1353-10	(n-bz) 3'-Icaa CPG	1000Å						

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Phosphoramidites and Supports for Modified DNA Synthesis

DMT alpha deoxy Adenosine CED OP



$C_{47}H_{52}N_7O_7P$
Mol. Wt.: 857.93

Catalog#

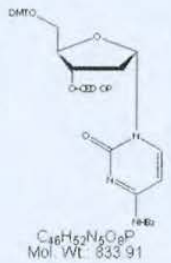
ANP-1651

Pricing

$165.00 / 100 µmole
$360.00 / 250 mg

Purity: 98% +

DMT alpha deoxy Cytidine CED OP



$C_{46}H_{52}N_5O_8P$
Mol. Wt.: 833.91

Catalog#

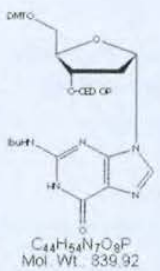
ANP-1652

Pricing

$165.00 / 100 µmole
$360.00 / 250 mg

Purity: 98% +

DMT alpha deoxy Guanosine CED OP



$C_{44}H_{54}N_7O_8P$
Mol. Wt.: 839.92

Catalog#

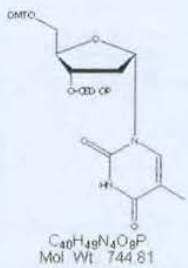
ANP-1653

Pricing

$165.00 / 100 µmole
$360.00 / 250 mg

Purity: 98% +

DMT alpha Thymidine CED OP



$C_{40}H_{49}N_4O_8P$
Mol. Wt.: 744.81

Catalog#

ANP-1654

Pricing

$165.00 / 100 µmole
$360.00 / 250 mg

Purity: 98% +

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

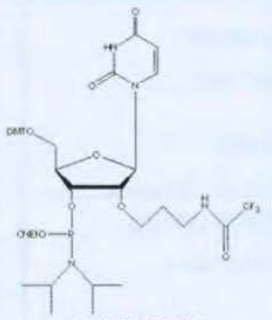
** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

ChemGenes Exhibit 2030 - Page 28

Oligo Synthesis Products

Phosphoramidites and Supports for Modified DNA Synthesis

2'-O-Trifluoroacetamido propyl Uridine CED OP



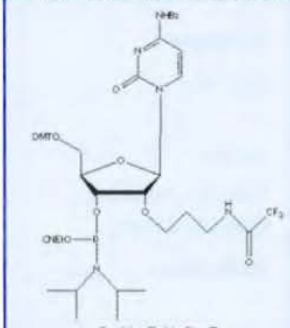
Catalog# ANP-7115

Pricing
$250.00 / 100 µmole
$700.00 / 250 mg

Purity: 98% +

2'-O-Trifluoroacetamido propyl Cytidine CED OP

(2'-O-Trifluoroacetamido propyl Cytidine (n-bz) CED OP)



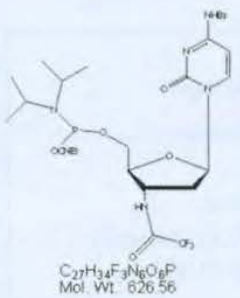
Catalog# ANP-7116

Pricing
$250.00 / 100 µmole
$700.00 / 250 mg

Purity: 98% +

3'-TFA Amino Cytidine 5'-CED OP

(3'-TFA Amino 2'-deoxy Cytidine (n-bz) 5'-CED OP)

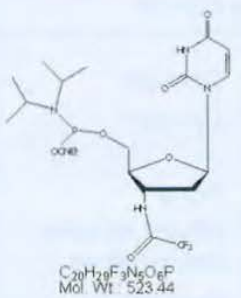


Catalog# ANP-1242

Pricing
$240.00 / 100 µmole
$680.00 / 250 mg

Purity: 98% +

3'-TFA Amino deoxy Uridine 5'-CED OP

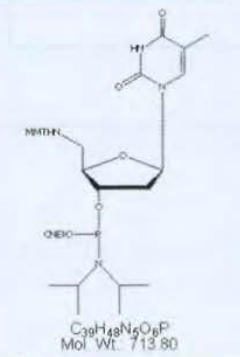


Catalog# ANP-1245

Pricing
$300.00 / 100 µmole
$750.00 / 250 mg

Purity: 98% +

5'-Amino Thymidine CED OP



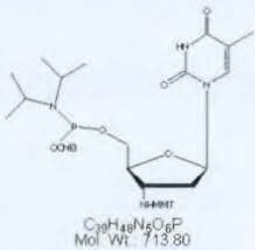
Catalog# ANP-9402

Pricing
$195.00 / 100 µmole
$430.00 / 250 mg

Purity: 98% +

3'-Amino Thymidine CED OP

(3'-Amino-MMT-Trityl Thymidine CED OP)



Catalog# ANP-8454

Pricing
$180.00 / 100 µmole
$420.00 / 250 mg

Purity: 98% +

5'-Amino Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9506-05	5'-Amino Thymidine	500Å	$110	$850	$120	$180	$240	$360
N-9506-10	3'-Icaa CPG	1000Å						

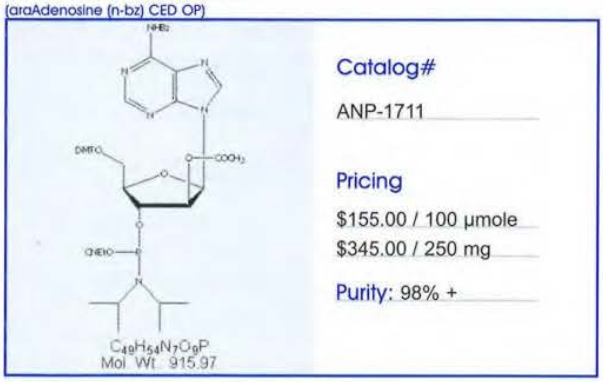
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Adenosine Arabinoside

(araAdenosine (n-bz) CED OP)



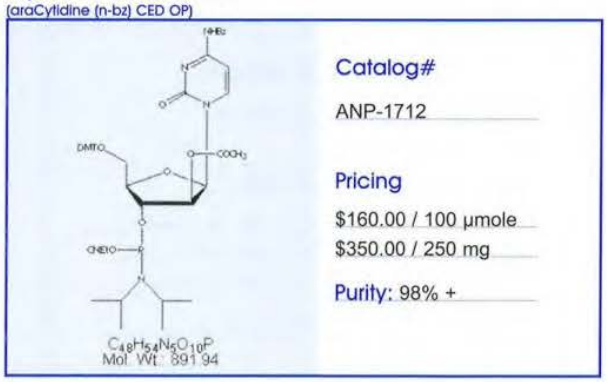
Catalog# ANP-1711

Pricing
$155.00 / 100 µmole
$345.00 / 250 mg

Purity: 98% +

Cytosine Arabinoside

(araCytidine (n-bz) CED OP)



Catalog# ANP-1712

Pricing
$160.00 / 100 µmole
$350.00 / 250 mg

Purity: 98% +

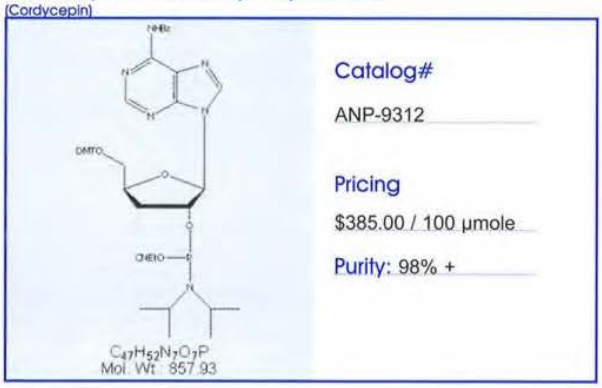
AraC phosphoramidite was synthesized and incorporated into synthetic oligonucleotides in order to study the duplex stability *(P. Beardsley, T. Mikita, M. M. Klause, A. L. Nussbaum, Nucl. Acids Res., 16, 9165, 1988).*
AraC nucleoside is a potent antileukemic agent as well as an inhibitor of DNA replication *(P. P. Major et al., Proc. Natl. Acad. Sci. USA, 78, 3235, 1981).*

Arabinoside Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	1 gm	pack of 4 cols. 0.2 µmole	1.0 µmole	pack of 10 cols. 0.2 µmole	1.0 µmole
N-7366-05	araAdenosine (n-bz)	500Å	$65	$500	$88	$112	$176	$224
N-7366-10	3'-Icaa CPG	1000Å						
N-7367-05	araCytidine (n-bz)	500Å	$65	$500	$88	$112	$176	$224
N-7367-10	3'-Icaa CPG	1000Å						

3'-deoxy Adenosine (n-bz) CED OP

(Cordycepin)



Catalog# ANP-9312

Pricing
$385.00 / 100 µmole

Purity: 98% +

3'-dA Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	pack of 4 cols. 0.2 µmole	1.0 µmole	pack of 10 cols. 0.2 µmole	1.0 µmole
N-9502-05	3'-deoxy Adenosine (n-bz)	500Å	$295	$200	$400	$400	$800
N-9502-10	2'-Icaa CPG (Cordycepin)	1000Å					

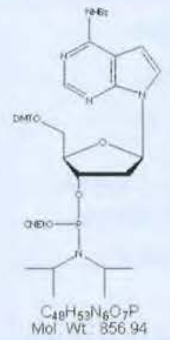
ChemGenes Exhibit 2030 - Page 30

Oligo Synthesis Products

Phosphoramidites and Supports for Modified DNA Synthesis

7-Deaza deoxy Adenosine CED OP

(7-Deaza deoxy Adenosine (n-bz) CED OP)



Catalog#

ANP-4815

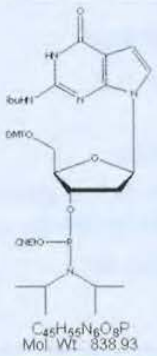
Pricing

$150.00 / 50 µmole
$270.00 / 100 µmole
$675.00 / 250 mg

Purity: 98% +

7-Deaza deoxy Guanosine CED OP

(7-Deaza deoxy Guanosine (n-ibu) CED OP)



Catalog#

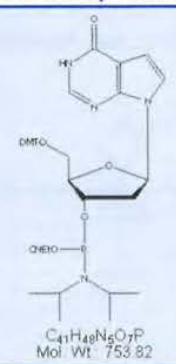
ANP-4857

Pricing

$150.00 / 50 µmole
$270.00 / 100 µmole
$675.00 / 250 mg

Purity: 98% +

7-Deaza deoxy Inosine CED OP



Catalog#

ANP-1146

Pricing

$150.00 / 50 µmole
$270.00 / 100 µmole
$675.00 / 250 mg

Purity: 98% +

7-Deaza 3'-Succinyl Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-8777-05	7-Deaza deoxy Adenosine	500Å	$90	$750	$110	$145	$220	$290
N-8777-10	(n-bz) 3'-Icaa CPG	1000Å						
N-8778-05	7-Deaza deoxy Guanosine	500Å	$90	$750	$110	$145	$220	$290
N-8778-10	(n-ibu) 3'-Icaa CPG	1000Å						
N-8779-05	7-Deaza deoxy Inosine	500Å	$90	$750	$110	$145	$220	$290
N-8779-10	3'-Icaa CPG	1000Å						

7-Deaza 2'-deoxy Adenosine (2'-deoxytubercidin), Guanosine, and Inosine

These analogs of natural deoxy Adenosine, Guanosine, and Inosine are very polpular among molecular biologists for the purpose of localizing DNA-enzyme interactions *(F. Seela, H. Driller, Nucl. Acids Res., 13, 911, 1985)* and facilitating DNA sequencing using M13 chain-termination methodology *(S. Mizusawa, S. Nishimura, F. Seela, Nucl. Acids Res., 14, 1315, 1986)*.

The oligonucleotide containing these bases have reduced band compression, which occurs due to strong GC base pairing. The high stability of the oligomers containing these bases and their possible application in MALDI mass spectrometry *(K. Schneider, B. T. Chait, Nucl. Acids Res., 23. 1570, 1995)*, allows for these substances to play a key role in DNA sequencing.

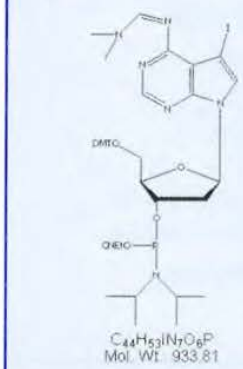
The 7-deaza bases are related to 2'-deoxyadenosine and 2'-deoxyguanosine and form stable base pairs in duplex DNA (F.Seela & H.Winter, Helv. Chim. Acta., 1994, 77, 597; F. Seela & H. Winter, Helv. Chim. Acta., 1998, 81, 2244).

For Corrosponding ribo 7-Deaza Amidites see page 65.
For Corrosponding 7-Deaza-2'-O-methyl amidites see page 94.

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5'-DMT-7-Deaza-7-Iodo deoxy Adenosine CED OP

(5'-DMT-7-Deaza-7-Iodo deoxy Adenosine (n,n-dmf) CED OP)



$C_{44}H_{53}IN_7O_6P$
Mol. Wt.: 933.81

Catalog#

ANP-4586

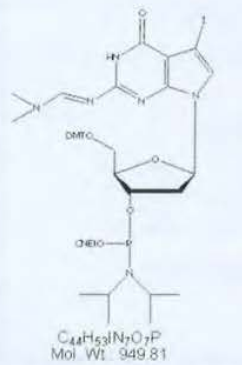
Pricing

$225.00 / 50 µmole
$405.00 / 100 µmole

Purity: 98% +

5'-DMT-7-Deaza-7-Iodo deoxy Guanosine CED OP

(5'-DMT-7-Deaza-7-Iodo deoxy Guanosine (n,n-dmf) CED OP)



$C_{44}H_{53}IN_7O_7P$
Mol. Wt.: 949.81

Catalog#

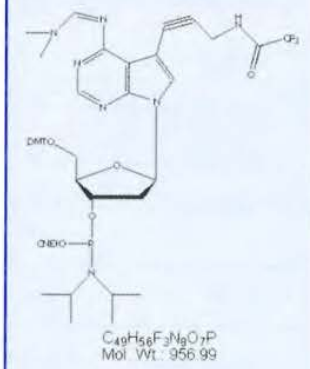
ANP-4589

Pricing

$225.00 / 50 µmole
$405.00 / 100 µmole

Purity: 98% +

7-Deaza deoxy Adenosine (n,n-dmf)-7-Propargyl Amino TFA CED OP



$C_{49}H_{56}F_3N_8O_7P$
Mol. Wt.: 956.99

Catalog#

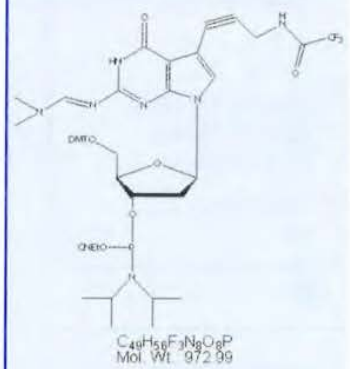
ANP-1339

Pricing

$265.00 / 50 µmole
$475.00 / 100 µmole

Purity: 98% +

7-Deaza deoxy Guanosine (n,n-dmf)-7-Propargyl Amino TFA CED OP



$C_{49}H_{56}F_3N_8O_8P$
Mol. Wt.: 972.99

Catalog#

ANP-1354

Pricing

$265.00 / 50 µmole
$475.00 / 100 µmole

Purity: 98% +

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

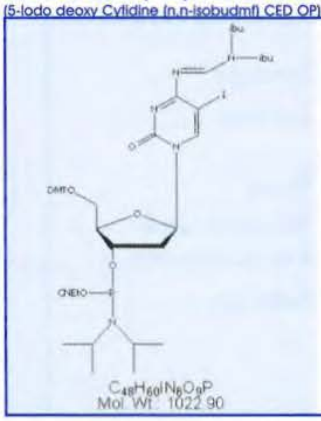
* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

Oligo Synthesis Products

Phosphoramidites and Supports for Modified DNA Synthesis

5-Iodo deoxy Cytidine CED OP
(5-Iodo deoxy Cytidine (n,n-isobudmf) CED OP)

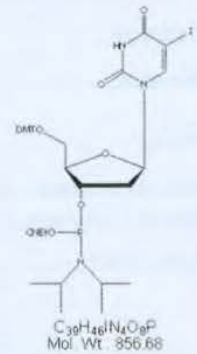


Catalog# ANP-4591

Pricing
$110.00 / 100 µmole
$300.00 / 250 mg
$585.00 / 500 mg

Purity: 98% +

5-Iodo deoxy Uridine CED OP

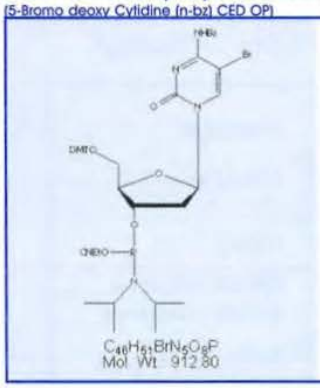


Catalog# ANP-4611

Pricing
$ 55.00 / 100 µmole
$150.00 / 250 mg
$275.00 / 500 mg

Purity: 98% +

5-Bromo deoxy Cytidine CED OP
(5-Bromo deoxy Cytidine (n-bz) CED OP)

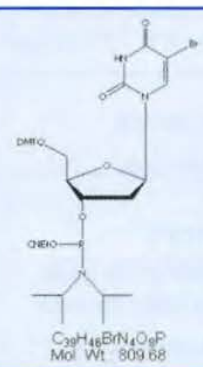


Catalog# ANP-6141

Pricing
$ 50.00 / 100 µmole
$150.00 / 250 mg
$275.00 / 500 mg

Purity: 98% +

5-Bromo deoxy Uridine CED OP

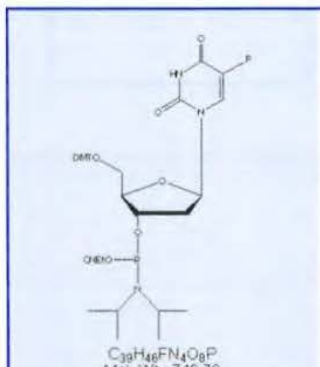


Catalog# ANP-6415

Pricing
$ 50.00 / 100 µmole
$150.00 / 250 mg
$275.00 / 500 mg

Purity: 98% +

5-Fluoro deoxy Uridine CED OP

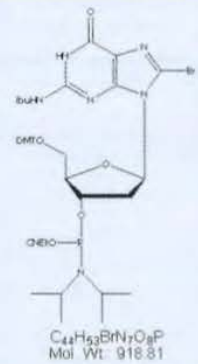


Catalog# ANP-6151

Pricing
$125.00 / 100 µmole
$350.00 / 250 mg
$680.00 / 500 mg

Purity: 98% +

8-Bromo deoxy Guanosine CED OP
(8-Bromo deoxy Guanosine (n-ibu) CED OP)



Catalog# ANP-6152

Pricing
$ 95.00 / 100 µmole
$195.00 / 250 mg
$330.00 / 500 mg

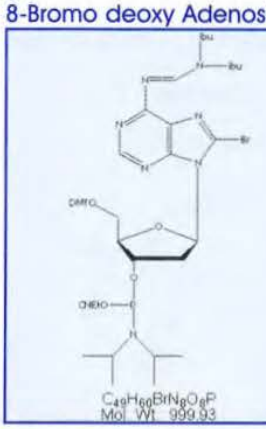
Purity: 98% +

C-8 Substituted Purines and C-5 Halogen Substituted Pyrimidines

The bromo in Adenosine and Guanosine, at the C-8 position, is photolabile in nature. The 8-Bromo deoxy Adenosine phosphoramidite has been incorporated into synthetic DNA as a means to create a site which can be photo-activated after duplex formation. Such DNA or RNA probes containing 8-Bromo Adenosine or Guanosine could thus be useful to determine specific contact in protein-DNA complexes *(J. Liu, G. L. Verdine, Tet. Letters, 33, 4265, 1992).*

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8-Bromo deoxy Adenosine (n,n-isobudmf) CED OP



Catalog#

ANP-4702

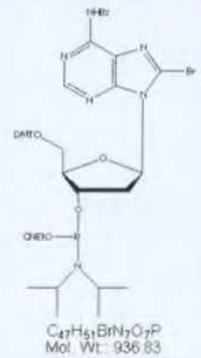
Pricing

$130.00 / 100 µmole
$315.00 / 250 mg

Purity: 98% +

Deprotection of isobudmf protected 5'-DMT-8-Bromo deoxy Adenosine takes 2-3 hours at 37°C with ammonia deprotection of oligo. This group is compatible with PAC Chemistry.

8-Bromo deoxy Adenosine (n-bz) CED OP



Catalog#

ANP-4703

Pricing

$120.00 / 100 µmole
$300.00 / 250 mg

Purity: 98% +

Deprotection of bz protected 8-Bromo deoxy Adenosine takes 7-8 hours at 37°C with ammonia deprotection of oligo. This system is compatible with Standard base protection Chemistry.

Halogenated Purine & Pyrimidine Supports & Columns

			Bulk CPG		pack of 4 cols.		pack of 10 cols.	
Catalog #	Product Name	Pore Size	100 mg	1 gm	0.2 µmole	1.0 µmole	0.2 µmole	1.0 µmole
N-7363-05 N-7363-10	5-Iodo deoxy Cytidine (n,n-isobudmf) 3'-lcaa CPG	500Å 1000Å	$65	$260	$105	$160	$210	$320
N-7364-05 N-7364-10	5-Iodo deoxy Uridine 3'-lcaa CPG	500Å 1000Å	$65	$260	$105	$160	$210	$320
N-7362-05 N-7362-10	5-Bromo deoxy Cytidine (n-bz) 3'-lcaa CPG	500Å 1000Å	$50	$175	$95	$145	$190	$290
N-1378-05 N-1378-10	5-Bromo deoxy Uridine 3'-lcaa CPG	500Å 1000Å	$50	$175	$95	$145	$190	$290
N-7365-05 N-7365-10	5-Fluoro deoxy Uridine 3'-lcaa CPG	500Å 1000Å	$65	$265	$105	$160	$210	$320
N-9921-05 N-9921-10	8-Bromo deoxy Guanosine (n-ibu) 3'-lcaa CPG	500Å 1000Å	$115	$430	$110	$180	$220	$360
N-4704-05 N-4704-10	8-Bromo deoxy Adenosine (n,n-isobudmf) 3'-lcaa CPG	500Å 1000Å	$110	$420	$105	$175	$210	$350
N-4705-05 N-4705-10	8-Bromo deoxy Adenosine (n-bz) 3'-lcaa CPG	500Å 1000Å	$110	$420	$105	$175	$210	$350

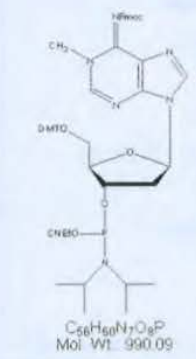
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Email: info@chemgenes.com

Oligo Synthesis Products

Phosphoramidites and Supports for Modified DNA Synthesis

N^1-Methyl deoxy Adenosine CED OP

(N^1-Methyl deoxy Adenosine (n-fmoc) CED OP)



Catalog#

ANP-6121

Pricing

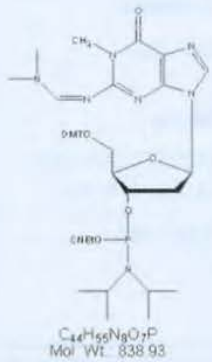
$250.00 / 100 µmole

$495.00 / 250 mg

Purity: 98% +

N^1-Methyl deoxy Guanosine CED OP

(N^1-Methyl deoxy Guanosine (n,n-dmf) CED OP)



Catalog#

ANP-6122

Pricing

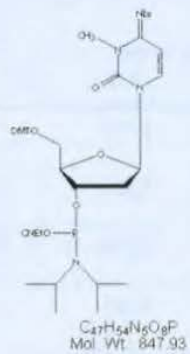
$250.00 / 100 µmole

$495.00 / 250 mg

Purity: 98% +

N^3-Methyl deoxy Cytidine CED OP

(N^1-Methyl deoxy Cytidine (n-bz) CED OP)



Catalog#

ANP-3851

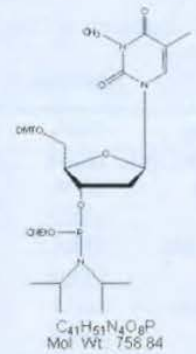
Pricing

$225.00 / 100 µmole

$450.00 / 250 mg

Purity: 98% +

N^3-Methyl Thymidine CED OP



Catalog#

ANP-6153

Pricing

$250.00 / 100 µmole

$495.00 / 250 mg

Purity: 98% +

N-Alkylated phosphoramidites

Due to mutagenic effects of carcinogens, DNA in living organisms is vulnerable to alkylation. It has been shown that there is direct reversal of n-alkylation of methylated bases in oligonucleotides. The discovery of an enzyme which is a substrate for DNA repair has great implications for repair of such carcinogenic and mutagenic events (S.C.Trewick, T.F. Henshaw, R.P Hausinger, T. Lindahl and B. Sedgwick, Nature, 419, 174-177, 2002; and another report confirming these observations, P.Falnes, R.F. Johansen, E. Seeberg, Nature, 419, 178, 2002).

N-alkylated nucleosides and the oligonucleotides incorporating methylated bases at specific sites in oligos possess great potential for studies of reversal of alkylation of an oligonucleosides and oxidative alkylation inside cells by various carcinogens.

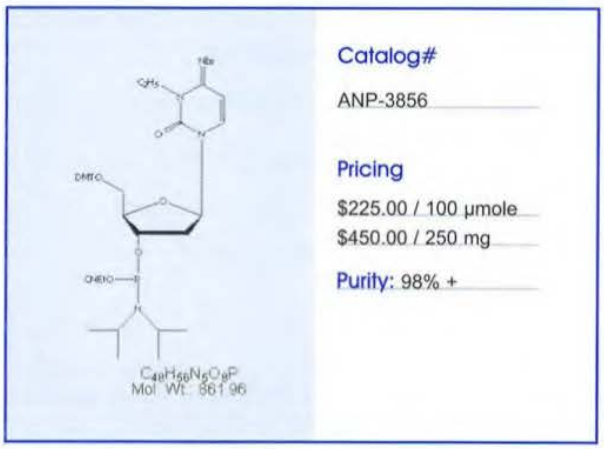
ChemGenes is offering the phosphoramidites for studies and possibilities of reversal of methylation lesions by use of oligonucleotides incorporating alkylated purine/pyrimidines.

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N^3-Ethyl deoxy Cytidine CED OP



Catalog#

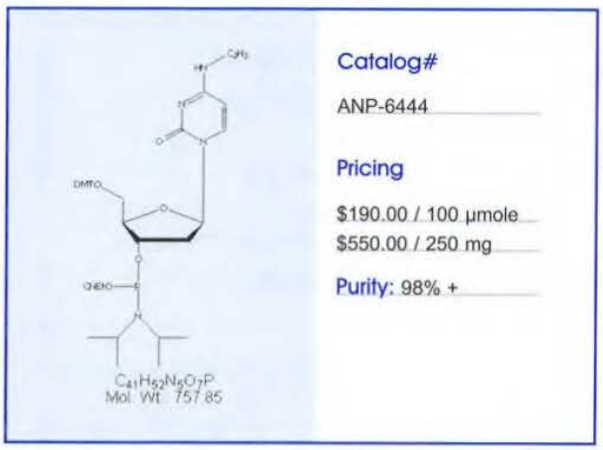
ANP-3856

Pricing

$225.00 / 100 µmole
$450.00 / 250 mg

Purity: 98% +

N^4-Ethyl deoxy Cytidine CED OP



Catalog#

ANP-6444

Pricing

$190.00 / 100 µmole
$550.00 / 250 mg

Purity: 98% +

N^4-Ethyl deoxy Cytidine hybridizes selectively with natural dG to give G:N^4-Et-C base pair (H.Nguyen and E.M.Southern, Nucleic Acids Research, 2000, 28, 3904-3909).

N-Alkylated 3'-Succinyl Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9980-05 N-9980-10	N^1-Methyl deoxy Adenosine (n-fmoc) 3'-Icaa CPG	500Å 1000Å	$125	$970	$90	$125	$180	$250
N-9981-05 N-9981-10	N^1-Methyl deoxy Guanosine (n,n-dmf) 3'-Icaa CPG	500Å 1000Å	$125	$970	$90	$125	$180	$250
N-9922-05 N-9922-10	N^3-Methyl Thymidine 3'-Icaa CPG	500Å 1000Å	$125	$970	$90	$125	$180	$250
N-9923-05 N-9923-10	N^4-Ethyl deoxy Cytidine 3'-Icaa CPG	500Å 1000Å	$125	$970	$80	$120	$160	$240

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

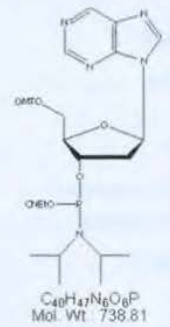
* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

Oligo Synthesis Products

Phosphoramidites and Supports for Modified DNA Synthesis

Nebularine
(Purine-2'-deoxyriboside CED OP)

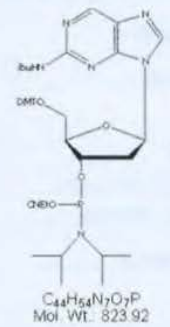


Catalog#
ANP-7601

Pricing
$ 95.00 / 100 µmole
$240.00 / 250 mg

Purity: 98% +

2-Amino deoxy Purine CED OP
(2-Amino Purine-2'-deoxyriboside CED OP)



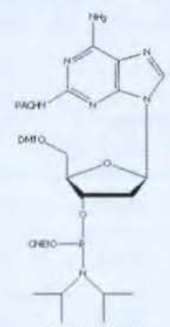
Catalog#
ANP-9315

Pricing
$120.00 / 100 µmole

Purity: 98% +

Deprotection of ibu protected 5'-DMT-deoxy Purine takes 6-8 hours at 37°C with ammonia deprotection of oligo.

2-Amino deoxy Adenosine CED OP
(2-Amino (n-PAC) deoxy Adenosine CED OP) (2,6-Diaminopurine-2'-deoxyadenosine OP)

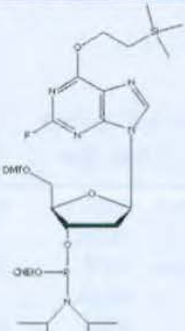


Catalog#
ANP-9316

Pricing
$335.00 / 100 µmole

Purity: 98% +

2-Fluoro deoxy Inosine CED OP (O^6-trimethyl silyl ethoxy)
(For post synthetic modification of Inosine-carbon-2)



Catalog#
ANP-7702

Pricing
$180.00 / 100 µmole
$525.00 / 250 mg

Purity: 98% +

3'-Succinyl Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9503-05 N-9503-10	Purine-2'-deoxy riboside 3'-Icaa CPG	500Å 1000Å	$110	$750	$120	$140	$240	$280
N-9511-05 N-9511-10	2-Amino Purine-2'-deoxy riboside CPG	500Å 1000Å	$110	$650	$80	$120	$160	$240
N-9512-05 N-9512-10	2-Amino (n-PAC) deoxy Adenosine 3'-Icaa CPG	500Å 1000Å	$110	$700	$90	$120	$180	$240
N-9926-05 N-9926-10	2-Fluoro deoxy Inosine CPG (O^6-trimethyl silyl ethoxy)	500Å 1000Å	$125	$970	$100	$150	$200	$300

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

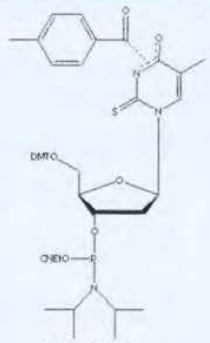
* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

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Phosphoramidites and Supports for Modified DNA Synthesis

2-Thio Thymidine CED OP



Catalog#

ANP-9213

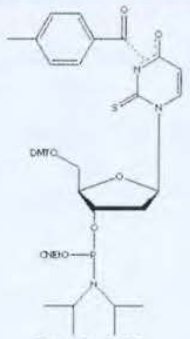
Pricing

$280.00 / 100 µmole

$655.00 / 250 mg

Purity: 98% +

2-Thio deoxy Uridine CED OP



Catalog#

ANP-9214

Pricing

$290.00 / 100 µmole

$670.00 / 250 mg

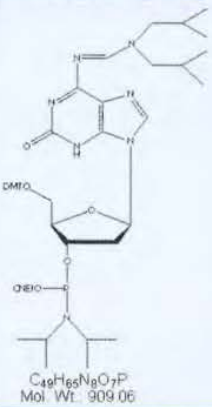
Purity: 98% +

2-Thio 3'-Succinyl Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9509-05	2-Thio Thymidine	500Å	$110	$810	$125	$155	$250	$310
N-9509-10	3'-Icaa CPG	1000Å						
N-9510-05	2-Thio deoxy Inosine	500Å	$125	$900	$135	$170	$270	$340
N-9510-10	3'-Icaa CPG	1000Å						

deoxy isoGuanosine CED OP

(deoxy isoGuanosine (n,n-isobutyl) CED OP)



Catalog#

ANP-4268

Pricing

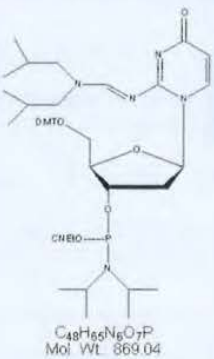
$300.00 / 100 µmole

$750.00 / 250 mg

Purity: 98% +

deoxy isoCytidine CED OP

(deoxy isoCytidine (n,n-isobutyl) CED OP)



Catalog#

ANP-4269

Pricing

$300.00 / 100 µmole

$750.00 / 250 mg

Purity: 98% +

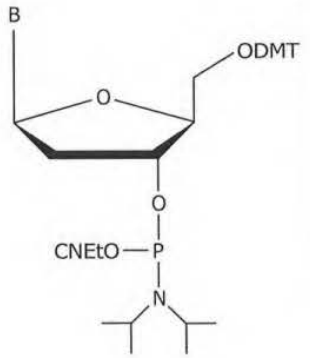
Deprotection of dmf protected 2'-deoxy isoGuanosine takes 3-4 hours at 37°C with ammonia deprotection of oligo.

IsoG & IsoC 3'-Succinyl Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9929-05	deoxy isoCytidine CPG	500Å	$125	$970	$110	$175	$220	$350
N-9929-10	(n,n-diisobutylformamidine)	1000Å						
N-9927-05	deoxy isoGuanosine CPG	500Å	$125	$970	$110	$175	$220	$350
N-9927-10	(n,n-diisobutylformamidine)	1000Å						

Oligo Synthesis Products

Phosphoramidites and Supports for Modified DNA Synthesis



β-L-DNA Synthesis Reagents

B	Protection	Catalog#
A	n-bz	ANP-8031
C	n-bz	ANP-8032
G	n-ibu	ANP-8033
T	n/a	ANP-8034
C	n-acetyl	ANP-8035

Catalog #	Product Name	100mg	500mg	1gm	2gm	5gm
ANP-8031	β-L-deoxy Adenosine (n-bz) CED phosphoramidite, *M.W. 857.92*	$140	$275	$505	$ 927	$2,125
ANP-8032	β-L-deoxy Cytidine (n-bz) CED phosphoramidite, *M.W. 833.89*	$140	$275	$505	$ 927	$2,125
ANP-8033	β-L-deoxy Guanosine (n-ibu) CED phosphoramidite, *M.W. 839.90*	$155	$295	$530	$ 973	$2,233
ANP-8034	β-L-Thymidine CED phosphoramidite, *M.W. 744.80*	$150	$290	$525	$ 963	$2,223
ANP-8035	β-L-deoxy Cytidine (n-acetyl) CED phosphoramidite, *M.W. 771.84*	$150	$305	$565	$1,037	$2,380

Mirror Image of Natural DNA, (β-L-deoxy Nucleoside Phosphoramidites) for The Synthesis of L-DNA

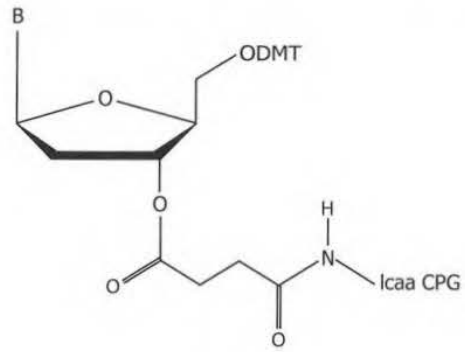
- β-L-deoxyribonucleoside polymers do not form double strands with complementary strands. (*Ulysse Aseline, et. al., N.A.R. 19, 15 4067-4074 1991).*
- β-L-deoxyribonucleosides have high resistance to digestion by various nucleases.
- Synthetic 56-nucleotide β-L-DNA bind with Vasopressin and is an antagonist of Vasopressin. *(K. P. Williams et. al., PNAS, USA, 94, 11285-11290, 1997).*
- β-L-deoxyribonucleosides are being developed to bind with great specificity to antibodies and small biologically active molecules.

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

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β-L-DNA Icaa Supports & Columns

B	Protection	Catalog #
A	n-bz	N-3521
C	n-bz	N-3522
G	n-ibu	N-3523
T	n/a	N-3524
C	n-acetyl	N-3525

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	500 mg	1 gm	pack of 4 cols. 0.2 µmole	1.0 µmole	pack of 10 cols. 0.2 µmole	1.0 µmole
N-3521-05	β-L-deoxy Adenosine	500Å	$125	$290	$465	$120	$240	$240	$480
N-3521-10	(n-bz) 3'-Icaa CPG	1000Å							
N-3522-05	β-L-deoxy Cytidine	500Å	$125	$290	$465	$120	$240	$240	$480
N-3522-10	(n-bz) 3'-Icaa CPG	1000Å							
N-3523-05	β-L-deoxy Guanosine	500Å	$125	$290	$465	$120	$240	$240	$480
N-3523-10	(n-ibu) 3'-Icaa CPG	1000Å							
N-3524-05	β-L-Thymidine	500Å	$125	$290	$465	$120	$240	$240	$480
N-3524-10	3'-Icaa CPG	1000Å							
N-3525-05	β-L-deoxy Cytidine	500Å	$125	$290	$465	$120	$240	$240	$480
N-3525-10	(n-acetyl) 3'-Icaa CPG	1000Å							

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

Oligo Synthesis Products

Phosphoramidites and Supports for Modified DNA Synthesis

Abasic Phosphoramidite
(1,2-dideoxy D-ribose CED OP)

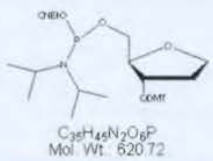


Catalog# ANP-7058

Pricing
$85.00 / 100 µmole
$300.00 / 250 mg

Purity: 98% +

Reverse Abasic Phosphoramidite
(1,2-dideoxy D-ribose 3-DMT-5-CED OP)



Catalog# ANP-1422

Pricing
$125.00 / 100 µmole
$425.00 / 250 mg

Purity: 98% +

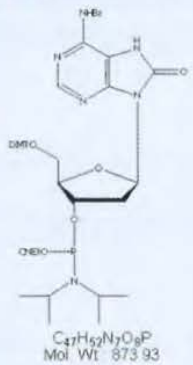
Abasic Site

Oligonucleotides containing the chemically stable isostructural tetrahydrofuran analog of an abasic site are important reagents for studies related to depurination of oligonucleotides, which occurs quite frequently within the cell. For a good publication regarding T_M values, etc. see: *I. Pompizi, A. Haberli , C.J.Leumann, Nucleic Acids Research, 2000, 28, 2702-2708.*

Abasic Succinyl Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-1423-05	1,2-dideoxy D-ribose	500Å	$210	$170	$215	$340	$430
N-1423-10	5-DMT-3-Icaa CPG	1000Å					
N-1424-05	1,2-dideoxy D-ribose	500Å	$290	$210	$300	$420	$600
N-1424-10	3-DMT-5-Icaa CPG	1000Å					

8-Oxo deoxy Adenosine CED OP
(8-Oxo deoxy Adenosine (n-bz) CED OP)

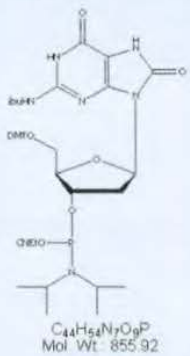


Catalog# ANP-9301

Pricing
$130.00 / 100 µmole
$345.00 / 250 mg

Purity: 98% +

8-Oxo deoxy Guanosine CED OP
(8-Oxo deoxy Guanosine (n-ibu) CED OP)



Catalog# ANP-9311

Pricing
$285.00 / 100 µmole
$640.00 / 250 mg

Purity: 98% +

8-Oxo 3'-Succinyl Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-5300-05	8-Oxo deoxy Adenosine	500Å	$110	$780	$120	$145	$240	$290
N-5300-10	(n-bz) 3'-Icaa CPG	1000Å						
N-9500-05	8-Oxo deoxy Guanosine	500Å	$125	$900	$135	$170	$270	$340
N-9500-10	(n-ibu) 3'-Icaa CPG	1000Å						

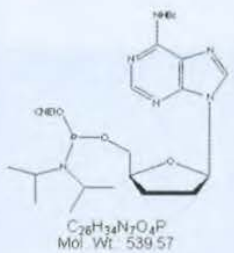
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Phosphoramidites and Supports for Modified DNA Synthesis

2',3'-dideoxy Adenosine (n-bz) 5'-CED OP



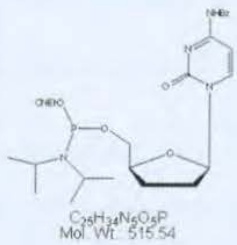
$C_{26}H_{34}N_7O_4P$
Mol. Wt. 539.57

Catalog# DDN-7051

Pricing
$130.00 / 100 µmole
$540.00 / 250 mg

Purity: 98% +

2',3'-dideoxy Cytidine (n-bz) 5'-CED OP



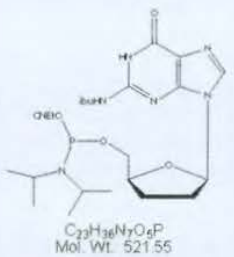
$C_{25}H_{34}N_5O_5P$
Mol. Wt. 515.54

Catalog# DDN-7052

Pricing
$130.00 / 100 µmole
$540.00 / 250 mg

Purity: 98% +

2',3'-dideoxy Guanosine (n-ibu) 5'-CED OP



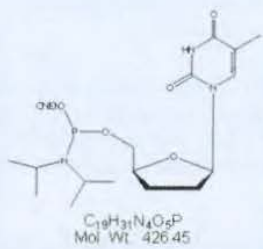
$C_{23}H_{36}N_7O_5P$
Mol. Wt. 521.55

Catalog# DDN-7053

Pricing
$130.00 / 100 µmole
$540.00 / 250 mg

Purity: 98% +

2',3'-dideoxy Thymidine 5'-CED OP



$C_{19}H_{31}N_4O_5P$
Mol. Wt. 426.45

Catalog# DDN-7054

Pricing
$130.00 / 100 µmole
$540.00 / 250 mg

Purity: 98% +

Dideoxy Succinyl Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 10 cols. 0.2 µmole
N-7368-05	2',3'-dideoxy Adenosine (n-succinyl Icaa CPG)	500Å	$250	$1,500	$180	$250
N-7369-05	2',3'-dideoxy Cytidine (n-succinyl Icaa CPG)	500Å	$250	$1,500	$180	$240

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

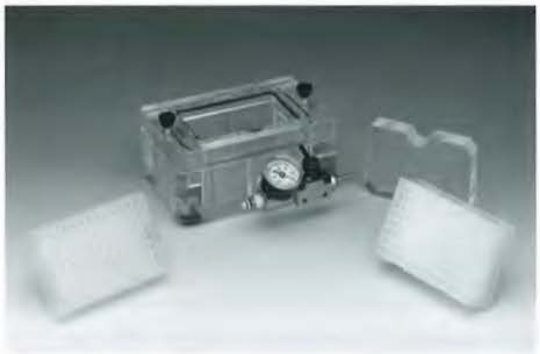
** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

DNA PURIFICATION ACCESSORIES

ChemGenes now offers the GeneSys-1 solid phase DMT-ON purification/extraction 96 well micropurifier to enable parallel purification of synthetic oligonucleotides for 5 OD (260nm) to 50 OD (260 nm) quantities. The 96 position GeneSys-1 accomodates the polypropylene 0.7 mL/well, 1.2 mL/well, 1.25 mL/well, and 2.25mL/ well removable well filter plates. The system charges crude oligos followed by washing and elution without a cumbersome valve network.

Catalog#	Product Name	Prices
GS-1154	GeneSys-12 (Not Shown)	$ 550
GS-1158	GeneSys-24 (Not Shown)	$ 805
GS-8366	GeneSys Manifold for 96-Well Format GeneSys-1	$1,280
GS-3249	Puri-Pak Plate™	$ 280
	Oligo Purification Plate (works best for 25-30 OD)	
GS-3280	96 Well Collection plate	$ 15
GS-3280	96 Well Collection plate (Pack of 12)	$ 162

GeneSys-12 (catalog #GS-1154) purifies up to 12 oligos at the same time.
GeneSys-24 (catalog #GS-1158) purifies up to 24 oligos at the same time.



Puri-Pak Plate™ (catalog#: GS-3249) is a 96-Well purification extraction plate. Each well is filled with a unique packing material for oligo purication/cleanup. Each well is capable of the following:

- DMT-ON purification of up to 1 µmole scale per well, or
- DMT-OFF desalting of up to 25 OD per well

The GeneSys Manifold for the 96 Well format comes complete with a gasket for top and bottom collection plates. The system also includes a vacuum controller for low vacuum evacuation of the system for the 96-well solvent, buffer exchange, and dropwise collection of the purified oligo. This system has the advantage of simultaneous purification of large numbers of oligos in a 96-well purification format. The purification of the crude synthetic oligos can be achieved either by desalting of the crude synthetic oligo or by DMT-ON purification protocol of the crude synthetic DNA.

Besides the natural synthetic DNA oligonucleotides, the Puri-Pak Cartridges or the Puri-Pak plate can be used to purify terminal and nucleobase modified oligos, biotin, and other chromophore labeled oligos, 2'-O-Methyl-oligos, and phosphorothioate labeled oligos.

96-Well collection plates (catalog#: GS-3280) have a unique design in which the purification plate fits nicely in each well for the collection plate and accommodates a 2 ml volume per well.

Puri-Pak Plate™ and Puri-Pak Cartridges™ are trade marks of ChemGenes Corporation.

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Drying Traps

DNA moisture traps are used for maintaining moisture-free environments in oligonucleotide synthesis. The use of these traps will generate super anhydrous conditions for high quality full length DNA/RNA. The traps are available in four different sizes: Small, Medium, Large, and Extra Large. DNA moisture traps are shipped fully activated in vacuum sealed foil packets and are ready for immediate use.

These traps allow highly effective drying of either phosphoramidite solution in acetonitrile, tetrazole solution in acetonitrile (activator solution), or anhydrous acetonitrile (used to make either phosphoramidite solutions or activator solutions).

In addition, the use of these traps in acetonitrile bottles during wash cycles in the DNA synthesizer will maintain a dry environment. This results in consistently high coupling in the synthesis per cycle. The traps also restore the usability of "wet" acetonitrile (app. 250 ppm moisture content) by reducing the moisture content below 50 ppm.

Please see the data in the chart below for the selection of your specific application. As the chart indicates a small trap should be used for 10 ml acetonitrile solution and a large trap should be used for 500 ml acetonitrile solution.

Moisture Absorption Efficiency Chart:

Shows the water absorption of the traps of different sizes, as determined by coulometric analysis of acetonitrile spiked with water.

Quantity of Acetonitrile	Amount of Moisture present in "Wet" Solvent	Number of Traps required	Size of Trap	Time required to achieve 35-40 ppm or lower
10-50 ml	180-200 ppm	One	Small	24 Hours
50-100 ml	180-200 ppm	One	Medium	24 Hours
100-1000 ml	180-200 ppm	One	Large	24 Hours
1-4 liters	180-200 ppm	One	Extra Large	24 Hours

Prices

Catalog#	Size	Price for 5	Price for 10
DMT-1975	Small	$32.00	$58.00
DMT-1974	Medium	$34.00	$63.00
DMT-1973	Large	$40.00	$68.00
DMT-1972	Extra Large	$42.00	$78.00

ChemGenes Exhibit 2030 - Page 44

Puri-Pak Cartridges & Barrels

The **Puri-Pak**™ has been developed by ChemGenes to purify oligonucleotides by DMT-ON method and to desalt oligonucleotides which have been purified by ion-exchange HPLC or Gel Electrophoresis. They are very effective in producing high purity oligonucleotides after synthesis.

The **Puri-Pak cartridges**™ are suitable for the following applications:

- Low scale and also 1.0 µmol scale purification of synthetic oligonucleotides, modified synthetic oligonucleotides carrying amino-terminals, biotin, phosphorothioate oligonucleotides, and 2'-OMe oligonucleotides.
- Desalting of oligonucleotides.

Technical Details

The Puri-Pak columns are designed for efficient and fast purification of DMT-ON oligonucleotides as well as for desalting of oligonucleotides. They are recommended for single use where 25 OD units can be loaded per cartridge. The Puri-Pak columns can also efficiently purify crude oligonucleotides. Also, 5'-DMT-ON oligonucleotides can be separated cleanly from the shorter deletion sequences.

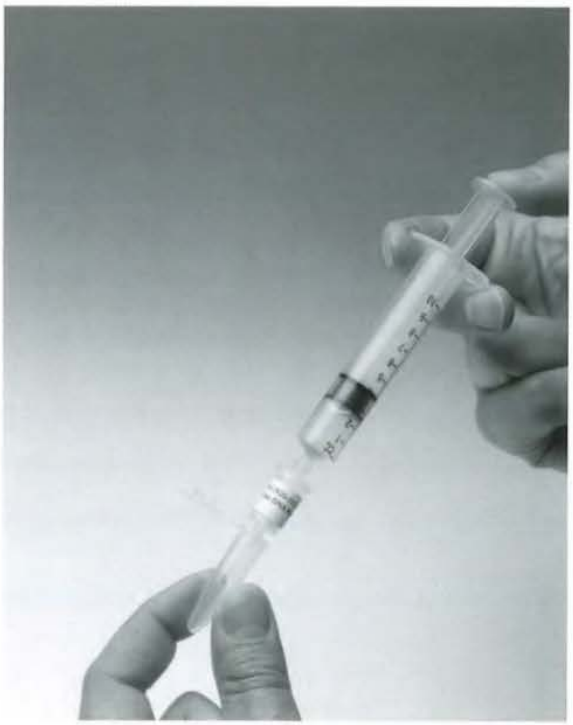
After NH_3 deprotection of the oligonucleotide, the NH_3 solution containing the dissolved oligo can be loaded directly onto the Puri-Pak column. We recommend washing the crude oligo with ether prior to removal of the cleaved base protecting groups. The oligo should then be dissolved in either water or 0.1M triethylammonium acetate (1-3ml) and loaded onto the Puri-Pak column.

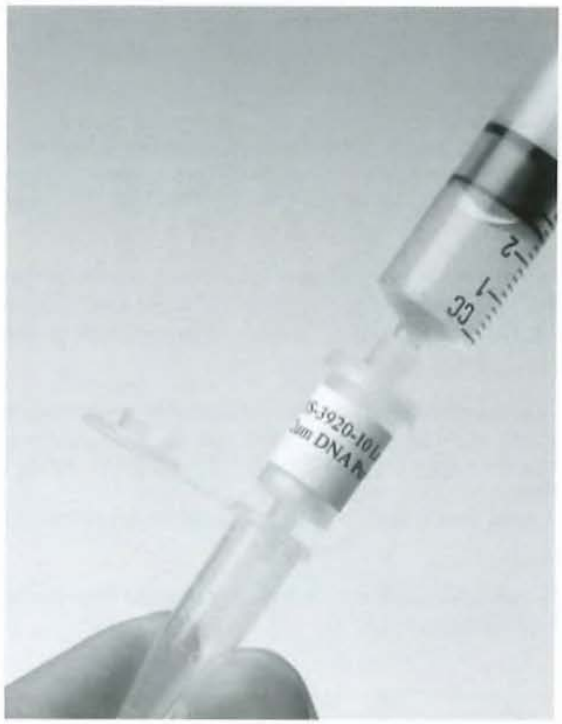
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Catalog#	Product Name	Quantity	Price
CSS-3920-S	Cartridge	1	$ 6.50
CSS-3920-M	Cartridge	5	$ 30.00
CSS-3920-L	Cartridge	10	$ 55.00
CSS-3940-S	Barrel (4 ml)	1	$ 6.50
CSS-3940-M	Barrel (4 ml)	5	$ 30.00
CSS-3940-L	Barrel (4 ml)	10	$ 55.00
CSS-3960-S	Barrel (8 ml)	1	$ 12.00
CSS-3960-M	Barrel (8 ml)	10	$ 95.00
CSS-3960-L	Barrel (8 ml)	50	$450.00





RNA Synthesis

The importance of RNA has long been recognized in cellular processes. A major area of focus is on antisense RNA *(C. Hëléne, J. J. Toulme, Biochim. Biophys. Acta, 99, 1049, 1990)* and the role of catalytic RNA in splicing and ligation *(T. R. Cech, Science, 236, 1532, 1987; Guerrier-Takadac, N. Lumelsky, S. Altman, Science, 246, 1578, 1989)*.

Chemical synthesis of defined sequence RNA is fundamental to develop and understand the role and application of RNA. The enzymatic approach using RNA polymerase is template dependant and therefore, is not a controlled sequence synthesis *(J. F. Milligan, D. R. Groebe, G. W. Witherell, O. C. Uhlenbeck, Nucl. Acids Res., 15, 8783, 1987)*.

Chemical synthesis of RNA has been perfected to the extent that long sequences, such as biologically active 76-mer tRNA and multi-milligram quantities can be produced efficiently *(D. Gasparuto, T. Livache, H. Bazin, A. Duplaa, A. Guy, A. Khorlin, D. Molko, A. Roget, R. Teoule, Nucl. Acids Res., 20, 5159, 1992; K. R. Webster, Y. Shamoo, W. Königsberg, E. K. Spicer, Biotechniques, 11, 658,1991)*.

Small Interfering RNA's

The development of these RNA is one of the key discoveries in the field of RNA application. Short double stranded RNAs (dsRNAs), with a general chain length of 21-23 mer and having a two nucleotide 3'-end overhang, mediate gene specific suppression of mammalian cells. Such RNA's are also called small interfering RNA (siRNA). siRNA guide endonucleolytic cleavage of the target RNA at a single site.

This process is known as RNA interference (RNAi) *(Fire,A.,Xu,S.,Montgomery, M.K., kostas.S.A., Driver,S.E., and Mello,C.C. Nature 391, 806-811 1998)*. The dsRNA direct the degradation of target RNAs complementary to the siRNA sequence *(Zamore ,P., Tuschl,T., Sharp, P., and Bartel, D. Cell 101,25-33, 2000 ; Elbashir, S.M., Harborth, J.,Weber, K.,and Tuschl, T., Methods Finds. Exp.Clin. Pharmacol. 26, 199-213,2002)*.

The RNAi offers astronomical potentials for understanding and manipulating human diseases at the cellular level. Among the vast and rapidly exploding field of siRNA, some key developments taking place are summarized as:

- Prediction of natural regulatory mechanism in the field of cell biology and functional genomics (this is expected to result in gene based drug discovery)
- Gene control, gene knock down, and target validation are currently being persued with great vigor by a vast number of researchers worldwide.

Short dsRNA's can be best obtained by chemical synthesis. ChemGenes specializes in producing the highest purity RNA monomers for studies and further developments in this field.

Use of Thioethyl Tetrazole

The use of thioethyl tetrazole has been shown to enhance coupling efficiency to 99.7% *(Marita Wasner, Dominique Arion, Gadi Borkow, Anne Noronha, Andre H. Uddin, Michael A. Parniak and Masad J. Damha, Biochemistry 37, 7478-7486 1998)*.

Please see page 133 for ordering information.

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Quality Control Criteria for UltraPure RNA Phosphoramidites

Thin Layer Chromatography

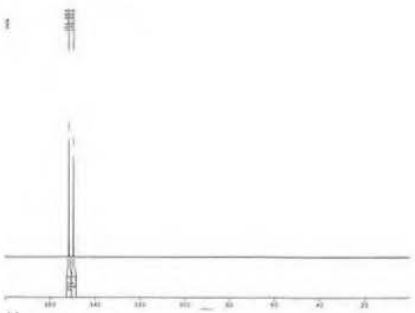
- Sharp doublet in most cases, or a single spot
- Detection Limit 0.5%
- No visible impurity observed

Solubility Test

- 200 mg of pure dry product in 1.0 ml of dry acetonitrile (H_2O Content < 0.004-0.005 gm / 100 ml)

^{31}P NMR

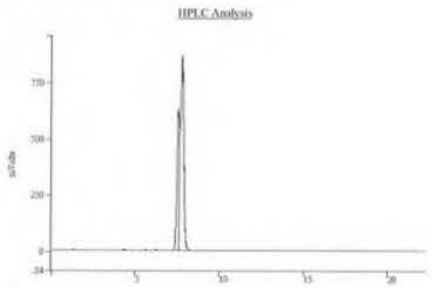
- Single or double peak
- Detection Limit: 0.08%



^{31}P NMR of 2'-tBDSilyl G (n-ibu) Phosphoramidite

HPLC

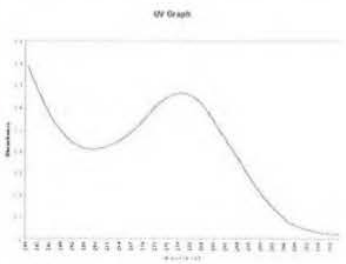
- Single or double peak
- Detection limit: 0.5%



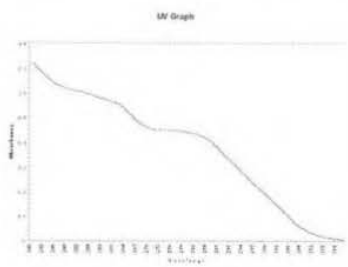
HPLC Graph of 2'-tBDSilyl Adenosine (n-bz) CED OP

UV Characterization

- Used to characterize the purine or pyrimidine structure and substituent



UV Spectrum of 2'-tBDSilyl-rA (n-bz)-OP



UV Spectrum of 2'-tBDSilyl-rG (n-ibu)-OP

Coupling Test

- Greater than 98-98.5% under set conditions specified in the data sheet supplied with compound

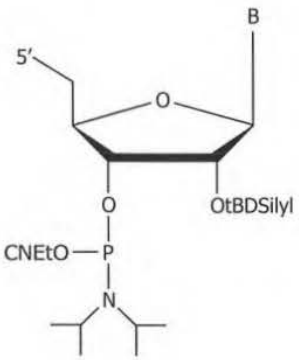


An example of a coupling efficiency profile for a sample RNA oligo.

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Email: info@chemgenes.com

Oligo Synthesis Products

Phosphoramidites and Supports for Natural RNA Synthesis



Amidites for Natural RNA Synthesis with Standard Base Protection

5'	B	Protection	Catalog#
DMTO	A	n-bz	ANP-5671
DMTO	C	n-bz	ANP-5672
DMTO	G	n-ibu	ANP-5673
DMTO	U	n/a	ANP-5674
DMTO	A	n-acetyl	ANP-4546
DMTO	C	n-acetyl	ANP-6676
DMTO	G	n-acetyl	ANP-4547
MMTO	A	n-bz	ANP-5676
MMTO	G	n-ibu	ANP-5677

Catalog#	Product name	250mg	500mg	1gm	2gm	5gm	10gm
ANP-5671	2'-tBDSilyl Adenosine (n-bz) CED phosphoramidite, *M.W. 988.19*	$55	$100	$180	$288	$ 576	$ 922
ANP-5672	2'-tBDSilyl Cytidine (n-bz) CED phosphoramidite, *M.W. 964.17*	$55	$100	$180	$288	$ 576	$ 922
ANP-5673	2'-tBDSilyl Guanosine (n-ibu) CED phosphoramidite, *M.W. 970.18*	$55	$100	$180	$288	$ 576	$ 922
ANP-5674	2'-tBDSilyl Uridine CED phosphoramidite, *M.W. 861.05*	$55	$135	$180	$288	$ 576	$ 922
ANP-4546	2'-tBDSilyl Adenosine (n-acetyl) CED phosphoramidite, *M.W. 926.12*	$55	$100	$250	$450	$1,010	$1,615
ANP-6676	2'-tBDSilyl Cytidine (n-acetyl) CED phosphoramidite, *M.W. 902.10*	$25	$ 48	$180	$288	$ 576	$ 922
ANP-4547	2'-tBDSilyl Guanosine (n-acetyl) CED phosphoramidite, *M.W. 942.12*	$70	$135	$250	$450	$1,010	$1,615
ANP-5676	MMT-2'-tBDSilyl Adenosine (n-bz) CED phosphoramidite, *M.W. 958.17*	$75	$140	$260	$450	$1,010	$1,615
ANP-5677	MMT-2'-tBDSilyl Guanosine (n-ibu) CED phosphoramidite, *M.W. 940.15*	$75	$140	$260	$450	$1,010	$1,615

Advantages and Applications of 5'-MMT in Purine Bases for Oligo Synthesis

Due to the use of 5-ethylthio Tetrazole (in most DNA/RNA synthesis protocols), which is more acidic in nature compared to 1-H Tetrazole, the DMT group from purine bases is removed to a certain extent in the coupling step during oligo synthesis, thereby causing undesired M+1 oligo growth.

Since purine bases, A & G, cleave at the 5'-DMT at a much higher rate than 5'-MMT, the 5'-MMT protected nucleoside phosphoramidite is preferred, offering a minimal level of M+1 impurities.

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

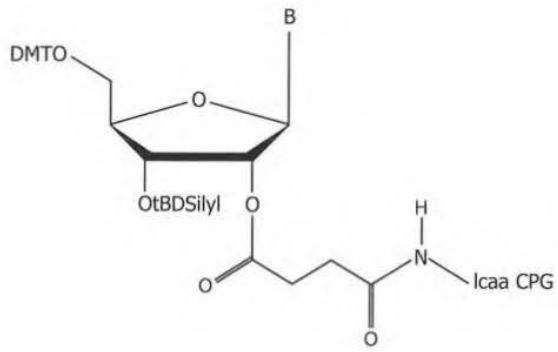
* Synthesizer Gene Assembler Plus

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Phosphoramidites and Supports for Natural RNA Synthesis



Solid Supports for Natural RNA Synthesis with Standard Base Protection

B	Protection	Catalog #
A	n-bz	N-6101
C	n-bz	N-6102
G	n-ibu	N-6103
U	n/a	N-6104
C	n-acetyl	N-6106

			Bulk CPG		pack of 4 cols.			each		pack of 10 cols.		
Catalog #	Product Name	Pore Size	100 mg	1 gm	40 nmole	0.2 µmole	1.0 µmole	10 µmole	15 µmole	40 nmole	0.2 µmole	1.0 µmole
N-6101-05 N-6101-10 N-6101-20	Adenosine (n-bz) 3'-tBDSilyl- 2'-lcaa CPG	500Å 1000Å 2000Å	$25	$240	$50	$60	$85	$240	$355	$100	$120	$170
N-6102-05 N-6102-10 N-6102-20	Cytidine (n-bz) 3'-tBDSilyl- 2'-lcaa CPG	500Å 1000Å 2000Å	$25	$240	$50	$60	$85	$240	$355	$100	$120	$170
N-6103-05 N-6103-10 N-6103-20	Guanosine (n-ibu) 3'-tBDSilyl- 2'-lcaa CPG	500Å 1000Å 2000Å	$25	$240	$50	$60	$85	$240	$355	$100	$120	$170
N-6104-05 N-6104-10 N-6104-20	Uridine 3'-tBDSilyl- 2'-lcaa CPG	500Å 1000Å 2000Å	$25	$240	$50	$60	$85	$240	$355	$100	$120	$170
N-6106-05 N-6106-10 N-6106-20	Cytidine (n-acetyl) 3'-tBDSilyl- 2'-lcaa CPG	500Å 1000Å 2000Å	$25	$240	$50	$60	$85	$240	$355	$100	$120	$170

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

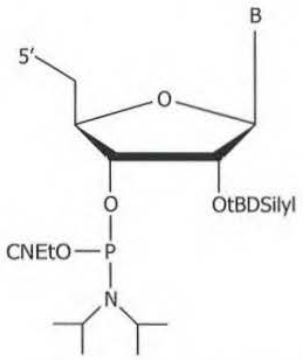
* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

ChemGenes Exhibit 2030 - Page 50

Oligo Synthesis Products

Phosphoramidites and Supports for Natural RNA Synthesis

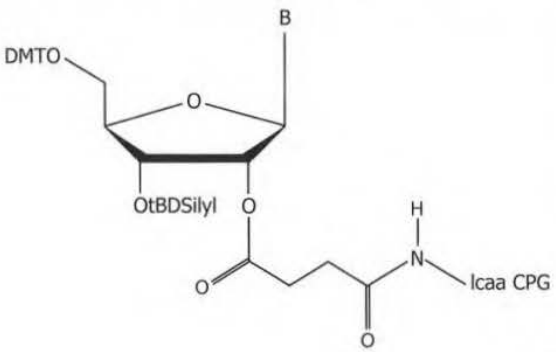


Amidites for Natural RNA Synthesis with Labile Base Protection

5'	B	Protection	Catalog#
DMTO	A	n-PAC	ANP-6671
DMTO	C	n-PAC	ANP-6672
DMTO	G	n-PAC	ANP-6673
DMTO	U	n/a	ANP-5674
MMTO	A	n-PAC	ANP-6678
MMTO	G	n-PAC	ANP-6677

Catalog #	Product Name	250mg	500mg	1gm	2gm	5gm
ANP-6671	2'-tBDSilyl Adenosine (n-PAC) CED phosphoramidite, *M.W. 1018.22*	$70	$130	$250	$480	$1,150
ANP-6672	2'-tBDSilyl Cytidine (n-PAC) CED phosphoramidite, *M.W. 994.19*	$70	$130	$250	$480	$1,150
ANP-6673	2'-tBDSilyl Guanosine (n-PAC) CED phosphoramidite, *M.W. 1034.22*	$70	$130	$250	$480	$1,150
ANP-5674	2'-tBDSilyl Uridine CED phosphoramidite, *M.W. 861.05*	$55	$135	$180	$288	$ 576
ANP-6678	MMT-2'-tBDSilyl Adenosine (n-PAC) CED phosphoramidite, *M.W. 988.19*	$72	$142	$275	$540	$1,320
ANP-6677	MMT-2'-tBDSilyl Guanosine (n-PAC) CED phosphoramidite, *M.W. 1004.19*	$72	$142	$275	$540	$1,320

- The capping reagent phenoxy acetic anhydride is available for capping during oligonucleotide synthesis, please see pages 17-24.
- For a description of the advantages of using 5'-MMT nucleoside phosphoramidites, please see page #49.

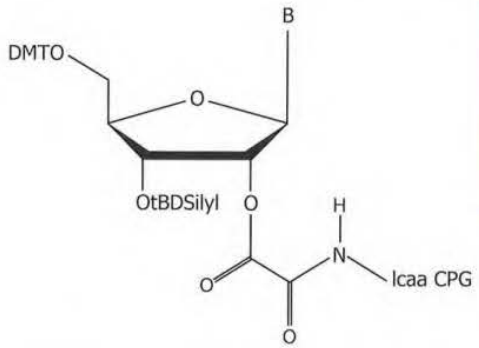


Natural RNA Supports with Labile Base Protection

B	Protection	Catalog #
A	n-PAC	N-P6101
C	n-PAC	N-P6102
G	n-PAC	N-P6103
U	n/a	N-6104

			Bulk CPG		pack of 4 cols.			pack of 10 cols.		
Catalog #	Product Name	Pore Size	100 mg	1 gm	40 nmole	0.2 µmole	1.0 µmole	40 nmole	0.2 µmole	1.0 µmole
N-P6101-05 N-P6101-10	Adenosine (n-PAC) 3'-tBDSilyl-2'-lcaa CPG	500Å 1000Å	$35	$245	$50	$65	$95	$100	$130	$190
N-P6102-05 N-P6102-10	Cytidine (n-PAC) 3'-tBDSilyl-2'-lcaa CPG	500Å 1000Å	$35	$245	$50	$65	$95	$100	$130	$190
N-P6103-05 N-P6103-10	Guanosine (n-PAC) 3'-tBDSilyl-2'-lcaa CPG	500Å 1000Å	$35	$245	$50	$65	$95	$100	$130	$190
N-6104-05 N-6104-10	Uridine 3'-tBDSilyl-2'-lcaa CPG	500Å 1000Å	$25	$240	$50	$60	$85	$100	$120	$170

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Oxalyl Supports with Labile Base Protection for RNA Synthesis

B	Protection	Catalog #
A	n-PAC	N-5141
C	n-PAC	N-5142
G	n-PAC	N-5143
U	n/a	N-5144

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 40 nmole	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 40 nmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-5141-05	Adenosine (n-PAC) 3'-tBDSilyl 2'-oxalyl Icaa CPG	500Å	$42	$294	$60	$78	$96	$120	$156	$192
N-5142-05	Cytidine (n-PAC) 3'-tBDSilyl 2'-oxalyl Icaa CPG	500Å	$42	$294	$60	$78	$96	$120	$156	$192
N-5143-05	Guanosine (n-PAC) 3'-tBDSilyl 2'-oxalyl Icaa CPG	500Å	$42	$294	$60	$78	$96	$120	$156	$192
N-5144-05	Uridine 3'-tBDSilyl 2'-oxalyl Icaa CPG	500Å	$42	$294	$60	$78	$96	$120	$156	$192

Ammonia Free Oligo Deprotection Solution should be used under the following conditions:

1. PAC-Protected nucleosides phosphoramidites must be used for efficient base deprotection using ammonia free oligo deprotection solution.

2. Oxalyl CPGs must be used for ammonia free oligo deprotection solution to cleave the oligo from the support. The standard succinyl CPGs inadequately deprotect when using ammonia free oligo deprotection solution. The CPG (1 µmole scale synthesis) after oligo synthesis is washed with ether, air dried, and is placed in a vial with a septum cap. The 1 ml of the ammonia free oligo deprotection solution is added using a syringe.

Ammonia Free Oligo Deprotection Solution

Catalog#	Pricing
RN-1435	$35.00 / 25 ml

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

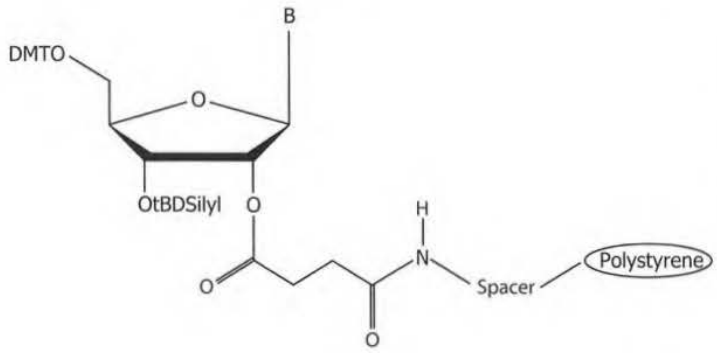
* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

ChemGenes Exhibit 2030 - Page 52

Oligo Synthesis Products

Phosphoramidites and Supports for Natural RNA Synthesis



Natural RNA with Succinyl Polystyrene

B	Protection	Catalog #
A	n-bz	N-6111
C	n-bz	N-6112
G	n-ibu	N-6113
U	n/a	N-6114
C	n-acetyl	N-6116

Catalog #	Product Name	Pore Size	Particle Size	Bulk Polystyrene Loading 30-40 μm/gm 100 mg	1 gm	5 gm	pack of 4 cols. 40 nmole	.02 μmole	1.0 μmole	pack of 10 cols. 40 nmole	0.2 μmole	1.0 μmole
N-6111-05	Adenosine (n-bz) 3'-tBDSilyl succinyl Polystyrene	500Å	60-70 microns	$40	$150	$465	$55	$65	$90	$110	$130	$180
N-6112-05	Cytidine (n-bz) 3'-tBDSilyl succinyl Polystyrene	500Å	60-70 microns	$40	$150	$465	$55	$65	$90	$110	$130	$180
N-6113-05	Guanosine (n-ibu) 3'-tBDSilyl succinyl Polystyrene	500Å	60-70 microns	$45	$165	$490	$60	$70	$100	$120	$140	$200
N-6114-05	Uridine 3'-tBDSilyl succinyl Polystyrene	500Å	60-70 microns	$35	$140	$455	$50	$60	$85	$100	$120	$170
N-6116-05	Cytidine (n-acetyl) 3'-tBDSilyl succinyl Polystyrene	500Å	60-70 microns	$40	$150	$465	$55	$65	$90	$110	$130	$180

ChemGenes offers unique polystyrene supports and columns that have special appeal due to rigidity, swelling, and inertness towards moisture and water. Our polystyrenes have a special linker and pore size (500Å). This unique cross-linking nature matches very closely with CPG (500Å).

Our supports have consistently displayed outstanding performance for the synthesis of medium length oligos of varying sizes.

Please Indicate Synthesizer when Ordering

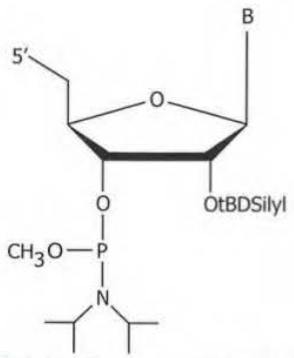
ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

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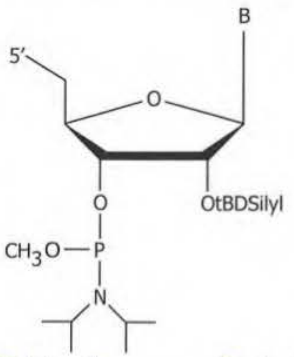
Phosphoramidites and Supports for Natural RNA Synthesis



Natural RNA Amidites with p-Methoxy and Standard Base Protection

5'	B	Protection	Catalog#
DMTO	A	n-bz	ANP-5691
DMTO	C	n-bz	ANP-5692
DMTO	G	n-ibu	ANP-5693
DMTO	U	n/a	ANP-5694
MMTO	A	n-bz	ANP-5696
MMTO	G	n-ibu	ANP-5697

Catalog#	Product name	250mg	500mg	1gm	2gm	5gm
ANP-5691	2'-tBDSilyl Adenosine (n-bz) p-methoxy phosphoramidite, *M.W. 949.16*	$65	$120	$215	$355	$795
ANP-5692	2'-tBDSilyl Cytidine (n-bz) p-methoxy phosphoramidite, *M.W. 925.13*	$65	$120	$215	$355	$795
ANP-5693	2'-tBDSilyl Guanosine (n-ibu) p-methoxy phosphoramidite, *M.W. 931.14*	$65	$120	$215	$355	$795
ANP-5694	2'-tBDSilyl Uridine p-methoxy phosphoramidite, *M.W. 822.01*	$65	$120	$215	$355	$795
ANP-5696	MMT-2'-tBDSilyl Adenosine (n-bz) p-methoxy phosphoramidite, *M.W. 919.13*	$90	$170	$230	$380	$855
ANP-5697	MMT-2'-tBDSilyl Guanosine (n-ibu) p-methoxy phosphoramidite, *M.W. 901.11*	$90	$170	$230	$380	$855



Natural RNA Amidites with p-Methoxy and Labile Base Protection

5'	B	Protection	Catalog#
DMTO	A	n-PAC	ANP-3861
DMTO	C	n-PAC	ANP-3862
DMTO	G	n-PAC	ANP-3863
DMTO	U	n/a	ANP-5694 (prices listed above)
MMTO	A	n-PAC	ANP-3866
MMTO	G	n-PAC	ANP-3867

Catalog #	Product Name	250mg	500mg	1gm	2gm	5gm
ANP-3861	2'-tBDSilyl Adenosine (n-PAC) p-methoxy phosphoramidite, *M.W. 979.18*	$90	$175	$335	$645	$1,550
ANP-3862	2'-tBDSilyl Cytidine (n-PAC) p-methoxy phosphoramidite, *M.W. 955.16*	$90	$175	$335	$645	$1,550
ANP-3863	2'-tBDSilyl Guanosine (n-PAC) p-methoxy phosphoramidite, *M.W. 995.18*	$90	$175	$335	$645	$1,550
ANP-3866	MMT-2'-tBDSilyl Adenosine (n-PAC) p-methoxy phosphoramidite, *M.W. 949.16*	$100	$190	$375	$735	$1,800
ANP-3867	MMT-2'-tBDSilyl Guanosine (n-PAC) p-methoxy phosphoramidite, *M.W. 965.16*	$100	$190	$375	$735	$1,800

- For natural phosphodiester oligonucleotides, use thiopenol solution (catalog#: RN-1465 on pages 17-24) to thoroughly remove the p-methoxy group prior to ethanolic ammonia deprotection.
- To make p-methoxy phosphotriester oligonucleotides, use our ammonia free deprotection solution listed on page 98.

Summary of Modified Ribo Phosphoramidites & Supports

ChemGenes produces a wide range of modified RNA phosphoramidites and Supports.

The following summarizes our key modifications:

Unnatural 2'-5'-Linked RNA

N^3 Substituted Pyrimidines
Includes N^3-Methyl Uridine, N^3-Methyl ribo Thymidine, & N^3-Thiobenzoylethyl Uridine Amidites & Supports

Inosine, ribo Thymidine, 5-Methyl Cytidine, and 2,2'-Anhydro Uridine Amidites & Supports

N^6 Substituted Purine Amidites & Supports
Includes N^6-Benzyl Adenosine and N^6-isopentenyl Adenosine Amidites & Supports

Puromycin CPG

N^4-Ethyl Cytidine, 4-Thio-U, 4-Triazolyl-U, and Pyridine-2-One Products

2'-Fluoro and 2'-Amino Amidites & Supports
Includes 2'-Fluoro C, 2'-Fluoro U, 2'-Amino C, 2'-Amino U

2-Amino Adenosine, Purine riboside, & 2-Amino purine riboside

Halogenated Amidites & Supports
Includes 5-Bromo Cytidine, 5-Bromo Uridine, 5-Iodo Cytidine, 5-Iodo Uridine, 5-Fluoro Uridine, and 8-Bromo Adenosine

7-Deaza Amidites and Supports

isoC and isoG Amidites & Supports

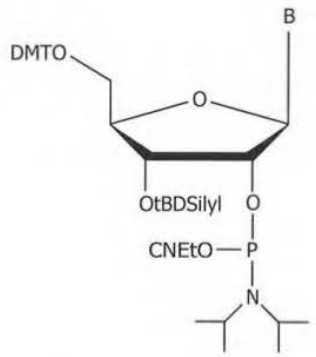
2',3'-Diacetyl Guanosine & Uridine

L-RNA Amidites and Supports

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Unnatural 2'-5' Linkage RNA Amidites with Standard Base Protection

B	Protection	Catalog#
A	n-bz	ANP-5681
C	n-bz	ANP-5682
G	n-ibu	ANP-5683
U	n/a	ANP-5684

Catalog#	Product name	250mg	500mg	1gm
ANP-5681	Adenosine (n-bz) 3'-tBDSilyl CED phosphoramidite, *M.W. 988.19*	$85	$160	$280
ANP-5682	Cytidine (n-bz) 3'-tBDSilyl CED phosphoramidite, *M.W. 964.17*	$85	$160	$280
ANP-5683	Guanosine (n-ibu) 3'-tBDSilyl CED phosphoramidite, *M.W. 970.18*	$85	$160	$280
ANP-5684	Uridine 3'-tBDSilyl CED phosphoramidite, *M.W. 861.05*	$85	$160	$280

Synthesis of Unnatural RNA (2'-5'-Linkage), 2'-5'-linked Oligos

ChemGenes offers a wide variety of 3'-Silyl protected ribonucleoside phosphoramidites that allow the synthesis of 2'-5'-linked oligos. The low molecular weight oligomer 5'-O-triphosphoryl adenylyl-(2'-5')-adenylyl-(2'-5')-adenosine (pppA2'p5'A2'p5'A) activates the latent endo-ribonuclease RNase L, which subsequently cleaves the messenger and ribosomal RNAs *(R. Charubala, E. Uhlmann, F. Himmelsbach, W. Pfleiderer, Helv. Chem. Acta, 70, 2028, 1987).*

Thus such oligonucleotides are very useful to determine their exact biological role, to extend their biological half life, or to alter the biological activity of the core structure (A2'p5'A2'p5'A) *(J. C. Jamoulle, J. Imai, K. Lesiak, P. F. Torrence, Biochemistry, 23, 3063, 1984).*

2',5'-linked synthetic RNA sequences consisting of mixed bases were synthesized. RNA 2',5' duplexes are not substrates of the enzyme RNAse H (Escherichia coli or HIV-1 reverse transcriptase). However, they can inhibit the RNaseH mediated cleavage of a natural DNA:RNA substrate *(Marita Wasner, Dominique Arion, Gadi Borkow, Anne Noronha, Andre H. Uddin, Michael A. Parniak and Masad J. Damha, Biochemistry. 37, 7478-7486, 1998).*

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

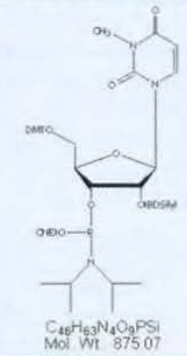
** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

Oligo Synthesis Products

Phosphoramidites and Supports for Modified RNA Synthesis

N^3-Methyl Uridine CED OP

(N^3-Methyl-2'-tBDSilyl Uridine CED OP)



Catalog#

ANP-7451

Pricing

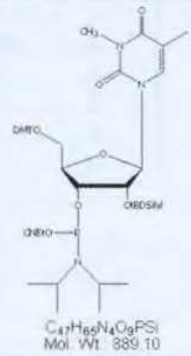
$145.00 / 100 µmole

$380.00 / 250 mg

Purity: 98% +

N^3-Methyl ribo Thymidine CED OP

(N^3-Methyl-2'-tBDSilyl ribo Thymidine CED OP)



Catalog#

ANP-7461

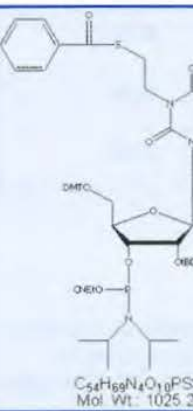
Pricing

$180.00 / 100 µmole

$450.00 / 250 mg

Purity: 98% +

N^3-Thiobenzoylethyl Uridine CED OP



Catalog#

ANP-7441

Pricing

$280.00 / 100 µmole

$615.00 / 250 mg

Purity: 98% +

N^3 Substituted Pyrimidine Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9814-05	N^3-Methyl Uridine	500Å	$75	$475	$90	$120	$180	$240
N-9814-10	3'-tBDSilyl 2'-Icaa CPG	1000Å						
N-9816-05	N^3-Methyl ribo Thymidine	500Å	$75	$475	$90	$120	$180	$240
N-9816-10	3'-tBDSilyl 2'-Icaa CPG	1000Å						
N-9828-05	N^3-Thiobenzoylethyl Uridine	500Å	$110	$475	$115	$155	$230	$310
N-9828-10	3'-tBDSilyl 2'-Icaa CPG	1000Å						

N^3-methyl Uridine and N^3-methyl Thymidine are the results of chemical carcinogens on DNA/RNA. In general, alkylation products are formed at the ring-nitrogen atoms and the exocyclic oxygen atoms of all four bases as well as at the oxygen atoms of the internucleotide phosphate bonds. Such adducts can initiate neoplastic transformations *(B. Singer, J. T. Kusmierek, Ann. Rev. Biochem., 52, 522, 1982; R. Saffhill, G. P. Margison, P. J. O'Connor, Biochim. Biophys. Acta, 823, 111, 1985).*

The individual alkylation products are thought to possess different mutagenic and carcinogenic properties *(Nucl. Acids Res., 20, 6471, 1992).*

N^3-methyl Uridine phosphoramidite and N^3-methyl Thymidine phosphoramidite are currently available from ChemGenes for incorporation into RNA/DNA to further study the biochemical nature of these oligonucleotides. It is important to gain an understanding of these ring-nitrogen modified bases for eventual damage repairs.

ChemGenes CORPORATION

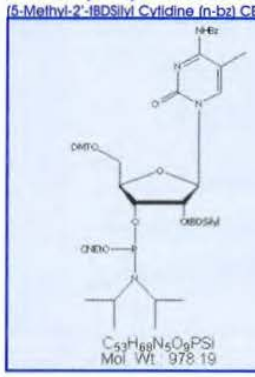
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Phosphoramidites and Supports for Modified RNA Synthesis

5-Methyl Cytidine CED OP

(5-Methyl-2'-tBDSilyl Cytidine (n-bz) CED OP)



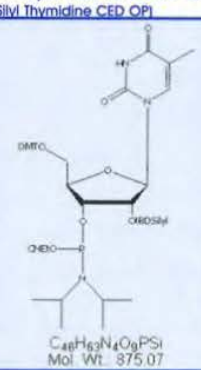
Catalog# ANP-5675

Pricing
$120.00 / 100 µmole
$320.00 / 250 mg

Purity: 98% +

Ribo Thymidine CED OP

(2'-tBDSilyl Thymidine CED OP)



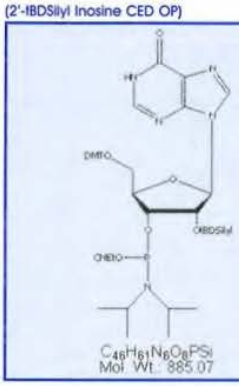
Catalog# ANP-7511

Pricing
$185.00 / 100 µmole
$480.00 / 250 mg

Purity: 98% +

Inosine CED OP

(2'-tBDSilyl Inosine CED OP)



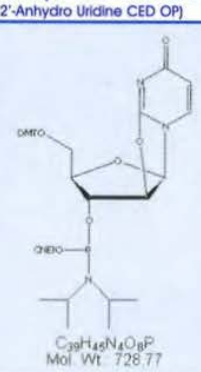
Catalog# ANP-5680

Pricing
$ 70.00 / 250 mg
$120.00 / 500 mg
$190.00 / 1 gm

Purity: 98% +

2,2'-Anhydro Uridine CED OP

(DMT-2,2'-Anhydro Uridine CED OP)



Catalog# ANP-4876

Pricing
$165.00 / 100 µmole
$485.00 / 250 mg

Purity: 98% +

Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9822-05 N-9822-10	5-Methyl Cytidine (n-bz) 3'-tBDSilyl 2'-Icaa CPG	500Å 1000Å	$ 60	$475	$75	$110	$150	$210
N-8477-05 N-8477-10	Ribo Thymidine 3'-tBDSilyl 2'-Icaa CPG	500Å 1000Å	$110	$545	$75	$ 90	$150	$180
N-8370-05 N-8370-10	Inosine 3'-tBDSilyl- 2'-Icaa CPG	500Å 1000Å	$ 75	$425	$50	$ 65	$100	$130
N-9810-05 N-9810-10	2,2'-Anhydro Uridine 3'-Icaa CPG	500Å 1000Å	$ 60	$ 485	$ 60	$ 75	$120	$150

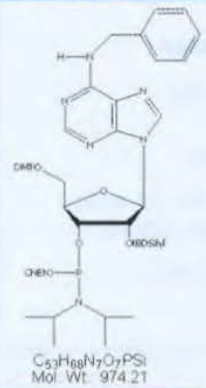
ChemGenes Exhibit 2030 - Page 58

Oligo Synthesis Products

Phosphoramidites and Supports for Modified RNA Synthesis

N^6-Benzyl Adenosine CED OP

(N^6-Benzyl-2'-tBDSilyl Adenosine CED OP)



$C_{53}H_{68}N_7O_7PSi$
Mol. Wt. 974.21

Catalog# ANP-8614

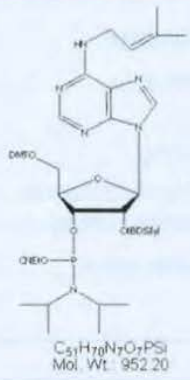
Pricing

$365.00 / 100 µmole

Purity: 98% +

N^6-isopentenyl Adenosine CED OP

(N^6-isopentenyl-2'-tBDSilyl Adenosine CED OP)



$C_{51}H_{70}N_7O_7PSi$
Mol. Wt. 952.20

Catalog# ANP-8615

Pricing

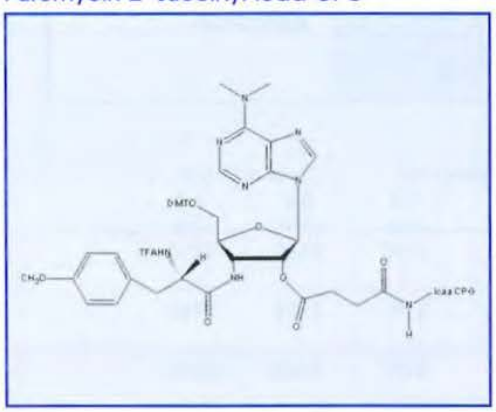
$365.00 / 100 µmole

Purity: 98% +

N^6-Substituted Purine Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9050-05	N^6-Benzyl Adenosine	500Å	$120	$800	$105	$170	$210	$340
N-9050-10	3'-tBDSilyl 2'-Icaa CPG	1000Å						
N-9060-05	N^6-isopentenyl Adenosine	500Å	$125	$810	$110	$175	$220	$350
N-9060-10	3'-tBDSilyl 2'-Icaa CPG	1000Å						

Puromycin 2'-succinyl Icaa CPG



Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	Each 10 µmole	Each 15 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-1971-05	Puromycin	500Å	$108	$896	$108	$190	$324	$488	$216	$380
N-1971-10	2'-Icaa CPG	1000Å								

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

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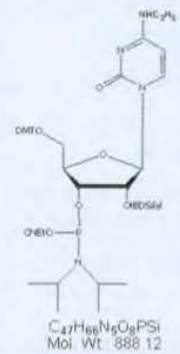
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Phosphoramidites and Supports for Modified RNA Synthesis

N^4-Ethyl Cytidine CED OP

(N^4-Ethyl 2'-tBDSilyl Cytidine CED OP)



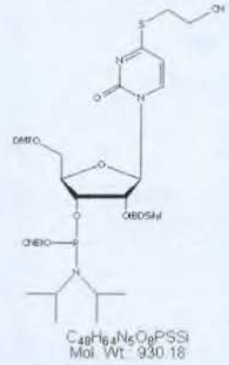
Catalog# ANP-4165

Pricing
$265.00 / 100 µmole
$455.00 / 250 mg

Purity: 98% +

4-Thio Uridine CED OP

(4-Thiocyanoethyl 2'-tBDSilyl Uridine CED OP)



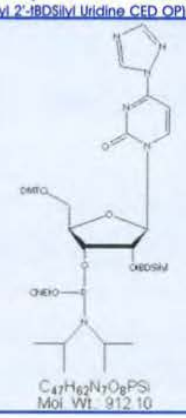
Catalog# ANP-8101

Pricing
$350.00 / 100 µmole
$700.00 / 250 mg

Purity: 98% +

4-Triazolyl Uridine CED OP

(4-Triazolyl 2'-tBDSilyl Uridine CED OP)



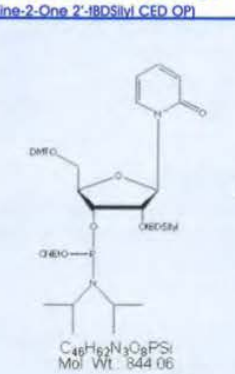
Catalog# ANP-9167

Pricing
$255.00 / 100 µmole
$480.00 / 250 mg

Purity: 98% +

Pyridine-2-One CED OP

(Pyridine-2-One 2'-tBDSilyl CED OP)



Catalog# ANP-8611

Pricing
$280.00 / 100 µmole
$665.00 / 250 mg

Purity: 98% +

Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9020-05	Pyridine-2-One	500Å	$105	$685	$95	$145	$190	$290
N-9020-10	3'-tBDSilyl 2'-Icaa CPG	1000Å						
N-9824-05	N^4-Ethyl Cytidine	500Å	$ 60	$525	$85	$125	$170	$250
N-9824-10	3'-tBDSilyl 2'-Icaa CPG	1000Å						

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

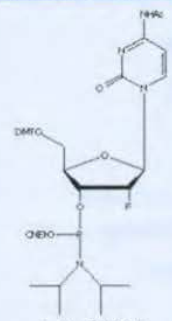
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Oligo Synthesis Products

Phosphoramidites and Supports for Modified RNA Synthesis

2'-Fluoro Cytidine CED OP

[2'-Fluoro Cytidine (n-acetyl) CED OP]



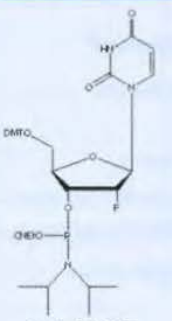
$C_{41}H_{49}FN_5O_8P$
Mol. Wt.: 789.83

Catalog# ANP-9152

Pricing
$150.00 / 100 µmole
$440.00 / 250 mg

Purity: 98% +

2'-Fluoro Uridine CED OP



$C_{39}H_{46}FN_4O_8P$
Mol. Wt.: 748.78

Catalog# ANP-9154

Pricing
$150.00 / 100 µmole
$440.00 / 250 mg

Purity: 98% +

2'-Fluoro 3'-Succinyl Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-1057-05	2'-Fluoro Cytidine	500Å	$245	$135	$210	$270	$420
N-1057-10	3'-Icaa CPG	1000Å					
N-1056-05	2'-Fluoro Uridine	500Å	$160	$115	$190	$230	$380
N-1056-10	3'-Icaa CPG	1000Å					

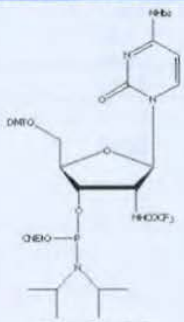
2'-Fluoro nucleoside phosphoramidites

A number of 2'-deoxy-2'-fluoro nucleosides have been found to display significant biological activity as nucleosides and as triphosphates, and are used as versatile probes for DNA and RNA polymerases (see review article; F. Viani, Chapter 13, pp 419-449, in Stereochemical Challenges and Biomedical Targets, Ed., V.A. Soloshonola, John Wiley & Sons Ltd., 1999 ; G.E. Wright, N.C. Brown, Pharmacol. Ther. 1990, 47, 447).

The incorporation of the deoxyfluoronucleosides into oligonucleotides imparts very interesting biological properties to fluorinated oligomers (B.Reif ,V.Wittmann, H.Schwalbe, C. Griesinger, K.Jahn-Hofmann, J.W.Engels, Helv. Chim. Acta, 1997, 80, 1952).

2'-Amino Cytidine CED OP

[2'-Amino TFA Cytidine (n-bz) CED OP]



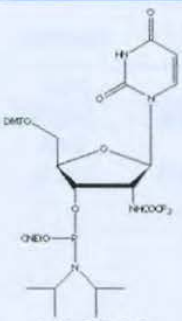
$C_{48}H_{52}F_3N_6O_9P$
Mol. Wt.: 944.93

Catalog# ANP-5322

Pricing
$250.00 / 100 µmole
$495.00 / 250 mg

Purity: 98% +

2'-Amino Uridine CED OP



$C_{41}H_{47}F_3N_5O_9P$
Mol. Wt.: 841.81

Catalog# ANP-9403

Pricing
$222.00 / 100 µmole
$450.00 / 250 mg

Purity: 98% +

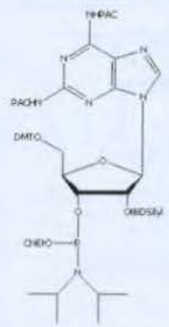
2'-Amino 3'-Succinyl Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9010-05	2'-Amino Uridine	500Å	$110	$610	$90	$155	$180	$310
N-9010-10	3'-Icaa CPG	1000Å						

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Diaminopurine-CED-OP

(2-Amino Adenosine CED OP), (2-Amino-2'-tBDSilyl Adenosine CED OP)



$C_{62}H_{75}N_9O_{11}PSi$
Mol. Wt.: 1167.37

Catalog# ANP-8613

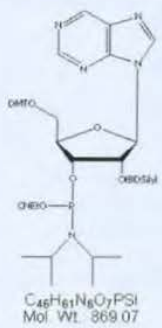
Pricing

$325.00 / 100 µmole

Purity: 98% +

Purine Riboside CED OP

(2'-tBDSilyl Purine Riboside CED OP)



$C_{46}H_{61}N_8O_7PSi$
Mol. Wt.: 869.07

Catalog# ANP-8616

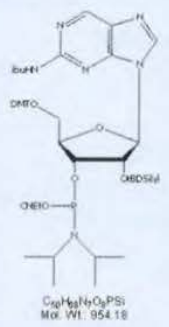
Pricing

$385.00 / 100 µmole

Purity: 98% +

2-Amino Purine Riboside CED OP

(2'-tBDSilyl 2-Amino Purine Riboside CED OP)



$C_{56}H_{69}N_7O_8PSi$
Mol. Wt.: 954.18

Catalog# ANP-8617

Pricing

$370.00 / 100 µmole

Purity: 98% +

Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9040-05	2-Amino Adenosine	500Å	$120	$615	$95	$165	$190	$330
N-9040-10	3'-tBDSilyl 2'-lcaa CPG	1000Å						
N-9080-05	Purine Riboside	500Å	$110	$610	$95	$165	$190	$330
N-9080-10	3'-tBDSilyl 2'-lcaa CPG	1000Å						
N-9070-05	2-Amino Purine Riboside	500Å	$120	$610	$95	$165	$190	$330
N-9070-10	3'-tBDSilyl 2'-lcaa CPG	1000Å						

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

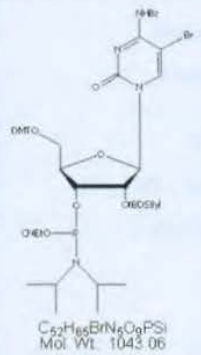
** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

Oligo Synthesis Products

Phosphoramidites and Supports for Modified RNA Synthesis

5-Bromo Cytidine CED OP

(5-Bromo-2'-tBDSilyl Cytidine (n-bz) CED OP)



Catalog#

ANP-5648

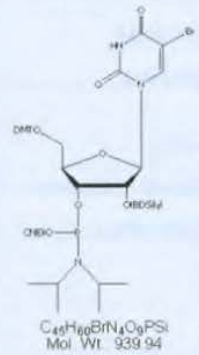
Pricing

$135.00 / 100 µmole
$330.00 / 250 mg
$585.00 / 500 mg

Purity: 98% +

5-Bromo Uridine CED OP

(5-Bromo-2'-tBDSilyl Uridine CED OP)



Catalog#

ANP-7411

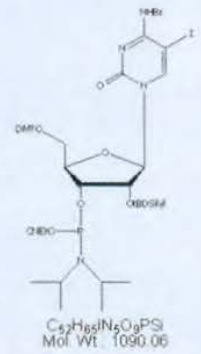
Pricing

$155.00 / 100 µmole
$350.00 / 250 mg

Purity: 98% +

5-Iodo Cytidine CED OP

(5-Iodo-2'-tBDSilyl Cytidine (n-bz) CED OP)



Catalog#

ANP-7212

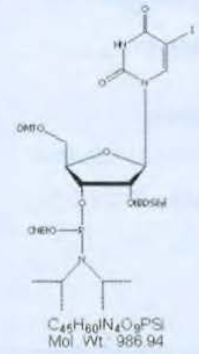
Pricing

$155.00 / 100 µmole
$350.00 / 250 mg

Purity: 98% +

5-Iodo Uridine CED OP

(5-Iodo-2'-tBDSilyl Uridine CED OP)



Catalog#

ANP-7412

Pricing

$155.00 / 100 µmole
$350.00 / 250 mg

Purity: 98% +

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

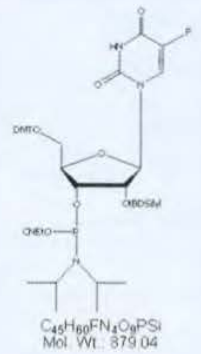
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5-Fluoro Uridine CED OP

(5-Fluoro 2'-tBDSilyl Uridine CED OP)



$C_{45}H_{60}FN_4O_9PSi$
Mol. Wt.: 879.04

Catalog#

ANP-6154

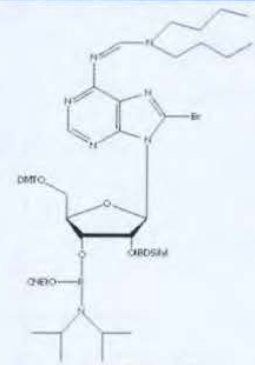
Pricing

$255.00 / 100 µmole
$480.00 / 250 mg

Purity: 98% +

8-Bromo Adenosine CED OP

(8-Bromo-2'-tBDSilyl Adenosine (n,n-dibuf) CED OP)



$C_{55}H_{78}BrN_9O_7PSi$
Mol. Wt.: 1102.22

Catalog#

ANP-7111

Pricing

$115.00 / 100 µmole
$235.00 / 250 mg

Purity: 98% +

Halogenated Purine & Pyrimidine Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9844-05	5-Bromo Cytidine (n-bz)	500Å	$140	$580	$115	$130	$230	$260
N-9844-10	3'-tBDSilyl 2'-lcaa CPG	1000Å						
N-9818-05	5-Bromo Uridine	500Å	$125	$550	$105	$120	$210	$240
N-9818-10	3'-tBDSilyl 2'-lcaa CPG	1000Å						
N-9893-05	5-Iodo Cytidine (n-bz)	500Å	$150	$800	$130	$175	$260	$350
N-9893-10	3'-tBDSilyl 2'-lcaa CPG	1000Å						
N-9809-05	5-Iodo Uridine	500Å	$125	$550	$105	$120	$210	$240
N-9809-10	3'-tBDSilyl 2'-lcaa CPG	1000Å						
N-9832-05	5-Fluoro Uridine	500Å	$125	$580	$105	$120	$210	$240
N-9832-10	3'-tBDSilyl 2'-lcaa CPG	1000Å						
N-9812-05	8-Bromo Adenosine (n,n-dibuf)	500Å	$150	$800	$130	$175	$260	$350
N-9812-10	3'-tBDSilyl 2'-lcaa CPG	1000Å						

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

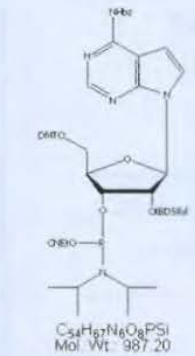
** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

Oligo Synthesis Products

Phosphoramidites and Supports for Modified RNA Synthesis

7-Deaza Adenosine CED OP

(7-Deaza-2'-tBDSilyl Adenosine (n-bz) CED OP)



$C_{54}H_{67}N_6O_8PSi$
Mol. Wt. 987.20

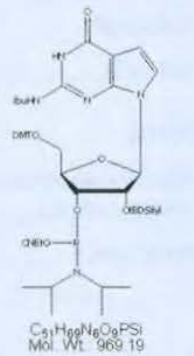
Catalog# ANP-7101

Pricing $315.00 / 100 µmole

Purity: 98% +

7-Deaza Guanosine CED OP

(7-Deaza-2'-tBDSilyl Guanosine (n-ibu) CED OP)



$C_{51}H_{69}N_6O_9PSi$
Mol. Wt. 969.19

Catalog# ANP-7301

Pricing $355.00 / 100 µmole

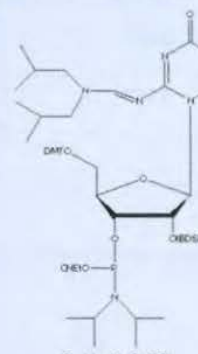
Purity: 98% +

7-Deaza 2'-Succinyl Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9897-05	7-Deaza Adenosine	500Å	$95	$685	$110	$190	$220	$380
N-9897-10	(n-bz) 2'-Icaa CPG	1000Å						
N-9895-05	7-Deaza Guanosine	500Å	$95	$685	$100	$190	$220	$380
N-9895-10	(n-ibu) 2'-Icaa CPG	1000Å						

isoCytidine CED OP

(isoCytidine (n,n-diisobutylformamidine) CED OP)



$C_{54}H_{79}N_6O_8PSi$
Mol. Wt. 999.30

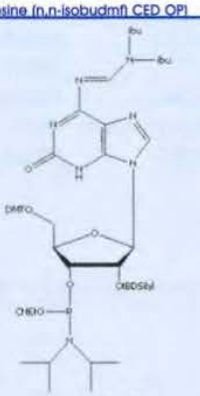
Catalog# ANP-7715

Pricing $370.00 / 100 µmole

Purity: 98% +

isoGuanosine CED OP

(isoGuanosine (n,n-isobudmf) CED OP)



$C_{55}H_{75}N_8O_{10}PSi$
Mol. Wt. 1067.29

Catalog# ANP-5988

Pricing $370.00 / 100 µmole

Purity: 98% +

isoC & isoG 2'-Succinyl Icaa Supports & Columns

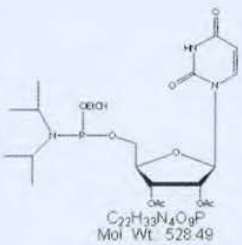
Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9712-05	isoCytidine (n,n-diisobutyl-	500Å	$155	$810	$120	$145	$240	$290
N-9712-10	formamidine) 2'-Icaa CPG	1000Å						
N-9827-05	isoGuanosine	500Å	$155	$810	$120	$150	$240	$300
N-9827-10	(n,n-isobudmf) 2'-Icaa CPG	1000Å						

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2',3'-Diacetyl Uridine 5'-CED OP

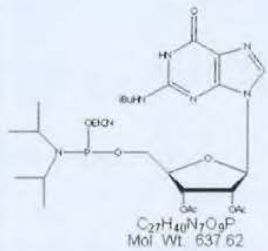


Catalog#
ANP-6155

Pricing
$80.00 / 100 µmole
$175.00 / 250 mg

Purity: 98% +

2',3'-Diacetyl Guanosine (n-ibu) 5'-CED OP



Catalog#
ANP-6156

Pricing
$90.00 / 100 µmole
$190.00 / 250 mg

Purity: 98% +

Terminal Diol Generating Reagents

2',3'-Diacetyl-5'-phosphoramidites are available from ChemGenes for the introduction of 2',3'-ribose units at the 5'-end of oligonucleotides. Following ammonia deprotection, the 2',3'-diacetate generates a free ribose 2',3'-diol moiety in the oligonucleotide.

Periodate cleavage of these diols generates dialdehydes *(N. F. Krynetskaya, G. V. Zayakina, T. S. Oretskaya, E. M. Volkov, Z. A. Shabarova, Nucleo. Nucleot., 5, 33, 1986)*. These dialdehydes have been stabilized by amines, especially by the terminal amino groups of lysine residues of proteins or polypeptides *(J. X. Khym, Biochemistry, 2, 344, 1963)*. Such oligonucleotide-protein conjugates have been utilized in immuno-assay and diagnostic applications.

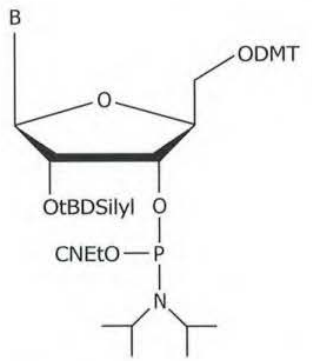
Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

Oligo Synthesis Products

Phosphoramidites and Supports for Modified RNA Synthesis



β-L-RNA Phosphoramidites

B	Protection	Catalog#
A	n-bz	ANP-4841
C	n-bz	ANP-4842
G	n-ibu	ANP-4843
T	n/a	ANP-4844
U	n/a	ANP-4845
C	n-acetyl	ANP-4846

Catalog#	Product name	250mg	500mg	1gm	2gm	5gm
ANP-4841	β-L-Adenosine (n-bz) 2'-tBDSilyl 3'-CED phosphoramidite, *M.W. 988.19*	$180	$325	$600	$1,152	$2,765
ANP-4842	β-L-Cytidine (n-bz) 2'-tBDSilyl 3'-CED phosphoramidite, *M.W. 964.17*	$180	$325	$600	$1,152	$2,765
ANP-4843	β-L-Guanosine (n-ibu) 2'-tBDSilyl 3'-CED phosphoramidite, *M.W. 970.18*	$180	$325	$600	$1,152	$2,765
ANP-4844	β-L-Thymidine 2'-tBDSilyl 3'-CED phosphoramidite, *M.W. 875.07*	$180	$325	$600	$1,152	$2,765
ANP-4845	β-L-Uridine 2'-tBDSilyl 3'-CED phosphoramidite, *M.W. 861.05*	$180	$325	$600	$1,152	$2,765
ANP-4846	β-L-Cytidine (n-acetyl) 2'-tBDSilyl 3'-CED phosphoramidite, *M.W. 902.10*	$180	$325	$600	$1,152	$2,765

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

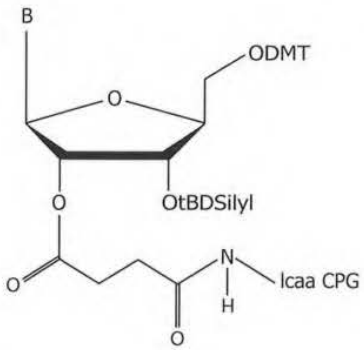
* Synthesizer Gene Assembler Plus

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Phosphoramidites and Supports for Modified RNA Synthesis



β-L-RNA lcaa Supports

B	Protection	Catalog #
A	n-bz	N-4691
C	n-bz	N-4692
G	n-ibu	N-4693
U	n/a	N-4694
T	n/a	N-4695
C	n-acetyl	N-4696

			Bulk CPG			pack of 4 cols.		pack of 10 cols.	
Catalog #	Product Name	Pore Size	100 mg	500 mg	1 gm	0.2 μmole	1.0 μmole	0.2 μmole	1.0 μmole
N-4691-05	β-L-Adenosine (n-bz)	500Å	$135	$425	$850	$110	$125	$220	$250
N-4691-10	3'-tBDSilyl 2'-lcaa CPG	1000Å							
N-4692-05	β-L-Cytidine (n-bz)	500Å	$135	$425	$850	$110	$125	$220	$250
N-4692-10	3'-tBDSilyl 2'-lcaa CPG	1000Å							
N-4693-05	β-L-Guanosine (n-ibu)	500Å	$135	$425	$850	$110	$125	$220	$250
N-4693-10	3'-tBDSilyl 2'-lcaa CPG	1000Å							
N-4694-05	β-L-Uridine	500Å	$135	$425	$850	$110	$125	$220	$250
N-4694-10	3'-tBDSilyl 2'-lcaa CPG	1000Å							
N-4695-05	β-L-ribo Thymidine	500Å	$135	$425	$850	$110	$125	$220	$250
N-4695-10	3'-tBDSilyl 2'-lcaa CPG	1000Å							
N-4696-05	β-L-Cytidine (n-acetyl)	500Å	$135	$425	$850	$110	$125	$220	$250
N-4696-10	3'-tBDSilyl 2'-lcaa CPG	1000Å							

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

Purification of synthetic RNA

RNA purification is significantly more difficult than DNA purification due to possible chain cleavage and isomerization of the internucleotide phosphate linkage. Several methodologies for deprotection and purification have been developed.

Small Quantity Purification

The first step following the synthesis of oligonucleotides involves a base treatment to remove the N-protecting and cyanoethyl groups. For base deprotection, both 28% aqueous ammonia containing ethanol (1:3) and anhydrous saturated ethanolic ammonia solutions have been used. The anhydrous saturated ethanolic ammonia solution was found to be superior in preventing the loss of any silyl groups *(S. A. Scaringe, C. Francklyn, N. Usman, Nucl. Acids Res., 18, 5433, 1990)*. It has been reported that a certain amount of silyl groups will be lost when using the 28% aqueous ammonia containing ethanol (1:3) solution *(J. Stawinski, R. Stromberg, M. Thelin, E. Westman, Nucl. Acids Res., 16, 9285, 1988)*.

The second step in the deprotection process involves removal of silyl protecting groups (TBDMS). This has been accomplished by 1.0 M solution of tetrabutylammoniumfluoride (TBAF) in THF. The reaction involves 50 equivalents of TBAF per TBDMS group during 24 hours. Even though initially deemed adequate, this method is slow and still leaves some TBDMS groups on the oligonucleotide. Superior results have been obtained with triethylamine-tris-hydrofluoride (TEA.3HF). In the synthesis of 76-mer tRNA the reaction with neat TEA.3HF for 14 hours resulted in complete removal of all TBDMS groups *(D. Gasparutto et al., ibid.)*. The faster rate of silyl removal with TEA.3HF has been demonstrated by others *(B. Sproat, F. Colonna, B. Mullah, D. Tsou, A. Andrus, A. Hampel, R. Vinayak, Nucleosides & Nucleotides, 14, 255, 1995)*.

RNA Purification Kit
(for Synthetic RNA via 2'-tBDSilyl Protection)

A double advantage with ChemGenes: Offering the highest purity RNA monomers and Deprotection & Purification Kits

With ChemGenes purification kits and products you can now synthesize and obtain a high quality of pure synthetic RNA. ChemGenes RNA purification kits include all the solutions and buffers required to obtain a high quality of synthetic RNA.

Catalog #	Quantity	Prices
CSS-5232-02	1 Kit	$150.00 / 0.2 um
CSS-5232-10	1 kit	$205.00 / 1.0 um

The RNA Purification kit consist of the Following:

- CSS-3268 (10 ml)
- CSS-5272 (pack of 10)
- CSS-4356 (25 ml)
- CSS-6634 (50 ml)

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Anhydrous Ammonia in Ethanol Solution

(20% ammonia by weight in absolute ethanol)
NH_3 F.W.: 17
C_2H_6O F.W.: 46.07

Catalog #	Quantity	Prices
CSS-3268	10 ml	$35.00

Ideal for selective deprotection of both the base protecting groups and the cyanoethyl groups and preventing chain cleavage isomerization of 3'-5' phosphorodiester bond in the final RNA. (ref: *Taifeng Wu, Kelvin K. Ogilive, Richard T. Pon, Nucl. Acids Res., 17, 3501 1989.*)

RNA Purification Cartridges

Catalog #	Quantity	Prices
CSS-5272-02	pack of 10	$ 60.00 / 0.2 um
CSS-5272-10	pack of 10	$125.00 / 1.0 um

The RNA purification cartridges are designed for the purification of short to medium length RNA oligonucleotides. The separation of different length oligos is based on charges on the ion-exchenge media in the cartridges. They achieve excellent purification of the oligonucleotide.

Tetra Butyl Ammonium Fluoride (TBAF)

(1M Solution in Tetrahydrofuran)
$C_{16}H_{38}FN$
F.W.: 261.47

Catalog #	Quantity	Prices
CSS-4356	25 ml	$30.00

Used to remove Silyl-protecting groups after the oligonucleotide synthesis.
Moisture Content adjusted for optimum silyl group removal.

Fluoride Ion Removal Solution

Catalog #	Quantity	Prices
CSS-6634	50 ml	$50.00

This product is developed to remove all the fluoride and organic by-products after the tetra butyl ammonium fluoride step in RNA deprotection.

Oligo Synthesis Products

Phosphoramidites and Supports for Introducing Chromophores & Ligands

Summary of Chromophore and Ligand Phosphoramidites & Supports

The incorporation of the following chromophores and ligands are summarized below:

Phosphate Introducing Reagents
Bis-cyanoethyl-N,N-diisopropyl Amidite and Phosphate-ON (generates DMT color) Reagents

Amino Linkers
Includes TFA-Amino C-4, TFA-Amino C-5, TFA-Amino C-6, MMT-Amino C-6, dC N^4-Amino Linker, MMT-Amino C-12, TFA-Amino C-12, Amino-dT C-6, & Fmoc-Amino-DMT C-3 Amidites and various supports

Spacers
Includes C-2 Spacer, C-3 Spacer, C-4 Spacer, C-6 Spacer, C-9 Spacer, C-12 Spacer, Spacer 9, Spacer 12, Spacer 18, Polyethyleneglycol 2000, and Polyethyleneglycol 4500

5'-Thiol Modifiers
Includes 5'-Thiol Modifier Hexyl, 5'-Thiol C-3 Disulfide, and 5'-Thiol C-6 Disulfide amidites and 3'-Thiol Modifier C-3 support

Biotin
Including Biotin BB, Biotin dT, and Biotin Phosphoramidite

Branching Amidites and Supports
Asymmetrical and Symmetrical Branching, Glyceryl CPG, & Butanol CPG

Carboxy Introduction and Cholesterol
Including Thymidine-succinyl Hexamide Amidite, deoxy Uridine 5-methylacrylate Amidite, Cholesterol TEG (generating DMT-orange color), TEG Cholesterol, & Cholesterol Support

Dabcyl and DNP-TEG
Including Dabcyl Amidite and Support, Thymidine C-5 Dabcyl Amidite, and DNP-TEG Amidite

Etheno Amidites & Supports
Including Etheno deoxy Adenosine, Etheno deoxy Cytidine, Etheno 2'-tBDSilyl-Adenosine, & Etheno 2'-tBDSilyl-Cytidine

HEX, TET, 6-FAM, Fluorescein, Fluorescein dT, and Tetrachloro, Hexachloro Fluorescein Cyclohexyl Amidites & Supports

Psoralen Amidites and Supports
Includes Psoralen Amidite, Psoralen C-2, Psoralen C-4, Psoralen C-6, Psoralen Hexaethyloxyglycol, and Psoralen CPG

Cy 3 and Cy 5

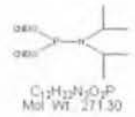
TAMRA Amidites & Supports and Cocktail for TAMRA
Includes N^4 6-TAMRA Amidite and Support & 5-TAMRA Amidite

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Phosphoramidites and Supports for Introducing Chromophores & Ligands

5'-Phosphorylation

(Bis-cyanoethyl-N,N-diisopropyl CED OP)



$C_{12}H_{23}N_2O_2P$
Mol. Wt. 271.30

Catalog#

CLP-1454

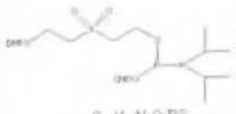
Pricing

$ 40.00 / 100 µmole
$ 65.00 / 250 mg
$ 95.00 / 500 mg
$150.00 / 1 gm

Purity: 98% +

5'-Phosphorylation (generates DMT color)

(5-Phosphate-ON Reagent)



$C_{34}H_{41}N_2O_7PS$
Mol. Wt. 656.77

Catalog#

CLP-1544

Pricing

$ 45.00 / 100 µmole
$150.00 / 250 mg

Purity: 98% +

Phosphate-ON Succinyl Icaa Supports & Columns for 3'-Phosphorylation

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9977-05	3'-Phosphate-ON	500Å	$62	$425	$52	$92	$104	$184
N-9977-10	Icaa CPG	1000Å						

Oligonucleotides can be phosphorylated enzymatically at the 5'-terminus by polynucleotide kinase. This reaction is reversible and is difficult to control. For applications such as gene assemblage, where complete phosphorylation is important, it is advisable to introduce the phosphate chemically.

ChemGenes offers two reagents for 5'-phosphorylation of an oligonucleotide:

- The bis-cyanoethyl-N,N-diisopropyl phosphoramidite (catalog #: CLP-1454) quantitatively phosphorylates the 5'-hydroxyl group via phosphoramidite methodology on an automatic DNA/RNA synthesizer.
- An alternative is the 5'-Phosphate-ON Reagent (catalog #: CLP-1544) which generates DMT orange color after introduction of phosphate at the last nucleoside in the oligonucleotide chain.

Description:

Bis-Cyanoethyl-N,N-diisopropyl CED OP is used for the introduction of 5'- terminal phosphate on synthetic DNA/RNA by phosphoramidite chemistry on an automatic DNA Synthesizer to produce probes and primers carrying 5'-phosphate. This is an ideal reagent for the production of phosphorylated DNA or RNA oligomers in large quantity, as compared to enzymatic phosphorylation at this position, which has limitations with respect to the quantities. This becomes a significant factor when large quantities of phosphorylated oligomers are required for recombinant DNA applications. The bis-cyanoethyl phosphoramidite reagent has the disadvantage of not generating any color, however due to its lower price it is the reagent of choice for the production of phophorylated DNA or RNA oligomers in large quantities.

5'-Phosphate-ON reagent is an alternative to Bis-cyanoethyl phosphorylating reagent as outlined above.
This reagent generates DMT orange color after introduction of phosphate at the last nucleoside in the oligonucleotide chain.

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

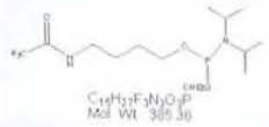
* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

Oligo Synthesis Products

Phosphoramidites and Supports for Introducing Chromophores & Ligands

TFA-Amino C-4 CED OP

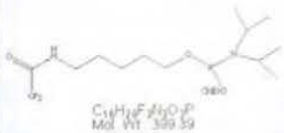


Catalog#
CLP-1453

Pricing
$50.00 / 100 µmole
$90.00 / 250 mg

Purity: 98% +

TFA-Amino C-5 CED OP

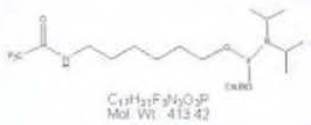


Catalog#
CLP-1357

Pricing
$50.00 / 100 µmole
$90.00 / 250 mg

Purity: 98% +

TFA-Amino C-6 CED OP



Catalog#
CLP-1553

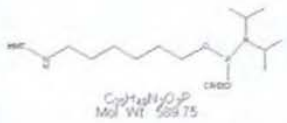
Pricing
$50.00 / 100 µmole
$90.00 / 250 mg

Purity: 98% +

MMT-Amino C-12 CED OP & TFA-Amino C-12 CED OP

For MMT-Amino C-12 and TFA-Amino C-12, please see page 75.

MMT-Amino C-6 CED OP



Catalog#
CLP-1563

Pricing
$ 60.00 / 100 µmole
$155.00 / 250 mg

Purity: 98% +

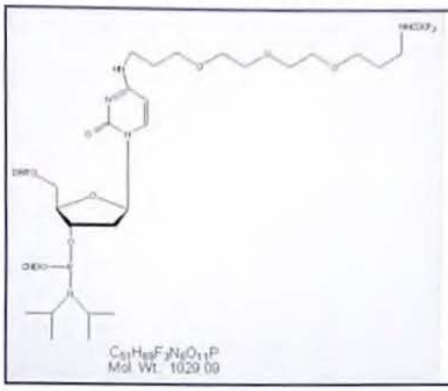
Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

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deoxy Cytidine N^4 Amino Linker CED OP



Catalog#

CLP-1329

Pricing

$115.00 / 100 µmole

$245.00 / 250 mg

Purity: 98% +

5'-Terminal Amino Introducing Reagents

These products are suitable for the direct introduction of 5'-terminal primary aliphatic amino function on a synthetic oligonucleotide, via a solid phase gene splicing machine.

The standard DNA synthesis protocol and coupling protocol are followed to quantitatively generate the primary aliphatic amino group. This primary aliphatic Amino group is useful for the subsequent introduction of various chromophores via the following:

- Biotin
- Fluorescent molecules
- Alkaline phosphatase enzyme, etc.

These products are suitable for direct introduction of a primary aliphatic amino function into a synthetic oligonucleotide. The primary aliphatic amino group reacts very smoothly with a wide variety of labeling reagents; thus it is the chemical modification of choice for this application. Covalently linked chromophores can be readily obtained in a synthetic DNA or RNA of interest. *(P. S. Nelson, R.S. Gold, R. Leon, Nucl. Acids Res, 17, 7179 1989).*

The 5'-Terminal Amino Introducing Reagent with C-4 Spacer (TFA-amino C-4, Catalog # CLP-1453) allows only for a single primary amino function per molecule. The amino group is introduced while protected as trifluoroacetamido which is cleaved during ammonia deprotection of the oligo. The amino group is separated from the 5'-phosphate of an oligonucleotide by four carbon atoms. The 5'-Terminal Amino Introducing Reagent with C-6 Spacer (TFA amino-C-6 phosphoramidite, catalog #: CLP-1553) is similarly introduced as the trifluoroacetamido but allows for introduction of a C-6 spacer between the 5'-hydroxyl and the terminally introduced primary amino group.

Please Indicate Synthesizer when Ordering

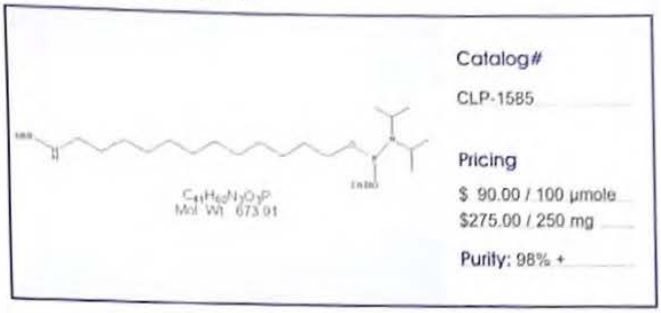
ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

Oligo Synthesis Products

Phosphoramidites and Supports for Introducing Chromophores & Ligands

MMT-Amino C-12 CED OP



Catalog#

CLP-1585

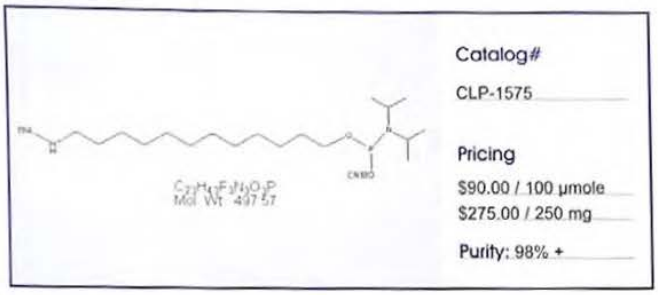
Pricing

$ 90.00 / 100 µmole

$275.00 / 250 mg

Purity: 98% +

TFA-Amino C-12 CED OP



Catalog#

CLP-1575

Pricing

$90.00 / 100 µmole

$275.00 / 250 mg

Purity: 98% +

MMT-Amino C-6 & C-12

The 5'-Terminal Introducing Reagent with C-6 Spacer (MMT-amino-C-6-phosphoramidite, page 73) and the 5'-Terminal Amino Introducing Reagent with C-12 Spacer (MMT-amino-C-12 phosphoramidite, above) are used to introduce a primary amino group at the 5'-terminal of an oligonucleotide. The MMT on the amino function is cleaved with 3% trichloracetic acid (TCA), similar to DMT removal in oligonucleotide synthesis. However, the MMT-group removal is significantly slower (12 minutes contact with TCA).

A useful utilization of MMT protected C-6 and C-12 phosphoramidites involves the selective cleavage of the MMT group from the synthesized oligonucleotide to obtain the free terminal amino function while the oligo is still bound to the solid support. Various chomophores can be coupled to the terminal amino group of the support bound oligonucleotide. The excess reagent (chromophores) can easlily be washed off, thus leaving almost pure chomophore-oligonucleotide conjugates.

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

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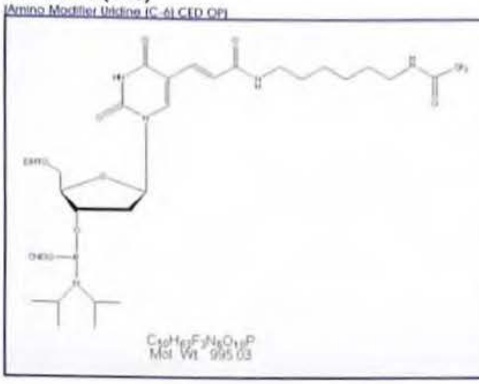
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Phosphoramidites and Supports for Introducing Chromophores & Ligands

Amino-dT (C-6)

(Amino Modifier Uridine (C-6) CED OP)



Catalog#

CLP-1501

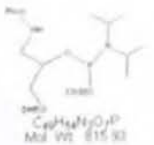
Pricing

$175.00 / 100 µmole
$375.00 / 250 mg
$675.00 / 500 mg

Purity: 98% +

$C_{56}H_{69}F_3N_5O_{11}P$
Mol Wt: 995.03

Fmoc-Amino-DMT C-3 CED OP



Catalog#

CLP-1661

Pricing

$ 48.00 / 100 µmole
$ 65.00 / 250 mg
$100.00 / 500 mg

Purity: 98% +

$C_{64}H_{74}N_5O_{12}P$
Mol Wt: 815.93

Amino-dT & Amino Introducing Reagent with C-3 Spacer (Fmoc-amino-DMT C-3 phosphoramidite)

The amino introducing reagent with C-3 Spacer (Fmoc-amino-DMT C-3 phosphoramidite, catalog #: CLP-1661) has a DMT group in addition to the protected primary amino group. This DMT group facilitates monitoring the efficiency of the phosphoramidite coupling. Also, the presence of the DMT allows for multiple additions of amino functional groups by further attachments of Amino modifiers during synthesis. The amino dT, with a spacer arm of 10 atoms, is suitable for the internal labeling of oligonucleotides.

Supports & Columns for 3'-amino linker oligonucleotides

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 250 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-1004-05	3'-Amino Modifier TFA Amino C-6	500Å	$140	$180	$585	$120	$180	$240	$360
N-1004-10	Icaa CPG	1000Å							
N-9750-05	3'-Amino Modifier C-3	500Å	$140	$150	$550	$88	$112	$176	$224
N-9750-10	Icaa CPG	1000Å							
N-6052-05	deoxy Cytidine N^4-Amino	500Å	$140	$170	$570	$110	$170	$220	$340
N-6052-10	Linker 3'-Icaa CPG	1000Å							
N-6054-05	Amino-dT (C-6)-	500Å	$140	$170	$570	$110	$170	$220	$340
N-6054-10	3'-Icaa CPG	1000Å							

3'-Amino Modifier

The 3'-Amino Modifier TFA-C-6 (Catalog#: N-1004) has been found to be a very useful addition to 3'-amino linked DNA/RNA chimeras and for micro RNA cloning (Lagos-Quintana et. al., Current Biology, 12, 735-739 2002).

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

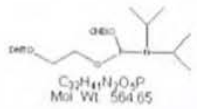
* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

Oligo Synthesis Products

Phosphoramidites and Supports for Introducing Chromophores & Ligands

DMT-Ethane-Diol Phosphoramidite
(C-2 Spacer)

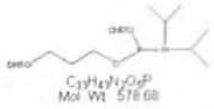


Catalog#
CLP-2250

Pricing
$ 80.00 / 100 µmole
$150.00 / 250 mg

Purity: 98% +

DMT-Propane-Diol Phosphoramidite
(C-3 Spacer)

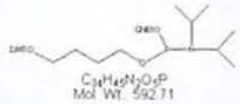


Catalog#
CLP-9008

Pricing
$ 80.00 / 100 µmole
$150.00 / 250 mg

Purity: 98% +

DMT-Butane-Diol Phosphoramidite
(C-4 Spacer)

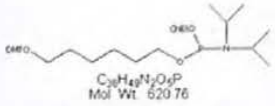


Catalog#
CLP-9775

Pricing
$ 80.00 / 100 µmole
$150.00 / 250 mg

Purity: 98% +

DMT-Hexane-Diol Phosphoramidite
(C-6 Spacer)



Catalog#
CLP-1120

Pricing
$ 80.00 / 100 µmole
$150.00 / 250 mg

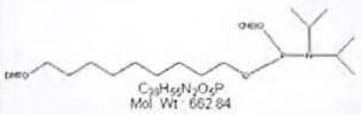
Purity: 98% +

The DMT-butanol CED phosphoramidite
C-4 Spacer (Catalog#: CLP-9775) introduces the butane-diol moiety (single or multiple units) into an oligo.

The butanediol spacer has been incorporated in oligos consisting of 2',5'-A and DNA segments to produce oligonucleotide chimeras that catalyze selective cleavage of RNA in human cells *(R. K. Maitra, G. Li, W. Xiao, B. Dong, P.F. Torrence, R. H. Silverman, J. Biol. Chem.270, 15071, 1995; K. Lesiak, S. Khamnei, and P. F. Torrence, Bioconjugate Chemistry, 4, 467, 1993).*

The corresponding CPG is also available to incorporate this unit at the 3'-end of an oligo (page 81).

DMT-Nonane-Diol Phosporamidite
(C-9 Spacer)

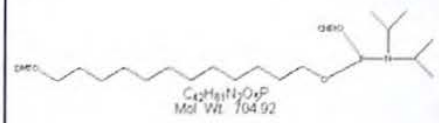


Catalog#
CLP-9009

Pricing
$ 80.00 / 100 µmole
$150.00 / 250 mg

Purity: 98% +

DMT-Dodecane-Diol Phosphoramidite
(C-12 Spacer)



Catalog#
CLP-1114

Pricing
$ 80.00 / 100 µmole
$150.00 / 250 mg

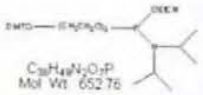
Purity: 98% +

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Phosphoramidites and Supports for Introducing Chromophores & Ligands

DMT-Triethyloxy-Glycol Phosphoramidite

(Spacer 9)



$C_{38}H_{49}N_2O_7P$
Mol Wt 652.76

Catalog#

CLP-1113

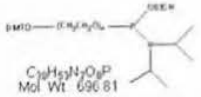
Pricing

$ 80.00 / 100 µmole
$150.00 / 250 mg

Purity: 98% +

DMT-Tetraethyloxy-Glycol Phosphoramidite

(Spacer 12)



$C_{40}H_{53}N_2O_8P$
Mol Wt 696.81

Catalog#

CLP-1368

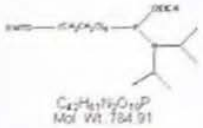
Pricing

$ 80.00 / 100 µmole
$150.00 / 250 mg

Purity: 98% +

DMT-Hexaethyloxy-Glycol Phosphoramidite

(Spacer 18)



Mol Wt 784.91

Catalog#

CLP-9765

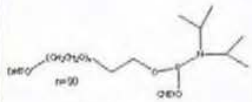
Pricing

$ 80.00 / 250 mg
$150.00 / 500 mg

Purity: 98% +

Polyethyleneglycol 4500 CED OP

(Avg. M.W.~4500)



Mol Wt Avg. ~ 4500

Catalog#

CLP-3118

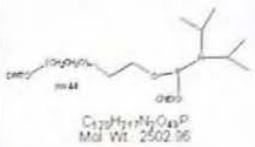
Pricing

$275.00 / 100 µmole
$540.00 / 1 gm

Purity: 98% +

Polyethyleneglycol 2000 CED OP

(Avg. M.W.~2000)



Mol Wt 2502.96

Catalog#

CLP-2119

Pricing

$265.00 / 100 µmole
$515.00 / 500 mg

Purity: 98% +

Glyceryl CPG &
Butyl CPG (for 3'-Butanol Spacer)

For Glyceryl CPG and Butyl CPG please see page 81.

Oligo Synthesis Products

Phosphoramidites and Supports for Introducing Chromophores & Ligands

5'-Thiol Modifier Hexyl CED OP



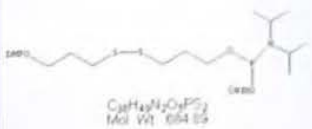
$C_{34}H_{65}N_2O_5PS$
Mol Wt 576.77

Catalog# CLP-5888

Pricing
$ 60.00 / 100 µmole
$100.00 / 100 mg
$180.00 / 250 mg

Purity: 98% +

5'-Thiol C-3 Disulfide Modifier CED OP



$C_{37}H_{69}N_2O_5PS_2$
Mol Wt 684.69

Catalog# CLP-8409

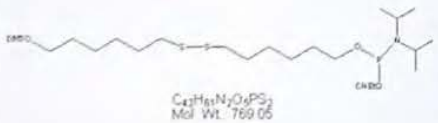
Pricing
$126.00 / 100 µmole
$320.00 / 250 mg

Purity: 98% +

5'-Thiol Modifier-C-6

Several methods are available to introduce a thiol group at the 5'-end of an oligonucleotide. Please refer to the following reference for more information: *B. A. Connolly, P. Rider, Nucl. Acids Res., 12, 4485, 1985; N. D. Sinha, R. M. Cook, Nucl. Acids Res., 16, 2659, 1988; S. Sharma, K. C. Gupta, Nucl. Acids Res., 14, 4404, 1989; A. Kumar, S. Advani, H. Dawar, G. P. Talwar, Nucl. Acids Res., 19, 4561, 1991*

5'-Thiol C-6 Disulfide Modifier CED OP



$C_{43}H_{81}N_2O_5PS_2$
Mol Wt 769.05

Catalog# CLP-8506

Pricing
$145.00 / 100 µmole
$320.00 / 250 mg

Purity: 98% +

3'-Thiol Succinyl Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9978-05	3'-Thiol Modifier	500Å	$70	$530	$68	$110	$136	$220
N-9978-10	C-3 Icaa CPG	1000Å						

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

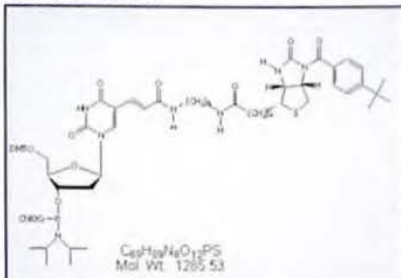
* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

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Phosphoramidites and Supports for Introducing Chromophores & Ligands

Biotin dT CED OP



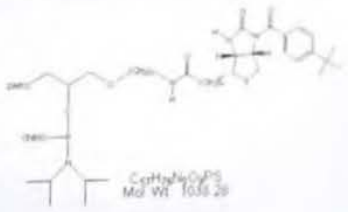
Catalog# CLP-1502

Pricing

$ 80.00 / 25 µmole
$150.00 / 50 µmole
$290.00 / 100 µmole
$580.00 / 250 mg

Purity: 98% +

Biotin (BB)™ CED OP

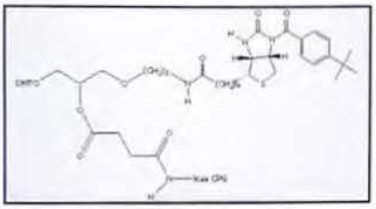


Catalog# CLP-1517

Pricing

$ 55.00 / 25 µmole
$104.00 / 50 µmole
$185.00 / 100 µmole
$360.00 / 250 mg

Purity: 98% +



Biotin (BB)™ CPG

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9162-05	Biotin (BB)™ 3'-lcaa CPG	500Å	$115	$970	$100	$180	$200	$360
N-9162-10		1000Å						

Biotinylation in the sequence and at the 5' Terminus

For use in automated synthesis and associated rapid purification techniques. Applications to which our Biotin phosphoramidites have been applied include:

- Diagnostic probe development including occasions where multiple Biotin molecules may be introduced into a probe to enhance sensitivity of ultimate detection.
- Introduction of biotin in the sequence and at the 5'-terminus of a primer prior to PCR amplification and trapping of the derived biotinylated DNA using streptavidin magnetic beads.
- Introduction of Biotin at the 3'-terminus of a probe capable of blocking chain extension in a PCR experiment. This is achieved through Biotin-CPG.

Protection of the N-1 position of Biotin with a lipophilic group induces higher solubility. It should be noted that we have found these products to be highly susceptible to deactivation by moisture in the diluent acetonitrile.

Biotin Phosphoramidites

"Biotin BB" contains a tert-butyl-benzoyl group at one of the secondary amino groups of Biotin. This novel feature is what makes ChemGenes "Biotin BB" (catalog #: CLP-1517) superior to other commercially available biotin products such as "Biotin dT" and "Biotin TEG". Another biotin product, "Biotin Phosphoramidite", can potentially cause side reactions during oligo synthesis due to the presence of the free urea moiety of the Biotin. As repeated synthesis cycles are performed, this side reaction will occur when 3'-end attachment is desired using a solid support. The "Biotin Phosphoramidite" has an additional problem of low solubility. "MMT-Biotin Phosphoramidite", another Biotin analog, has a MMT-group on the urea portion of the Biotin. The MMT-group, however, is potentially susceptible to cleavage during oligo synthesis. Furthermore, the MMT-group does not deactivate the urea moiety of Biotin towards side reactions during oligo synthesis. This novel feature was originally developed by Brian Sproat and coworkers *(Uwe Pieles, Brian Sproat and Gabor M. Lamm, Nucl. Acids Res., 18,4355,1990)*. This study demonstrated that the protection of the urea nitrogen causes dramatic effect in the purity of the synthesized oligos. ChemGenes "Biotin BB", which has a 7 atom spacer utilizes this protection feature and has tert butyl benzoyl protection on the urea nitrogen. This product is a simple and cost effective alternative to Biotin dT. ChemGenes also produces "Biotin BB" attached to solid support.

3'-End Labeling with "Biotin BB" CPG Solid Supports

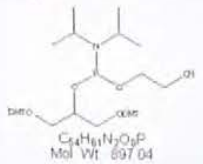
"Biotin BB" CPG is used for synthesis of 3'-Biotin oligomers. The tert-butyl-benzoyl protection prevents Biotin chromophore modifications. Also available from ChemGenes are the corresponding prepacked "Biotin BB" CPG columns listed above.

Biotin BB is a trademark of ChemGenes Corporation. The starting biotin for all biotin derivatives is Biotin-D(+).

Oligo Synthesis Products

Phosphoramidites and Supports for Introducing Chromophores & Ligands

Symmetrical Branching CED OP

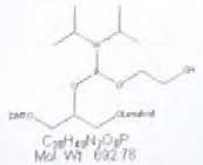


Catalog# CLP-5215

Pricing
$ 90.00 / 100 µmole
$198.00 / 250 mg

Purity: 98% +

Asymmetrical Branching CED OP

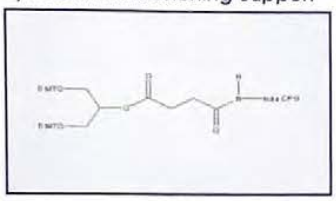


Catalog# CLP-7169

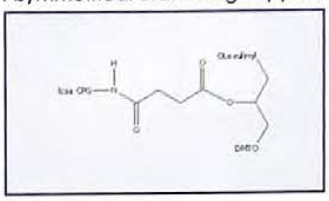
Pricing
$110.00 / 100 µmole
$235.00 / 250 mg

Purity: 98% +

Symmetrical Branching Support



Asymmetrical Branching Support



Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-5216-05	Symmetrical Branching 3'-Icaa CPG	500Å	$115	$970	$110	$170	$220	$340
N-7170-05	Asymmetrical Branching 3'-Icaa CPG	500Å	$115	$970	$110	$170	$220	$340
N-7175-05	Glyceryl CPG	500Å	$115	$970	$110	$170	$220	$340
N-7178-05	Butyl CPG (for 3'-Butanol Spacer)	500Å	$115	$970	$110	$170	$220	$340

Branching Phosphoramidites

The branching phosphoramidites incorporate branching sites into an oligonucleotide via automated DNA synthesis directly. Branched oligonucleotides are synthesized from the incorporated glycerol backbone, which posesses two protected hydroxyl groups for chain elongation. For example, branched oligonucleotides have been used effectively for signal amplification by introducing networks of labels or probing sites *(Horn et al., 1989; Chang et al., 1991; Foldesi et al, 1991).*

Symmetric branching phosphoramidites

This reagent allows simultaneous extension from the glycerol branch point because both hydroxyl groups are protected by DMT groups and are thus removed at the same time, resulting in two identical branches. Several cycles of incorporation of this amidite will result in a tree-like structure of 2 branched oligonucleotide arms. Since reporter molecules, such as biotin or flourescein, can be attached to each arm, this exponential branching can amplify and thus improve the sensitivity of these reporter molecules.

Asymmetric branching phosphoramidites

This reagent uses DMT to protect one hydroxyl of the glyceryl backbone and a levulinyl group to protect the other. The DMT group is removed during the normal deblock step and therefore routine chain elongation can continue from this branch. Subsequent removal of the levulinyl protecting group with hydrazine permits the elongation from the other, now asymmetrical branching. The branches can differ in sequence, reporter molecules, or both.

Levulinyl Deprotection Solution

Catalog#	Pricing
CLP-7171	$22.00 / 5 ml
	$36.00 / 10 ml

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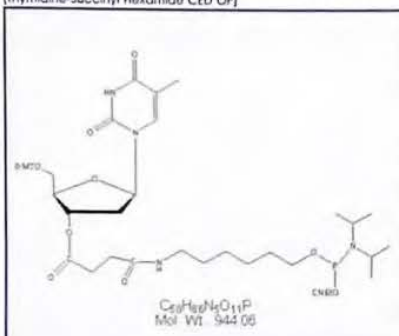
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Phosphoramidites and Supports for Introducing Chromophores & Ligands

5'-Terminal Carboxyl Group Generating Reagent

(Thymidine-Succinyl Hexamide CED OP)



$C_{49}H_{69}N_4O_{11}P$
Mol Wt 944.06

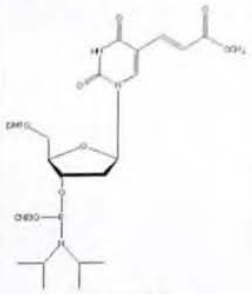
Catalog# CLP-2244

Pricing
$150.00 / 100 µmole
$285.00 / 250 mg

Purity: 98% +

Internal Carboxyl Group Generating Reagent

(Deoxy Uridine 5-Methylacrylate CED OP)



$C_{43}H_{51}N_4O_{10}P$
Mol Wt 814.85

Catalog# CLP-2842

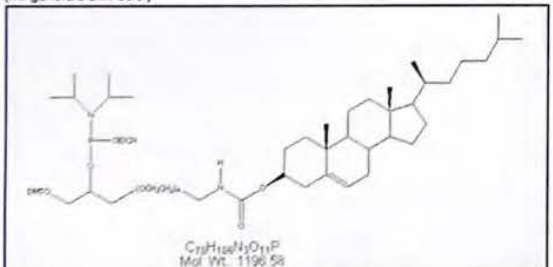
Pricing
$150.00 / 100 µmole
$285.00 / 250 mg

Purity: 98% +

For oligos requiring a 5'-carboxylic group, this is an excellent reagent. This ligand is introduced to the oligo via attachment to a C-6 spacer at the 5'-end of the DNA or RNA oligo.

Cholesterol (TEG) CED OP

(will generate DMT color)



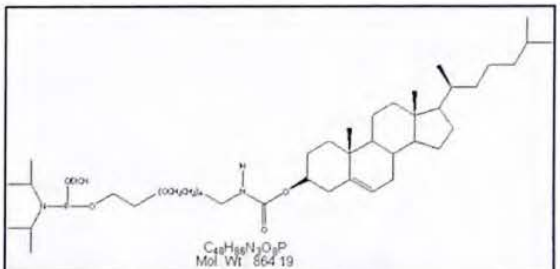
$C_{73}H_{108}N_3O_{11}P$
Mol Wt 1196.58

Catalog# CLP-2703

Pricing
$150.00 / 50 µmole
$275.00 / 100 µmole
$600.00 / 250 mg

Purity: 98% +

TEG Cholesterol (Tetra Ethylene Glycol) CED OP



$C_{48}H_{68}N_2O_8P$
Mol Wt 864.19

Catalog# CLP-2704

Pricing
$150.00 / 50 µmole
$275.00 / 100 µmole
$600.00 / 250 mg

Purity: 98% +

Cholesterol Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9166-05	Cholesterol 3'-Icaa CPG	500Å	$115	$970	$110	$175	$220	$350

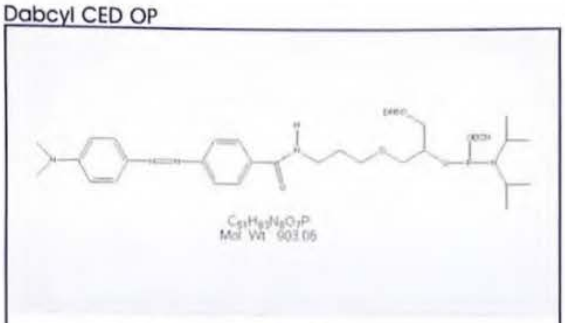
Cholesterol TEG Amidites & Supports

Potential therapeutic oligonucleotides must permeate the cell membrane for optimal activity. The addition of lipophilic groups to an oligonucleotide would be expected to enhance activity. The use of cholesterol oligos and the consequent improvement in activity has been described. Cholesterol phosphoramidite is designed with branched triethyleneglycol (TEG) spacer for maximium solubility in acetonitrile as well as for applications requiring multiple labels.

Oligo Synthesis Products

Phosphoramidites and Supports for Introducing Chromophores & Ligands

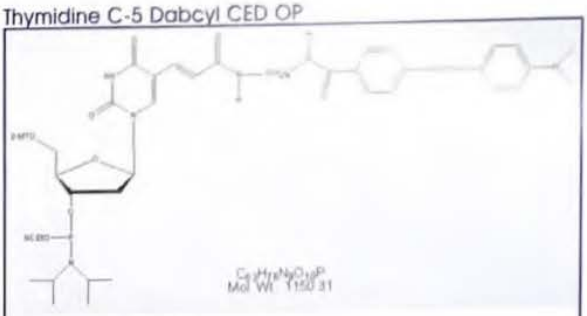
Dabcyl CED OP



Catalog#	Pricing
CLP-1522	$110.00 / 50 µmole
	$175.00 / 100 µmole
	$350.00 / 250 mg

Purity: 98% +

Thymidine C-5 Dabcyl CED OP



Catalog#	Pricing
CLP-9906	$150.00 / 50 µmole
	$285.00 / 100 µmole
	$500.00 / 250 mg

Purity: 98% +

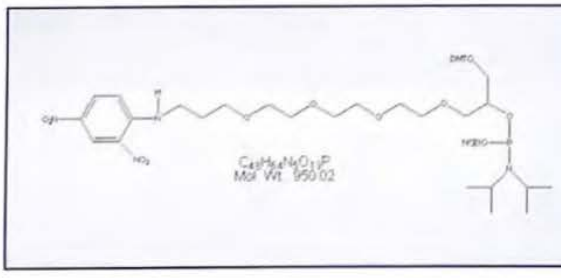
Dabcyl Amidites & Supports

A molecular beacon probe has its natural fluorescene quenched in solution unless it is hybridized to the target sequence. Consequently, the design of a molecular beacon requires a fluorophore to be in one part of the sequence and the quencher molecule to be in another, with both molecules being separated from the oligonucleotide by a hydrocarbon spacer. The Dabcyl group has been found to be a universal quencher. Dabcyl CPGs and Dabcyl Amidites are used to prepare probes with the quencher blocking the 3'-terminus. 5'-Dabcyl Phosphoramidite locates the quencher at the 5'-terminus and Dabcyl-dT places it within the sequence, leaving the 3'-terminus available for polymerase extension.

Dabcyl Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9756-05	Dabcyl (Molecular Beacon)	500Å	$110	$940	$110	$175	$220	$350

DNP-TEG CED OP



Catalog#	Pricing
CLP-9907	$145.00 / 50 µmole
	$260.00 / 100 µmole
	$495.00 / 250 mg

Purity: 98% +

DNP-TEG Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9127-05	DNP-TEG	500Å	$115	$960	$110	$185	$220	$370

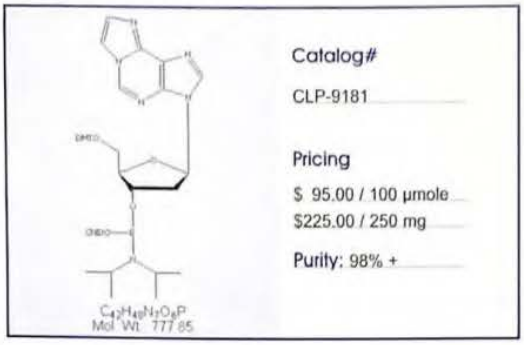
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Phosphoramidites and Supports for Introducing Chromophores & Ligands

Etheno deoxy Adenosine CED OP

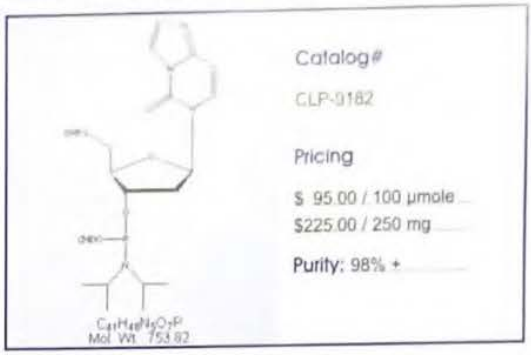


Catalog# CLP-9181

Pricing
$ 95.00 / 100 µmole
$225.00 / 250 mg

Purity: 98% +

Etheno deoxy Cytidine CED OP



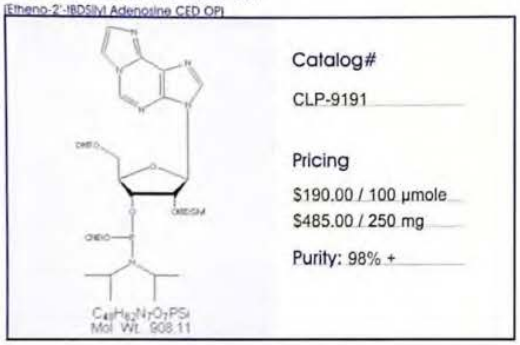
Catalog# CLP-9182

Pricing
$ 95.00 / 100 µmole
$225.00 / 250 mg

Purity: 98% +

Etheno Adenosine CED OP

(Etheno-2'-TBDSilyl Adenosine CED OP)



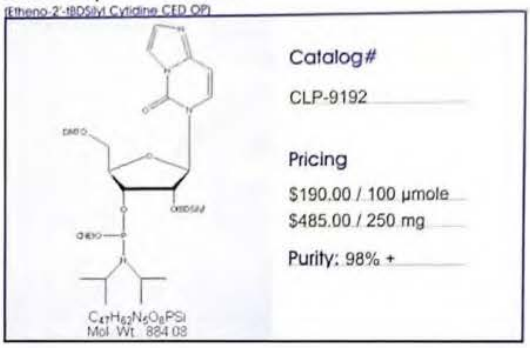
Catalog# CLP-9191

Pricing
$190.00 / 100 µmole
$485.00 / 250 mg

Purity: 98% +

Etheno Cytidine CED OP

(Etheno-2'-TBDSilyl Cytidine CED OP)



Catalog# CLP-9192

Pricing
$190.00 / 100 µmole
$485.00 / 250 mg

Purity: 98% +

Etheno Adenosine & Etheno Cytidine

Etheno nucleosides have high fluorescent intensity, especially etheno cytidine. They have been used for various applications such as extremely low detection probes, selective introduction in synthetic DNA/RNA, and nucleic acid structure function & determination. Primers with etheno modification undergo PCR and are amplified. These fluorescent nucleosides are base sensitive and should be deprotected using mild conditions (*Suresh C. Srivastava, et al., Nucleic Acids Research, 1994, vol 22, no. 7, 1296-1304).*

Etheno Adenosine; Detection Limit: 10^{-9}, Excitation: 260nm, Emission: 430nm
Etheno Cytidine; Detection Limit: 10^{-7}

Etheno Succinyl Icaa Supports & Columns

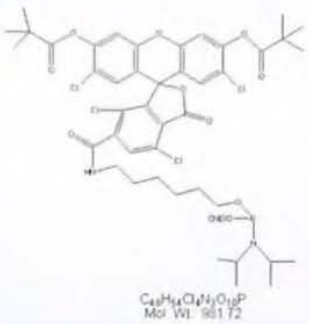
Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9113-05	Etheno deoxy Adenosine	500Å	$ 70	$550	$ 80	$110	$160	$240
N-9113-10	3'-Icaa CPG	1000Å						
N-9114-05	Etheno deoxy Cytidine	500Å	$ 60	$500	$ 50	$ 95	$100	$190
N-9114-10	3'-Icaa CPG	1000Å						
N-9091-05	Etheno Adenosine	500Å	$110	$910	$100	$135	$200	$270
N-9091-10	2'/3'-Icaa CPG	1000Å						
N-9092-05	Etheno Cytidine	500Å	$110	$910	$100	$135	$200	$270
N-9092-10	2'/3'-Icaa CPG	1000Å						

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Oligo Synthesis Products

Phosphoramidites and Supports for Introducing Chromophores & Ligands

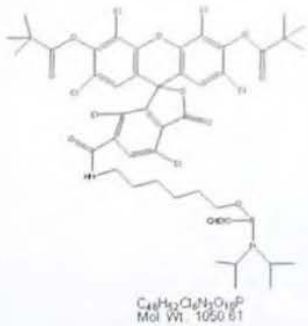
Tetrachloro Fluorescein Phosphoramidite (TET)



Catalog#	Pricing
CLP-9779	$165.00 / 50 µmole
	$325.00 / 100 µmole
	$875.00 / 250 mg

Purity: 98% +

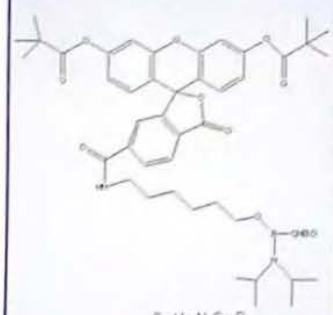
Hexachloro Fluorescein Phosphoramidite (HEX)



Catalog#	Pricing
CLP-9778	$165.00 / 50 µmole
	$325.00 / 100 µmole
	$875.00 / 250 mg

Purity: 98% +

6-FAM Phosphoramidite



Catalog#

CLP-9777

Pricing

$140.00 / 50 µmole
$280.00 / 100 µmole
$745.00 / 250 mg

Purity: 98% +

TET, HEX, & 6-FAM

These fluorescein derivatives have been used for non-isotopic fluorescent sequencing, hybridization, and PCR product quantitation. They can be used for antibody binding or as a fluorophore for fluorescent signal generation. Each have their own excitation and emission wavelengths: 6-FAM (ABS=496nm & EM=516nm), HEX (ABS=535nm & EM=556 nm), & TET (ABS=521nm & EM=536nm). The fluorescence and absorbance of fluorecein is very pH sensitive with both being the greatest at pH 8-9.

These fluorescent labels are generally added to the 5' end. Purification of the oligo is recommended either by HPLC or PAGE.

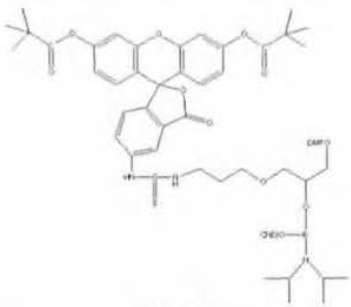
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Phosphoramidites and Supports for Introducing Chromophores & Ligands

Fluorescein CED OP

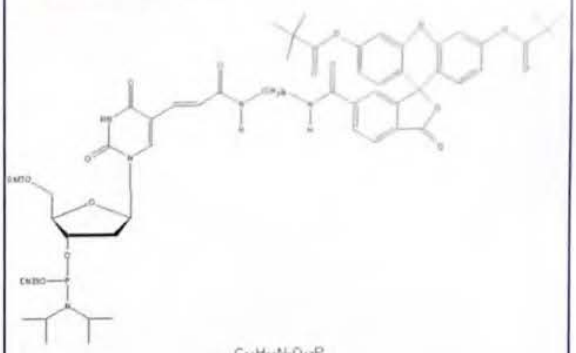


$C_{67}H_{77}N_4O_{13}PS$
Mol. Wt. 1209.39

Catalog#	Pricing
CLP-4282	$155.00 / 50 µmole
	$275.00 / 100 µmole
	$580.00 / 250 mg

Purity: 98% +

Fluorescein dT CED OP



$C_{79}H_{89}N_6O_{17}P$
Mol. Wt. 1425.56

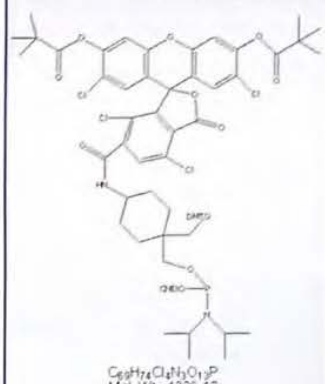
Catalog#	Pricing
CLP-9905	$180.00 / 50 µmole
	$325.00 / 100 µmole
	$670.00 / 250 mg

Purity: 98% +

Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9979-05	Fluorescein	500Å	$110	$970	$110	$180	$220	$360
N-5122-05	Fluorescein dT	500Å	$120	$995	$120	$200	$240	$400
N-9985-05	6-FAM Glyceryl	500Å	$110	$970	$110	$180	$220	$360
N-9986-05	6-FAM Icaa CPG (DMT)	500Å	$110	$970	$110	$180	$220	$360

Tetrachloro Fluorescein Cyclohexyl CED OP

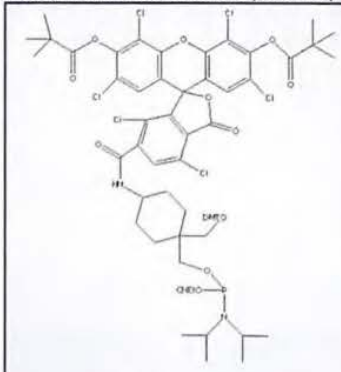


$C_{68}H_{74}Cl_4N_3O_{13}P$
Mol. Wt. 1326.12

Catalog#	Pricing
CLP-1526	$148.00 / 50 µmole
	$292.00 / 100 µmole
	$785.00 / 250 mg

Purity: 98% +

Hexachloro Fluorescein cyclohexyl CED OP



$C_{69}H_{72}Cl_6N_3O_{13}P$
Mol. Wt. 1395.01

Catalog#	Pricing
CLP-1527	$148.00 / 50 µmole
	$292.00 / 100 µmole
	$785.00 / 250 mg

Purity: 98% +

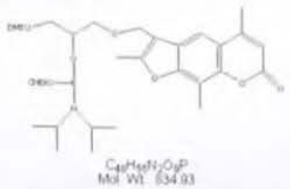
All of the above fluorescein amidites generate DMT-color after oligo coupling.

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Oligo Synthesis Products

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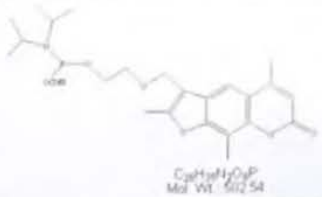
Psoralen Phosporamidite



Catalog#	Pricing
CLP-6644	$115.00 / 50 µmole
	$185.00 / 100 µmole
	$415.00 / 250 mg

Purity: 98% +

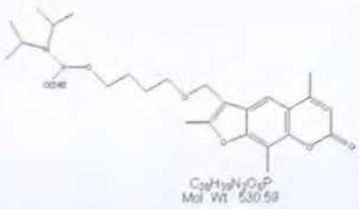
Psoralen C-2 CED OP



Catalog#	Pricing
CLP-6647	$160.00 / 100 µmole
	$345.00 / 250 mg

Purity: 98% +

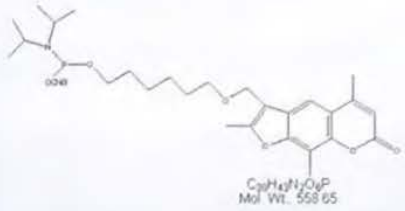
Psoralen C-4 CED OP



Catalog#	Pricing
CLP-6648	$170.00 / 100 µmole
	$370.00 / 250 mg

Purity: 98% +

Psoralen C-6 CED OP



Catalog#	Pricing
CLP-6641	$170.00 / 100 µmole
	$370.00 / 250 mg

Purity: 98% +

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

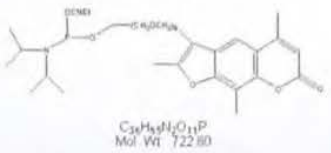
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Psoralen 12-Atom Spacer CED OP

(Psoralen Hexaethyloxyglycol CED OP)



$C_{36}H_{49}N_2O_{11}P$
Mol. Wt. 722.80

Catalog#	Pricing
CLP-6642	$187.00 / 100 µmole
	$465.00 / 250 mg

Purity: 98% +

Psoralen Supports & Columns

			Bulk CPG		pack of 4 cols.		pack of 10 cols.	
Catalog #	Product Name	Pore Size	100 mg	1 gm	0.2 µmole	1.0 µmole	0.2 µmole	1.0 µmole
N-9375-05	Psoralen	500Å	$115	$970	$110	$170	$220	$340

Psoralen

Psoralens are a class of naturally occuring compounds which have been used for centuries to treat skin and tumor diseases. Psoralen binds to DNA non-specifically. Psoralen modified oligonucleotides are expected to be superior than Psoralen itself as they will hydrolize to target oligonucleotides having complementary sequences. Psoralen derived oligonucleotides have been synthesized and found to recognize complementary target DNA sequences. The double stranded DNA fragments were found to be covalently cross-linked upon irradiation at 35 nm. *(U. Pieles, U. English, Nucl. Acids Res., 17, 285, 1989; U. Pieles, B.S. Sproat, P. Neuner, F. Cramer, Nucl. Acids. Res 17, 8967 1989).*

Psoralen attached oligonucleotides have also been hybridized with complementary target sites on RNA followed by cross-linking after photo reaction. *(J. Teare, P. Wollenzien, Nucl. Acids Res.17, 3559 1989).* Photo induced cross-linking has also been achieved on a double-stranded DNA by forming a triple helix. *(M. Takasugi, A. Guendouz M. Chassignol, J.L. Decont, J. Lhomme, N.T. Thuoing, C. Helene, Proc Natl. Acad. Sci USA, 88, 5602, 1991).* Furthermore, Psoralen derived oligonucleotide methyl-phosphates have been shown to cross-link in a sequence specific manner to single-dependant antiviral activity in cultured cells infected with herpes simplex virus type-1 (HSV-1) *(M. Kulka, C. Smith, L. Aurelian, R. Fisheluich, K. Meade, P. Miller, P.O.P. Ts'O, Proc. Natl. Acad. Sci., USA, 86, 6868 (1989).*

The Psoralen support is a 16 atom spacer between Psoralen and the oligo chain (3'-end).

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

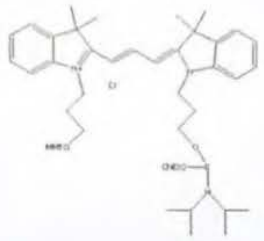
* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

Oligo Synthesis Products

Phosphoramidites and Supports for Introducing Chromophores & Ligands

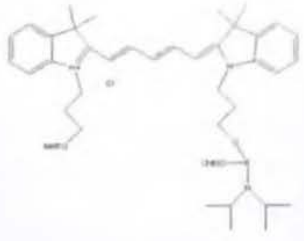
Cy 3™ Phosphoramidite



Catalog#	Pricing
CLP-1528	$165.00 / 50 µmole
	$325.00 / 100 µmole
	$875.00 / 250 mg

Purity: 98% +

Cy 5™ Phosphoramidite



Catalog#	Pricing
CLP-9800	$165.00 / 50 µmole
	$325.00 / 100 µmole
	$875.00 / 250 mg

Purity: 98% +

Cyanine Labelling: Cy3™ & Cy5™

The Cy3 amidite has a 3 atom spacer between Cy3 chromophore and the MMT group. The Cy5 amidite has a 5 atom spacer between the Cy5 chromophore and the MMT group. Each have their own excitation and emission wavelengths: Cy3 (ABS=550nm & EM=570nm and gives a red color) & Cy5 (ABS=649nm & EM=670nm and gives a violet color)

It is recommended to add these products only once at the 5'-end. Also, the MMT group should be removed on the synthesizer. For deprotection, use concentrated ammonium hydroxide at room temperature.

Note: Cy3 is more stable than Cy5.

Cy3 & Cy5 are both Trademarks of Amersham Pharmacia Biotech.

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

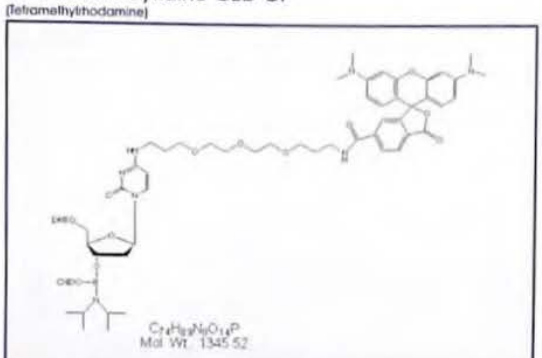
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N^4 6-TAMRA Cytidine CED OP
(Tetramethylrhodamine)

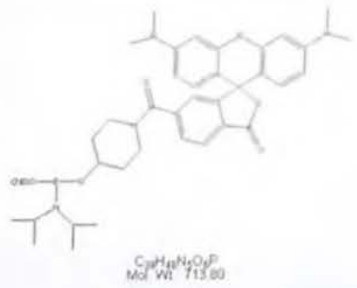


Catalog#	Pricing
CLP-2147	$ 84.00 / 50 µmole
	$148.00 / 100 µmole
	$594.00 / 250 mg

Price includes Cocktail for TAMRA

Purity: 98% +

5-TAMRA CED OP
(Tetramethylrhodamine)



Catalog#	Pricing
CLP-9066	$185.00 / 50 µmole
	$395.00 / 100 µmole
	$765.00 / 250 mg

Price includes Cocktail for TAMRA

Purity: 98% +

Cocktail for TAMRA

Catalog#	Pricing
RN-8561	$50.00 / 5 ml

TAMRA Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-2145-05	N^4 6-TAMRA Cytidine 3'-lcaa CPG	500Å	$155	$1,150	$125	$175	$250	$350

TAMRA

Like fluorescein, Tetra-methyl Rhodamine (TAMRA) conjugates are usually a mix of two isomers, however we supply pure 5-TAMRA as a phosphoramidite. Both isomers, 5-TAMRA & 6-TAMRA, have the same spectral properties (both excite at 540nm and emit at 570nm). They are much less pH sensitive. We offer the CPG columns for the 3'-TAMRA labeling and also TAMRA NHS Esters for labeling amino-modified oligonucleotides.

These fluorescent labels are generally added to the 5' end. Purification of the oligo is recommended either by HPLC or PAGE.

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

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Oligo Synthesis Products

Amidites and Supports for Antisense Oligonucleotides

Antisense (i.e. sequences complimentary to the "sense" strand, or usually messenger RNA) and otherwise interfering (e.g. "decoy") oligonucleotides, oligoribonucleotides, and modified oligonucleotides have gained overwhelming popularity for interference in various steps leading from DNA transcription to mRNA translation. Such regulatory interference has been harnessed for therapeutic effects against many diseases and viral infections. Production of viral proteins are inhibited by oligonucleotides that are complimentary to portions of mRNA for that protein (i.e. antisense). Other regulatory mechanisms of viruses, such as HIV, have been targeted for interference with the use of complimentary (i.e. antisense) or decoy (i.e. sense) oligonucleotides. Oligonucleotides for therapy have several advantages. These include the extremely high specificity and the ease of design based on Watson-Crick base pairing. The high association constants imply a strong duplex formation and thus effectiveness at low concentrations.

They Hybridize with Natural Targets leading to Diagnostic & Therapeutic Applications.

Unmodified Oligo	2'-OMe Modified Synthetic Oligo
Poor Uptake • Molecule too big • Highly charged	Lipophilic, Ampiphilic
Nuclease Resistant	Degradation by nucleases
Greater Specificity, Reacts Rapidly	Less Specificity
Higher T_m	Lower T_m

Combination of phosphorothioate phosphodiester regenerates RNaseH activity.

Synthetic Antisense oligo (2'-OMe Modified) are designed to: Permeate cells
Bind RNA target
Inactivate target

Biological Properties of 2'-O-Methyl RNA Molecules

- 2'-O-Methyl oligonucleotides have been used as chimeric oligomers with DNA-oligomers for site directed cleavage of RNA with RNaseH (Refs 1 & 2).
- 2'-O-Methyl oligonucleotides are more stable against several nucleases as compared to the deoxy and ribo type of oligomers. Therefore, the 2'-O-Methyl oligonucleotides are less susceptible to several nucleases (Ref 3).
- The use of 2'-O-Methyl and mixed phosphorothioates results in an inhibitory effect against HIV induced cytopathic effects and expressions of the virus specific antigens in cultures MT-4 cells. The anti-viral activity seems to be strongly concerned with the resistance to one or the other kind of deoxynucleases (Ref 4).
- 2'-O-Methyl oligoribonucleotides form stable hetero-duplexes with the complimentary RNA. The hybrid formed has a high, or a higher T_m than the corresponding DNA sequence (Ref 1).
- 2'-O-Methyl ribonucleotides have been used as valuable antisense probes for studying pre-mRNA splicing and the structures of splicosomes (Refs 5 & 6).
- The 2'-O-Methyl ethers of common ribonucleosides have been found as minor components of RNA (Refs 7 & 8).
- A number of biotechnology oriented companies in the U.S. are currently involved in the development of DNA-based diagnostic and therapeutic products, using 2'-O-Methyl oligonucleotide sequences (Ref 9), such as GEM^{R}132 being developed for HCMV treatment (Ref 10).
- Antisense oligonucleotides have inhibited several gene functions in mammalian cell lines such as myc, bcl-2 (relevant to lymphomas), and erb-B2 (relevant to breast cancer).

References

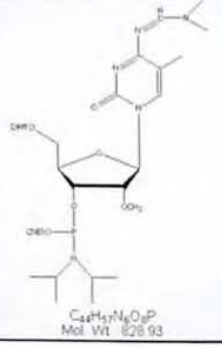
1. Inoune, H., Hayese, Y., Imura, A., Iwai, S., Miura, K., Ohtsuka, E., Nucl. Acids Res. 15:6131-6148 (1987)
2. Shibahara, S., Mukai, S., Nishihara, T., Inoune, H., Ohtsuka, E., and Morisawa, H., Nucl. Acids Res. 15:4403-4415 (1987)
3. Dunlap, B.F., Friderici, K.H., Rottman, F., Biochemistry 10:2581-2587 (1971)
4. Shibahara, S., Mukai, S., Morisawa, H., Nakashima, H., Kobayashi, S., Yamamoto, N., Nucl. Acids Res. 17:239-252 (1989)
5. Lamond, A.I., Sproat, B.S., Ryder, U., Hamm, J., Cell 56: 383-390 (1989)
6. Barbino, S., Sproat, B.S., Ryder, U., Blencowe, B.J., and Lamond, A.I., Cell 59: 531-539 (1989)
7. R.H. Hall, "The Modified Nucleosides in Nucleic Acids", Columbia University Press, New York, NY., (1971)
8. Cotton, M., Oberhauser, B., Schaffner, G., Wagner, E., and Birnstell, M.L., Nucl. Acids Res., 19: 2629-2635 (1991)
9. Agarwal, S. and Tang, J.Y., Antisense Res. and Devel: 4,261 (1992)
10. J. Michael Grindel, XII International Roundtable, Nucleosides, Nucleotides & Their Biological Applications, La Jolla, CA, Sep 15-19,1996, Abstract 0650

ChemGenes offers a number of special modified phosphoramidites: new modifications of Antisense producing oligos.

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Amidites and Supports for Antisense Oligonucleotides

5-Methyl Cytidine (n,n-dmf) 2'-O-Methyl CED OP



Catalog#

ANP-6554

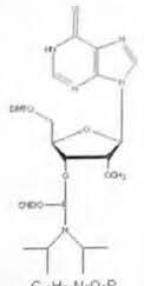
Pricing

$140.00 / 100 µmole

$350.00 / 250 mg

Purity: 98% +

2'-O-Methyl Inosine CED OP



Catalog#

ANP-5758

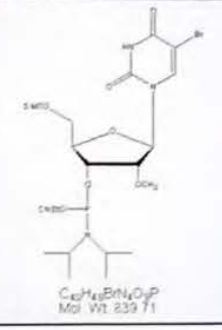
Pricing

$120.00 / 100 µmole

$300.00 / 250 mg

Purity: 98% +

5-Bromo Uridine 2'-O-Methyl CED OP



Catalog#

ANP-5760

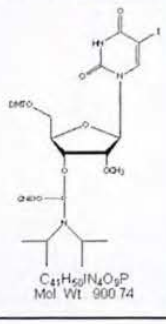
Pricing

$140.00 / 100 µmole

$350.00 / 250 mg

Purity: 98% +

5-Iodo Uridine 2'-O-Methyl CED OP



Catalog#

ANP-5759

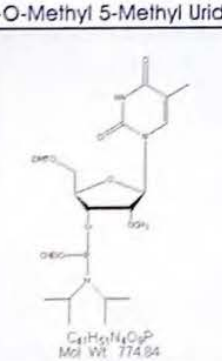
Pricing

$140.00 / 100 µmole

$350.00 / 250 mg

Purity: 98% +

2'-O-Methyl 5-Methyl Uridine (ribo Thymidine) CED OP



Catalog#

ANP-5600

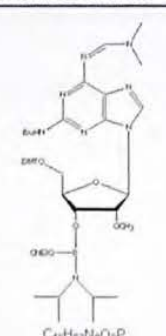
Pricing

$120.00 / 100 µmole

$300.00 / 250 mg

Purity: 98% +

2,6-Diamino Purine-2'-O-Methyl CED OP



Catalog#

ANP-8618

Pricing

$285.00 / 100 µmole

$640.00 / 250 mg

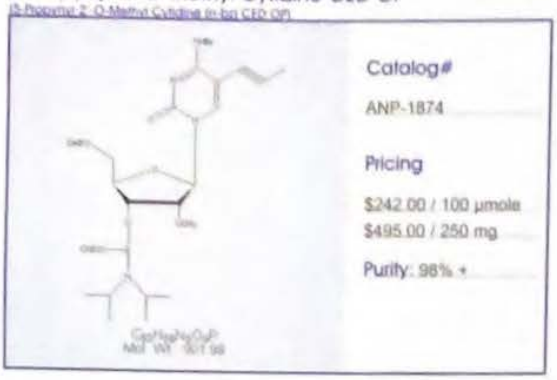
Purity: 98% +

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Email: info@chemgenes.com

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5-Propynyl-2'-O-Methyl Cytidine CED OP

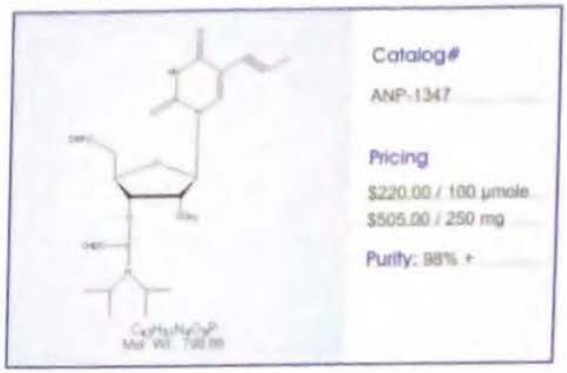


Catalog#
ANP-1874

Pricing
$242.00 / 100 µmole
$495.00 / 250 mg

Purity: 98% +

5-Propynyl-2'-O-Methyl Uridine CED OP

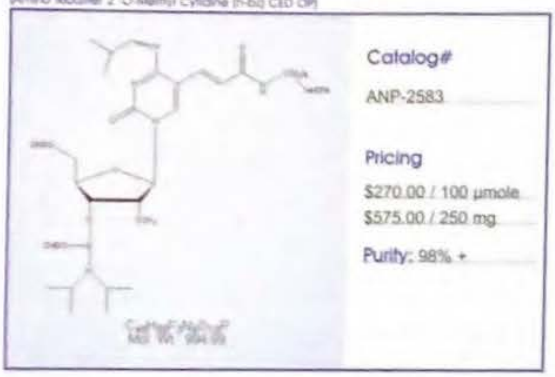


Catalog#
ANP-1347

Pricing
$220.00 / 100 µmole
$505.00 / 250 mg

Purity: 98% +

Amino Modifier 2'-O-Methyl Cytidine CED OP

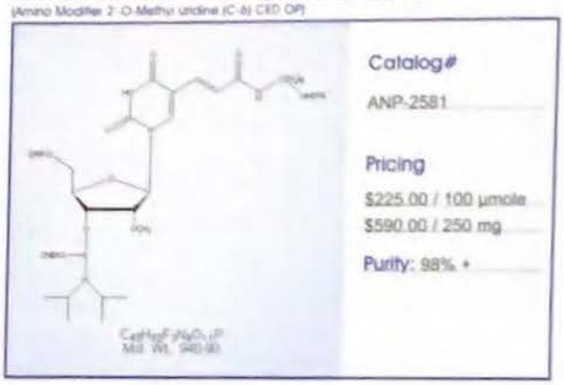


Catalog#
ANP-2583

Pricing
$270.00 / 100 µmole
$575.00 / 250 mg

Purity: 98% +

Amino Modifier 2'-O-Methyl Uridine CED OP



Catalog#
ANP-2581

Pricing
$225.00 / 100 µmole
$590.00 / 250 mg

Purity: 98% +

Modified 2'-O-Methyl 3'-Succinyl Icaa Supports & Columns

Catalog #	Product Name	Pore Size	Bulk CPG 250 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-1613-05	5-Methyl Cytidine (n,n-dmf)	500Å	$230	$900	$125	$200	$250	$400
N-1613-10	2'-O-Methyl Icaa CPG	1000Å						
N-9013-05	Inosine 2'-O-Methyl	500Å	$230	$900	$125	$200	$250	$400
N-9013-10	Icaa CPG	1000Å						
N-9011-05	5-Bromo Uridine	500Å	$230	$900	$125	$200	$250	$400
N-9011-10	2'-O-Methyl Icaa CPG	1000Å						
N-9012-05	5-Iodo Uridine	500Å	$230	$900	$125	$200	$250	$400
N-9012-10	2'-O-Methyl Icaa CPG	1000Å						
N-5601-05	Ribo Thymidine	500Å	$190	$750	$100	$175	$200	$350
N-5601-10	2'-O-Methyl Icaa CPG	1000Å						

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7-deaza-2'-O-Methyl Adenosine CED OP

(7-deaza 2'-O-Methyl Adenosine (n-bu) CED OP)



Catalog# ANP-5951

Pricing
$264.00 / 50 µmole
$462.00 / 100 µmole

Purity: 98% +

7-deaza-2'-O-Methyl Guanosine CED OP

(7-deaza 2'-O-Methyl Guanosine (n-ibu) CED OP)



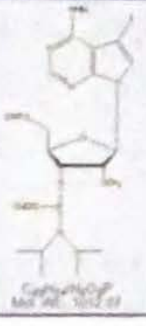
Catalog# ANP-5953

Pricing
$279.00 / 50 µmole
$495.00 / 100 µmole

Purity: 98% +

7-Iodo-7-deaza-2'-O-Methyl Adenosine CED OP

(7-Iodo-7-deaza-2'-O-Methyl Adenosine (n-bu) CED OP)



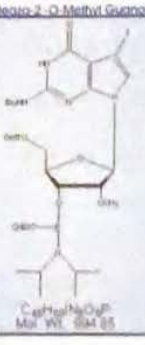
Catalog# ANP-9171

Pricing
$286.00 / 50 µmole
$510.00 / 100 µmole

Purity: 98% +

7-Iodo-7-deaza-2'-O-Methyl Guanosine CED OP

(7-Iodo-7-deaza-2'-O-Methyl Guanosine (n-ibu) CED OP)



Catalog# ANP-9173

Pricing
$286.00 / 50 µmole
$510.00 / 100 µmole

Purity: 98% +

7-deaza 7-Propargyl 2'-O-Methyl Adenosine CED OP

(7-deaza 7-Propargyl Amino ftA 2'-O-Methyl Adenosine (n-bu) CED OP)



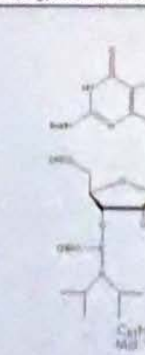
Catalog# ANP-9176

Pricing
$315.00 / 50 µmole
$565.00 / 100 µmole

Purity: 98% +

7-deaza 7-Propargyl 2'-O-Methyl Guanosine CED OP

(7-deaza 7-Propargyl Amino ftA 2'-O-Methyl Guanosine (n-ibu) CED OP)



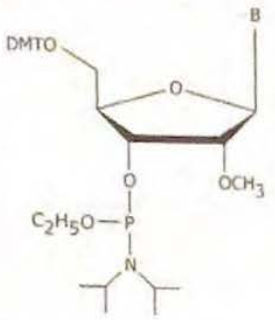
Catalog# ANP-9178

Pricing
$315.00 / 50 µmole
$565.00 / 100 µmole

Purity: 98% +

Oligo Synthesis Products

Amidites and Supports for Antisense Oligonucleotides



p-Ethoxy 2'-O-Methyl DNA Amidites with Standard Base Protection

B	Protection	Catalog #
A	n-bz	ANP-7221
C	n-bz	ANP-7222
G	n-ibu	ANP-7223
T	n/a	ANP-7224
U	n/a	ANP-7225

Catalog #	Product Name	250mg	500mg	1gm
ANP-7221	2'-O-Methyl Adenosine (n-bz) p-Ethoxy phosphoramidite, M.W. 862.88	$55	$90	$146
ANP-7222	2'-O-Methyl Cytidine (n-bz) p-Ethoxy phosphoramidite, M.W. 838.90	$55	$90	$146
ANP-7223	2'-O-Methyl Guanosine (n-ibu) p-Ethoxy phosphoramidite, M.W. 844.92	$55	$90	$146
ANP-7224	2'-O-Methyl Thymidine p-Ethoxy phosphoramidite, M.W. 735.79	$55	$90	$146
ANP-7225	2'-O-Methyl Uridine p-Ethoxy phosphoramidite, M.W. 721.77	$55	$90	$146

Applications

For the synthesis of DNA/RNA with neutral charge instead of a negatively charged phosphate back bone, p-ethoxys not only provide neutral charge but impart lipophilic character to the synthetic DNA. It is a useful product for the development of delivery of DNA molecules into cells. With the already established usefulness of 2'-O-Methyl RNA, additional backbone modification to the phosphate neutral charge would provide valuable products in the field of antisense therapeutics.

The above products are covered under ChemGenes patent # 6,015,886.

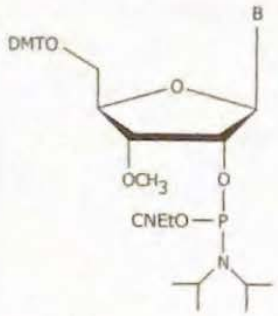
Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

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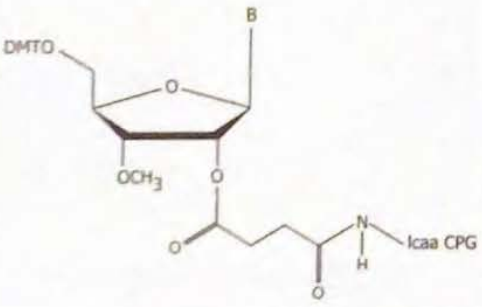
Amidites and Supports for Antisense Oligonucleotides



3'-O-Methyl Amidites with Standard Base Protection

B	Protection	Catalog#
A	n-bz	ANP-2901
C	n-bz	ANP-2902
G	n-ibu	ANP-2903
U	n/a	ANP-2904
Inosine	n/a	ANP-2905

Catalog #	Product Name	250mg	500mg	1gm
ANP-2901	3'-O-Methyl Adenosine (n-bz) CED phosphoramidite, *M.W. 887.96*	$165	$294	$530
ANP-2902	3'-O-Methyl Cytidine (n-bz) CED phosphoramidite, *M.W. 863.93*	$165	$294	$530
ANP-2903	3'-O-Methyl Guanosine (n-ibu) CED phosphoramidite, *M.W. 869.94*	$165	$294	$530
ANP-2904	3'-O-Methyl Uridine CED phosphoramidite, *M.W. 760.81*	$165	$294	$530
ANP-2905	3'-O-Methyl Inosine CED phosphoramidite, *M.W. 784.84*	$165	$294	$530



3'-O-Methyl Supports with Standard Base Protection

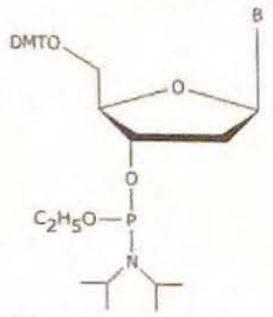
B	Protection	Catalog #
A	n-bz	N-8810
C	n-bz	N-8811
G	n-ibu	N-8812
U	n/a	N-8813
Inosine	n/a	N-8814

Catalog #	Product Name	Pore Size	Bulk CPG 250 mg	Bulk CPG 1 gm	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-8810-05	3'-O-Methyl Adenosine	500Å	$125	$480	$ 95	$120	$190	$240
N-8810-10	(n-bz) 2'-Icaa CPG	1000Å						
N-8811-05	3'-O-Methyl Cytidine	500Å	$125	$480	$ 95	$120	$190	$240
N-8811-10	(n-bz) 2'-Icaa CPG	1000Å						
N-8812-05	3'-O-Methyl Guanosine	500Å	$125	$480	$ 95	$120	$190	$240
N-8812-10	(n-ibu) 2'-Icaa CPG	1000Å						
N-8813-05	3'-O-Methyl Uridine	500Å	$125	$480	$ 95	$120	$190	$240
N-8813-10	2'-Icaa CPG	1000Å						
N-8814-05	3'-O-Methyl Inosine	500Å	$250	$900	$135	$245	$270	$490
N-8814-10	2'-Icaa CPG	1000Å						

The above products are covered under ChemGenes patent # 5,525,719.

Oligo Synthesis Products

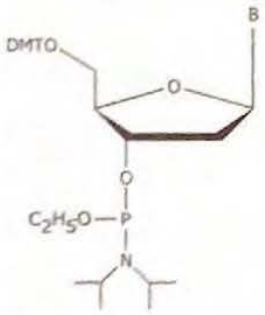
Amidites and Supports for Antisense Oligonucleotides



p-Ethoxy DNA Amidites with Standard Base Protection

B	Protection	Catalog#
A	n-bz	ANP-6541
C	n-bz	ANP-6542
G	n-ibu	ANP-6543
T	n/a	ANP-6544

Catalog #	Product Name	500mg	1gm
ANP-6541	deoxy Adenosine (n-bz) p-Ethoxy phosphoramidite, *M.W. 832.92*	$45	$80
ANP-6542	deoxy Cytidine (n-bz) p-Ethoxy phosphoramidite, *M.W. 808.90*	$45	$80
ANP-6543	deoxy Guanosine (n-ibu) p-Ethoxy phosphoramidite, *M.W. 814.91*	$45	$80
ANP-6544	Thymidine p-Ethoxy phosphoramidite, *M.W. 719.80*	$45	$80



p-Ethoxy DNA Amidites with Labile Base Protection

B	Protection	Catalog #
A	n-PAC	ANP-5541
C	n-PAC	ANP-5542
G	n-PAC	ANP-5543
T	n/a	ANP-6544

Catalog #	Product Name	250mg	500mg	1gm
ANP-5541	deoxy Adenosine (n-PAC) p-Ethoxy phosphoramidite, *M.W. 862.99*	$27	$48	$90
ANP-5542	deoxy Cytidine (n-PAC) p-Ethoxy phosphoramidite, *M.W. 839.92*	$27	$48	$90
ANP-5543	deoxy Guanosine (n-PAC) p-Ethoxy phosphoramidite, *M.W. 935.05*	$27	$48	$90
ANP-6544	Thymidine p-Ethoxy phosphoramidite, *M.W. 719.80*	$27	$45	$80

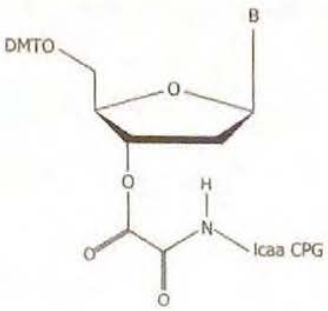
Applications

For the synthesis of DNA/RNA with neutral charge instead of a negatively charged phosphate back bone, p-ethoxys not only provide neutral charge but impart lipophilic character to the synthetic DNA. It is a useful product for the development of delivery of DNA molecules into cells. For clean removal of the base protecting groups using ammonia free deprotection solution, see following page.

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Oxalyl Supports with Labile Base Protection for DNA Synthesis

B	Protection	Catalog #
A	n-PAC	N-5131
C	n-PAC	N-5132
G	n-PAC	N-5133
T	n/a	N-5134

			Bulk CPG		pack of 4 cols			pack of 10 cols		
Catalog #	Product Name	Pore Size	100 mg	1 gm	40 nmole	0.2 µmole	1.0 µmole	40 nmole	0.2 µmole	1.0 µmole
N-5131-05	deoxy Adenosine (n-PAC) 3'-oxalyl lcaa CPG	500Å	$18	$144	$32	$39	$58	$64	$78	$116
N-5132-05	deoxy Cytidine (n-PAC) 3'-oxalyl lcaa CPG	500Å	$18	$144	$32	$39	$58	$64	$78	$116
N-5133-05	deoxy Guanosine (n-PAC) 3'-oxalyl lcaa CPG	500Å	$18	$144	$32	$39	$58	$64	$78	$116
N-5134-05	Thymidine 3'-oxalyl lcaa CPG	500Å	$18	$144	$32	$39	$58	$64	$78	$116

Ammonia Free Oligo Deprotection Solution should be used under the following conditions:

1. PAC-Protected nucleosides phosphoramidites must be used for efficient base deprotection using ammonia free oligo deprotection solution.

2. Oxalyl CPGs must be used for ammonia free oligo deprotection solution to cleave the oligo from the support. The standard succinyl CPGs inadequately deprotect when using ammonia free oligo deprotection solution. The CPG (1 µmole scale synthesis) after oligo synthesis is washed with ether, air dried, and is placed in a vial with a septum cap. The 1 ml of the ammonia free oligo deprotection solution is added using a syringe.

Ammonia Free Oligo Deprotection Solution

Catalog#	Pricing
RN-1435	$35.00 / 25 ml

Please Indicate Synthesizer when Ordering

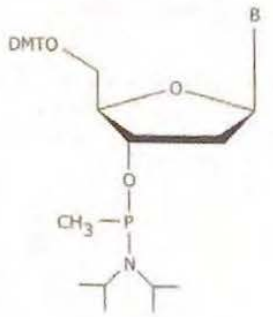
ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

Oligo Synthesis Products

Amidites and Supports for Antisense Oligonucleotides



p-Methyl Phosphonamidites with Standard Base Protection

B	Protection	Catalog#
A	n-bz	ANP-7551
C	n-ibu	ANP-7556
G	n-ibu	ANP-7553
T	n/a	ANP-7554
U	n/a	ANP-7557
Inosine	n/a	ANP-7558

Catalog #	Product Name	250mg	500mg
ANP-7551	deoxy Adenosine (n-bz) p-Methyl phosphonamidite, *M.W. 802.90*	$50	$90
ANP-7556	deoxy Cytidine (n-ibu) p-Methyl phosphonamidite, *M.W. 744.86*	$50	$90
ANP-7553	deoxy Guanosine (n-ibu) p-Methyl phosphonamidite, *M.W. 784.88*	$50	$90
ANP-7554	Thymidine p-Methyl phosphonamidite, *M.W. 689.78*	$50	$90
ANP-7557	deoxy Uridine p-Methyl phosphonamidite, *M.W. 675.75*	$50	$90
ANP-7558	deoxy Inosine p-Methyl phosphonamidite, *M.W. 689.78*	$50	$90

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

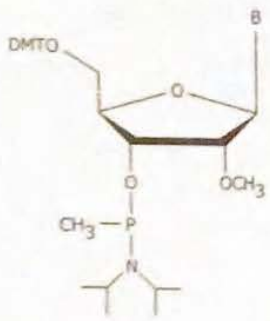
* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

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p-Methyl-2'-O-Methyl Phosphonamidites with Standard Base Protection

B	Protection	Catalog#
A	n-bz	ANP-8551
C	n-ibu	ANP-8552
G	n-ibu	ANP-8553
U	n/a	ANP-8554
C	n-acetyl	ANP-8556

Catalog #	Product Name	100µmole	250mg
ANP-8551	2'-O-Methyl Adenosine (n-bz) p-Methyl phosphonamidite, M.W. 832.92	$65	$182
ANP-8552	2'-O-Methyl Cytidine (n-ibu) p-Methyl phosphonamidite, M.W. 740.88	$65	$182
ANP-8553	2'-O-Methyl Guanosine (n-ibu) p-Methyl phosphonamidite, M.W. 814.91	$65	$182
ANP-8554	2'-O-Methyl Uridine p-Methyl phosphonamidite, M.W. 705.78	$65	$182
ANP-8556	2'-O-Methyl Cytidine (n-acetyl) p-Methyl phosphonamidite, M.W. 746.83	$65	$182

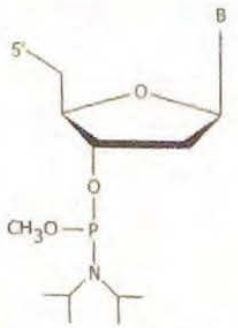
Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

Oligo Synthesis Products

Amidites and Supports for Antisense Oligonucleotides

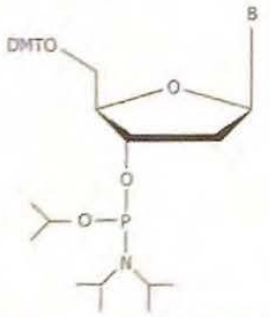


p-Methoxy DNA Amidites with Labile Base Protection

5'	B	Protection	Catalog #
DMTO	A	n-PAC	ANP-5531
DMTO	C	n-PAC	ANP-5532
DMTO	G	n-tBPAC	ANP-5533
DMTO	T	n/a	ANP-3764
MMTO	A	n-PAC	ANP-5536
MMTO	G	n-tBPAC	ANP-5537

Catalog #	Product Name	250mg	500mg	1gm
ANP-5531	deoxy Adenosine (n-PAC) p-Methoxy phosphoramidite, *M.W. 848.92*	$27	$48	$90
ANP-5532	deoxy Cytidine (n-PAC) p-Methoxy phosphoramidite, *M.W. 824.90*	$27	$48	$90
ANP-5533	deoxy Guanosine (n-tBPAC) p-Methoxy phosphoramidite, *M.W. 921.02*	$27	$48	$90
ANP-3764	Thymidine p-methoxy phosphoramidite, *M.W. 705.78*	$20	$40	$75
ANP-5536	MMT-deoxy Adenosine (n-PAC) p-Methoxy phosphoramidite, *M.W. 816.90*	$27	$48	$90
ANP-5537	MMT-deoxy Guanosine (n-tBPAC) p-Methoxy phosphoramidite, *M.W. 891.00*	$27	$48	$90

I For Ammonia Free Oligo Deprotection Solution that can be used with p-methoxy PAC protected amidites, please see page 98.
I For a description of the advantages of using 5'-MMT nucleoside phosphoramidites, please see page #2.



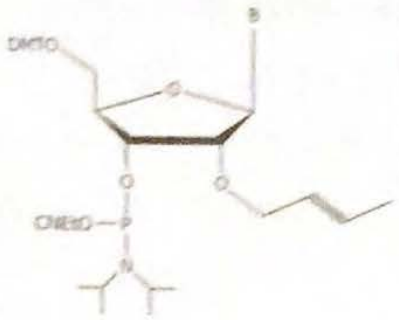
p-isopropoxy DNA Amidites with Standard Base Protection

B	Protection	Catalog #
A	n-bz	ANP-6901
C	n-bz	ANP-6902
G	n-ibu	ANP-6903
T	n/a	ANP-6904

Catalog #	Product Name	250mg	500mg	1gm
ANP-6901	deoxy Adenosine (n-bz) p-isopropoxy phosphoramidite, *M.W. 846.95*	$30	$55	$99
ANP-6902	deoxy Cytidine (n-bz) p-isopropoxy phosphoramidite, *M.W. 822.92*	$30	$55	$99
ANP-6903	deoxy Guanosine (n-ibu) p-isopropoxy phosphoramidite, *M.W. 928.93*	$30	$55	$99
ANP-6904	Thymidine p-isopropoxy phosphoramidite, *M.W. 733.83*	$30	$55	$99

Controlled aq. ammonia deprotection still retains the p-isopropoxy group in the oligonucleotide, while n-protecting groups are removed.

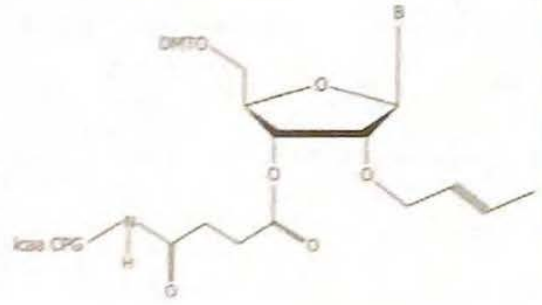
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2'-O-Butyne Amidites with Standard Base Protection

B	Protection	Catalog#
A	n-bz	ANP-7621
C	n-bz	ANP-7622
G	n-ibu	ANP-7623
U	n/a	ANP-7625

Catalog #	Product Name	100μmole	250mg
ANP-7621	2'-O-Butyne Adenosine (n-bz) CED phosphoramidite, MW 938.01	$185	$395
ANP-7622	2'-O-Butyne Cytidine (n-bz) CED phosphoramidite, MW 914.98	$185	$395
ANP-7623	2'-O-Butyne Guanosine (n-ibu) CED phosphoramidite, MW 930.98	$185	$395
ANP-7625	2'-O-Butyne Uridine CED phosphoramidite, MW 789.84	$185	$395



2'-O-Butyne Supports with Standard Base Protection

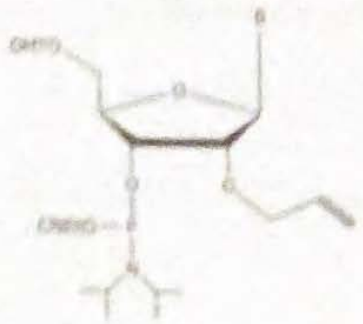
B	Protection	Catalog #
A	n-bz	N-9611
C	n-bz	N-9612
G	n-ibu	N-9613
U	n/a	N-9614

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	pack of 4 cols. 0.2 μmole	pack of 4 cols. 1.0 μmole	pack of 10 cols. 0.2 μmole	pack of 10 cols. 1.0 μmole
N-9611-05	2'-O-Butyne Adenosine (n-bz)	500Å	$65	$80	$95	$160	$190
N-9611-10	3'-Icaa CPG	1000Å					
N-9612-05	2'-O-Butyne Cytidine (n-bz)	500Å	$65	$80	$95	$160	$190
N-9612-10	3'-Icaa CPG	1000Å					
N-9613-05	2'-O-Butyne Guanosine (n-ibu)	500Å	$65	$80	$95	$160	$190
N-9613-10	3'-Icaa CPG	1000Å					
N-9614-05	2'-O-Butyne Uridine	500Å	$65	$80	$95	$160	$190
N-9614-10	3'-Icaa CPG	1000Å					

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Oligo Synthesis Products

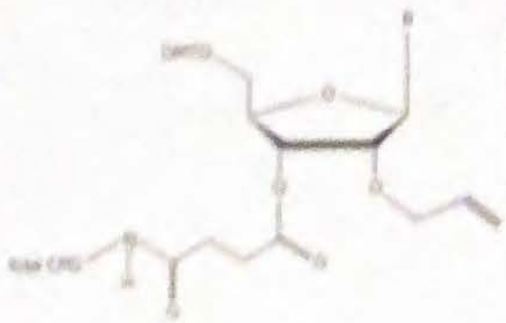
Amidites and Supports for Antisense Oligonucleotides



2'-O Propargyl Amidites with Standard Base Protection

B	Protection	Catalog #
A	n-bz	ANP-7751
C	n-bz	ANP-7752
G	n-ibu	ANP-7753
U	n/a	ANP-7754

Catalog #	Product Name	100µmole	250mg
ANP-7751	2'-O-Propargyl Adenosine (n-bz) CED phosphoramidite, s.e. or s.u.	$185	$395
ANP-7752	2'-O-Propargyl Cytidine (n-bz) CED phosphoramidite, s.e. or s.u.	$185	$395
ANP-7753	2'-O-Propargyl Guanosine (n-ibu) CED phosphoramidite, s.e. or s.u.	$185	$395
ANP-7754	2'-O-Propargyl Uridine CED phosphoramidite, s.e. or s.u.	$185	$395



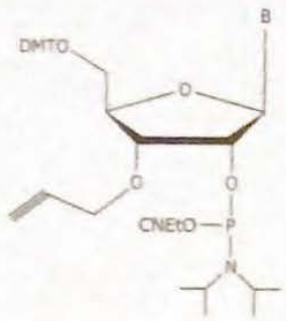
2'-O-Propargyl Supports with Standard Base Protection

B	Protection	Catalog #
A	n-bz	N-8910
C	n-bz	N-8920
G	n-ibu	N-8930
U	n/a	N-8940

Catalog #	Product Name	Pore Size	6-8 CPG 100	pack of 4 vials 0.2	pack of 4 vials 1.0	pack of 10 vials 0.2	pack of 10 vials 1.0
N-8910-05	2'-O-Propargyl Adenosine (n-bz)	500Å	$65	$80	$95	$160	$190
N-8910-10	3'-bis-CPG	1000Å					
N-8920-05	2'-O-Propargyl Cytidine (n-bz)	500Å	$65	$80	$95	$160	$190
N-8920-10	3'-bis-CPG	1000Å					
N-8930-05	2'-O-Propargyl Guanosine (n-ibu)	500Å	$65	$80	$95	$160	$190
N-8930-10	3'-bis-CPG	1000Å					
N-8940-05	2'-O-Propargyl Uridine	500Å	$65	$80	$95	$160	$190
N-8940-10	3'-bis-CPG	1000Å					

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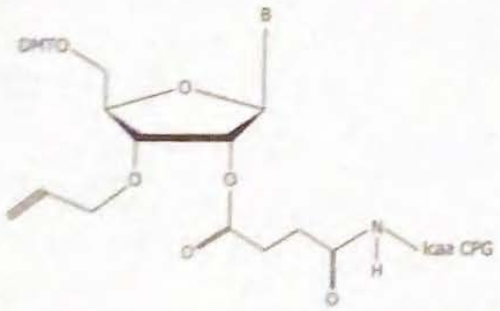
Toll Free (800) 762-9323



3'-O-Propargyl Amidites with Standard Base Protection

B	Protection	Catalog#
A	n-bz	ANP-9751
C	n-bz	ANP-9752
G	n-ibu	ANP-9753
U	n/a	ANP-9754

Catalog #	Product Name	100µmole	250mg
ANP-9751	3'-O-Propargyl Adenosine (n-bz) CED phosphoramidite, M.W. 911.98	$185	$395
ANP-9752	3'-O-Propargyl Cytidine (n-bz) CED phosphoramidite, M.W. 887.96	$185	$395
ANP-9753	3'-O-Propargyl Guanosine (n-ibu) CED phosphoramidite, M.W. 943.98	$185	$395
ANP-9754	3'-O-Propargyl Uridine CED phosphoramidite, M.W. 784.93	$185	$395



3'-O-Propargyl Supports with Standard Base Protection

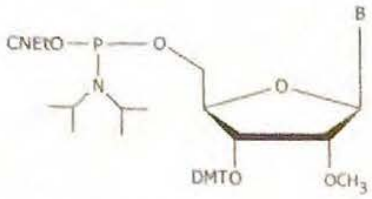
B	Protection	Catalog #
A	n-bz	N-9881
C	n-bz	N-9882
G	n-ibu	N-9883
U	n/a	N-9884

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	pack of 4 cols 0.2 µmole	pack of 4 cols 1.0 µmole	pack of 10 cols 0.2 µmole	pack of 10 cols 1.0 µmole
N-9881-05	3'-O-Propargyl Adenosine (n-bz)	500Å	$65	$80	$95	$160	$190
N-9881-10	2'-lcaa CPG	1000Å					
N-9882-05	3'-O-Propargyl Cytidine (n-bz)	500Å	$65	$80	$95	$160	$190
N-9882-10	2'-lcaa CPG	1000Å					
N-9883-05	3'-O-Propargyl Guanosine (n-ibu)	500Å	$65	$80	$95	$160	$190
N-9883-10	2'-lcaa CPG	1000Å					
N-9884-05	3'-O-Propargyl Uridine	500Å	$65	$80	$95	$160	$190
N-9884-10	2'-lcaa CPG	1000Å					

Oligo Synthesis Products

Amidites and Supports for Antisense Oligonucleotides

Reverse 2'-O-Methyl Amidites with Standard Base Protection

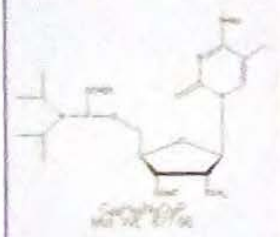


B	Protection	Catalog#
A	n-bz	ANP-1012
C	n-bz	ANP-1013
G	n-ibu	ANP-1014
U	n/a	ANP-1015

Catalog #	Product Name	100µmole	250mg
ANP-1012	2'-O-Methyl 3'-DMT Adenosine (n-bz) 5'-CED phosphoramidite, M.W. 887.96	$100	$240
ANP-1013	2'-O-Methyl 3'-DMT Cytidine (n-bz) 5'-CED phosphoramidite, M.W. 863.93	$100	$240
ANP-1014	2'-O-Methyl 3'-DMT Guanosine (n-ibu) 5'-CED phosphoramidite, M.W. 869.94	$100	$240
ANP-1015	2'-O-Methyl 3'-DMT Undine 5'-CED phosphoramidite, M.W. 760.85	$100	$240

3'-DMT-2'-O-Methyl-5-Methyl Cytidine 5'-CED OP

(3'-DMT-2'-O-Methyl-5-Methyl Cytidine (n-bz) 5'-CED OP)



Catalog#

ANP-1016

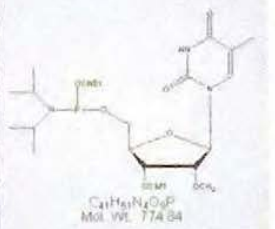
Pricing

$85.00 / 50 µmole

$150.00 / 100 µmole

Purity: 98% +

3'-DMT-2'-O-Methyl-5-Methyl Uridine 5'-CED OP



Catalog#

ANP-1017

Pricing

$85.00 / 50 µmole

$150.00 / 100 µmole

Purity: 98% +

Please Indicate Synthesizer when Ordering

ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

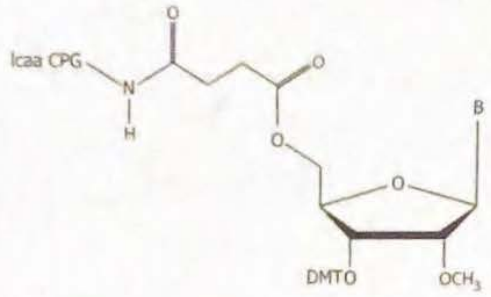
* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

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Reverse 2'-O-Methyl Supports with Standard Base Protection

B	Protection	Catalog #
A	n-bz	N-9912
C	n-bz	N-9913
G	n-ibu	N-9914
U	n/a	N-9915
5-Me-C	n-bz	N-9916
5-Me-U	n/a	N-9917

Catalog #	Product Name	Pore Size	Bulk CPG 100 mg	pack of 4 cols. 0.2 µmole	pack of 4 cols. 1.0 µmole	pack of 10 cols. 0.2 µmole	pack of 10 cols. 1.0 µmole
N-9912-05 N-9912-10	3'-DMT-2'-O-Methyl Adenosine (n-bz) 5'-lcaa CPG	500Å 1000Å	$60	$65	$80	$130	$160
N-9913-05 N-9913-10	3'-DMT-2'-O-Methyl Cytidine (n-bz) 5'-lcaa CPG	500Å 1000Å	$60	$65	$80	$130	$160
N-9914-05 N-9914-10	3'-DMT-2'-O-Methyl Guanosine (n-ibu) 5'-lcaa CPG	500Å 1000Å	$60	$65	$80	$130	$160
N-9915-05 N-9915-10	3'-DMT-2'-O-Methyl Uridine 5'-lcaa CPG	500Å 1000Å	$60	$65	$80	$130	$160
N-9916-05 N-9916-10	3'-DMT-2'-O-Methyl-5-Methyl Cytidine (n-bz) 5'-lcaa CPG	500Å 1000Å	$75	$75	$90	$150	$190
N-9917-05 N-9917-10	3'-DMT-2'-O-Methyl-5-Methyl Uridine 5'-lcaa CPG	500Å 1000Å	$75	$95	$90	$150	$190

Please Indicate Synthesizer when Ordering

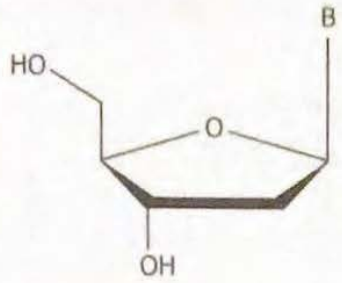
ABI	ABI 3900	Beckman	BioSearch	Expedite	MerMade	Pharmacia	PolyPlex
AB30	AB39	BK**	SH	EX	MR	PH*	PX

* Synthesizer Gene Assembler Plus

** This Synthesizer requires an adapter when ordering columns. Please refer to pg. 19

Nucleosides & Reagents

Unprotected Nucleosides



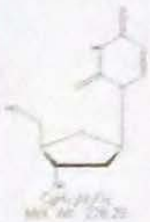
Deoxy Nucleosides

B	Catalog#
A	DN-1001
C	DN-1002
G	DN-1003
T	DN-1004

Catalog#	Product Name	1gm	5gm	25gm	100gm	500gm	1kg
DN-1001	deoxy Adenosine Monohydrate, M.W. 269.26	$6	$19	$ 73	$277	$1,277	$2,200
DN-1002	deoxy Cytidine Monohydrochloride, M.W. 263.69	$6	$19	$ 73	$277	$1,277	$2,200
DN-1003	deoxy Guanosine Monohydrate, M.W. 285.26	$9	$27	$103	$370	$1,437	$2,500
DN-1004	Thymidine, M.W. 242.23	$4	$12	$ 56	$195	$ 742	$1,290

Purity: All the above produced have a purity of 98% +

2'-deoxy Uridine



Catalog#

DN-6373

Pricing

$ 16.50 / 1 gm
$ 75.00 / 5 gm
$ 135.00 / 10 gm
$ 320.00 / 25 gm
$1,120.00 / 100 gm

Purity: 98% +

2'-deoxy Inosine



Catalog#

DN-4002

Pricing

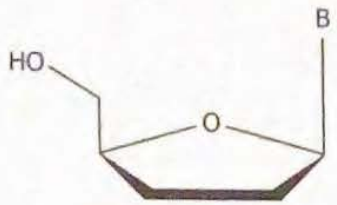
$ 18.50 / 1 gm
$ 82.50 / 5 gm
$155.00 / 10 gm

Purity: 98% +

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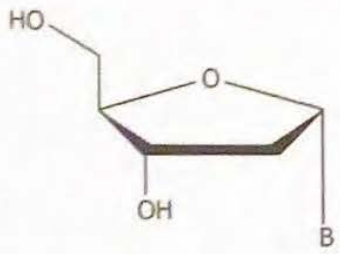


Dideoxy Nucleosides

B	Catalog#
A	DDN-1844
C	DDN-1868
G	DDN-1882
T	DDN-1883
U	DDN-1892

Catalog#	Product Name	100mg	1gm	5gm
DDN-1844	dideoxy Adenosine, *M.W. 235.24*	$80	$720	$2,880
DDN-1868	dideoxy Cytidine, *M.W. 211.22*	$80	$720	$2,880
DDN-1882	dideoxy Guanosine, *M.W. 251.24*	$80	$720	$2,880
DDN-1883	dideoxy Thymidine, *M.W. 226.23*	$80	$720	$2,880
DDN-1892	dideoxy Uridine, *M.W. 212.20*	$80	$720	$2,880

Purity: All the above produced have a purity of 98% +



Alpha Nucleosides

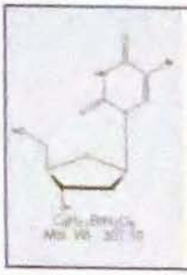
B	Catalog#
A	DN-6351
C	DN-6352
G	DN-6353
T	DN-6354

Catalog#	Product Name	100mg	500mg	1gm
DN-6351	alpha deoxy Adenosine, *M.W. 251.24*	$80	$360	$645
DN-6352	alpha deoxy Cytidine, *M.W. 227.22*	$80	$360	$645
DN-6353	alpha deoxy Guanosine, *M.W. 267.24*	$80	$360	$645
DN-6354	alpha deoxy Thymidine, *M.W. 242.23*	$80	$360	$645

Purity: All the above produced have a purity of 98% +

Modified Deoxy Nucleosides

5-Bromo deoxy Uridine

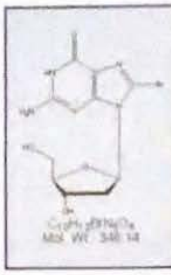


Catalog# DN-1136

Pricing
$ 6.50 / 100 mg
$ 18.00 / 500 mg
$140.00 / 5 gm
$630.00 / 25 gm

Purity: 98% +

8-Bromo deoxy Guanosine

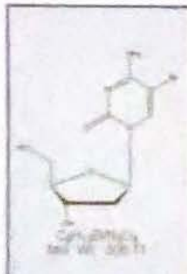


Catalog# DN-1203

Pricing
$ 17.00 / 100 mg
$ 84.00 / 1 gm
$300.00 / 5 gm

Purity: 98% +

5-Bromo deoxy Cytidine

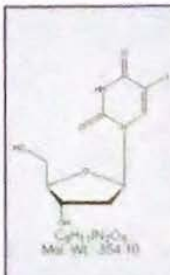


Catalog# DN-6496

Pricing
$ 80.00 / 1 gm
$360.00 / 5 gm

Purity: 98% +

5-Iodo deoxy Uridine

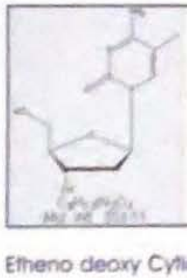


Catalog# DN-1180

Pricing
$ 10.00 / 500 mg
$ 15.00 / 1 gm
$ 65.00 / 5 gm
$290.00 / 25 gm
$925.00 / 100 gm

Purity: 98% +

5-Iodo deoxy Cytidine

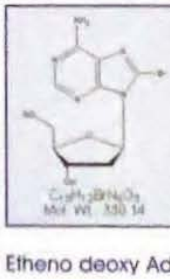


Catalog# DN-1181

Pricing
$ 36.00 / 1 gm
$324.00 / 10 gm

Purity: 98% +

8-Bromo deoxy Adenosine

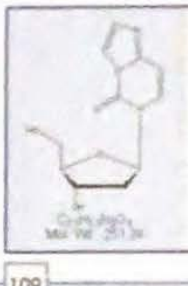


Catalog# DN-1182

Pricing
$ 22.00 / 100 mg
$195.00 / 1 gm

Purity: 98% +

Etheno deoxy Cytidine

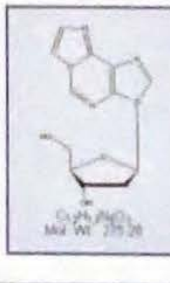


Catalog# DN-4252

Pricing
$28.00 / 25 mg
$95.00 / 100 mg

Purity: 98% +

Etheno deoxy Adenosine



Catalog# DN-4895

Pricing
$ 15.50 / 10 mg
$ 32.00 / 25 mg
$115.00 / 100 mg

Purity: 98% +

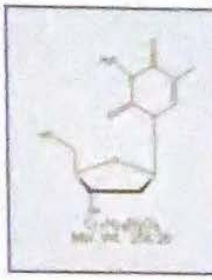
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Unprotected Nucleosides

N^3-Methyl Thymidine



Catalog#

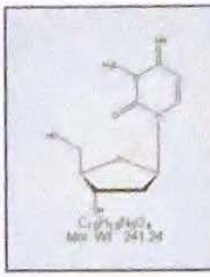
DN-1599

Pricing

$ 42.00 / 25 mg
$150.00 / 100 mg

Purity: 98% +

N^3-Methyl deoxy Cytidine



Catalog#

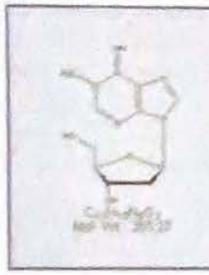
DN-6493

Pricing

$110.00 / 25 mg
$395.00 / 100 mg

Purity: 98% +

N^1-Methyl deoxy Adenosine



Catalog#

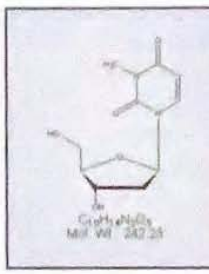
DN-1597

Pricing

$120.00 / 25 mg
$430.00 / 100 mg

Purity: 98% +

N^3-Methyl deoxy Uridine



Catalog#

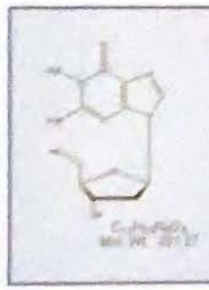
DN-6495

Pricing

$ 80.00 / 25 mg
$290.00 / 100 mg

Purity: 98% +

N^1-Methyl deoxy Guanosine



Catalog#

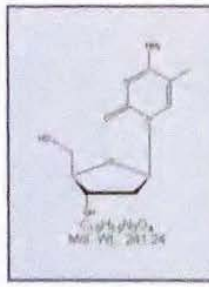
DN-1598

Pricing

$120.00 / 25 mg
$430.00 / 100 mg

Purity: 98% +

5-Methyl deoxy Cytidine



Catalog#

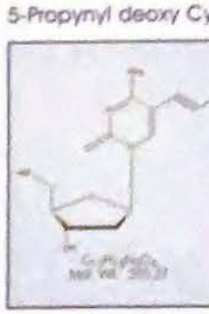
DN-2013

Pricing

$ 18.00 / 25 mg
$ 52.00 / 100 mg
$230.00 / 500 mg
$410.00 / 1 gm

Purity: 98% +

5-Propynyl deoxy Cytidine



Catalog#

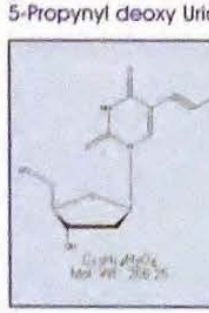
DN-1541

Pricing

$115.00 / 10 mg
$250.00 / 25 mg

Purity: 98% +

5-Propynyl deoxy Uridine



Catalog#

DN-1846

Pricing

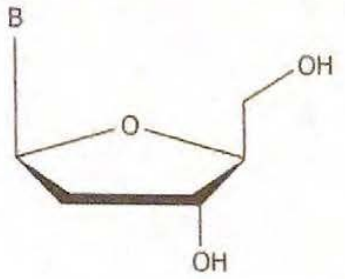
$ 75.00 / 100 mg
$675.00 / 1 gm

Purity: 98% +

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Nucleosides & Reagents

Unprotected Nucleosides



β-L-deoxy Nucleosides

B	Catalog#
A	DN-8231
C	DN-8232
G	DN-8233
T	DN-8234
U	DN-8235

Catalog#	Product Name	100mg	500mg	1gm
DN-8231	β-L-deoxy Adenosine, *M.W. 251.24*	$55	$195	$325
DN-8232	β-L-deoxy Cytidine, *M.W. 227.22*	$55	$195	$325
DN-8233	β-L-deoxy Guanosine, *M.W. 267.24*	$55	$195	$325
DN-8234	β-L-deoxy Thymidine, *M.W. 242.23*	$55	$195	$325
DN-8235	β-L-deoxy Undine, *M.W. 228.20*	$55	$195	$325

Modified deoxy Nucleosides

4-Thio Thymidine

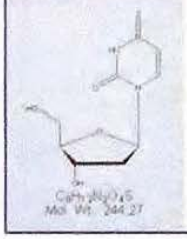


Catalog# DN-1781

Pricing
$ 45.00 / 50 mg
$ 75.00 / 100 mg
$175.00 / 250 mg

Purity: 98% +

4-Thio deoxy Uridine



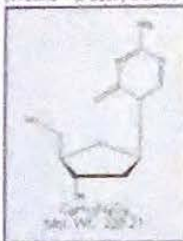
Catalog# DN-1263

Pricing
$ 45.00 / 50 mg
$ 75.00 / 100 mg
$175.00 / 250 mg

Purity: 98% +

5-aza 2'-deoxy Cytidine

(4-Amino-1-(2-deoxy-β-D-ribofuranosyl)-1,3,5-triazin-2(1H)-one)



Catalog# DN-1771

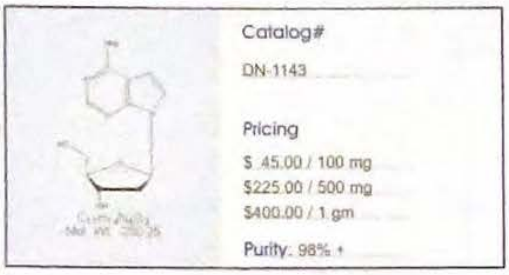
Pricing
$ 42.00 / 10 mg
$154.00 / 50 mg
$295.00 / 100 mg

Purity: 98% +

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7-Deaza deoxy Nucleosides

7-Deaza deoxy Adenosine



Catalog#

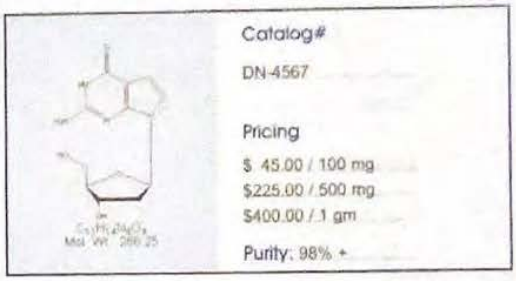
DN-1143

Pricing

$ 45.00 / 100 mg
$225.00 / 500 mg
$400.00 / 1 gm

Purity: 98% +

7-Deaza deoxy Guanosine



Catalog#

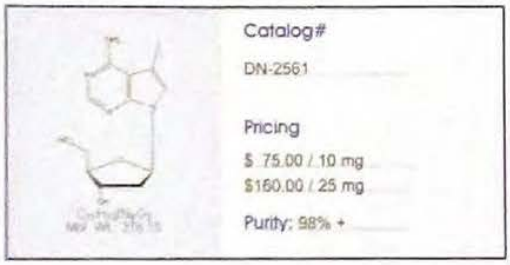
DN-4567

Pricing

$ 45.00 / 100 mg
$225.00 / 500 mg
$400.00 / 1 gm

Purity: 98% +

7-Deaza-7-Iodo deoxy Adenosine



Catalog#

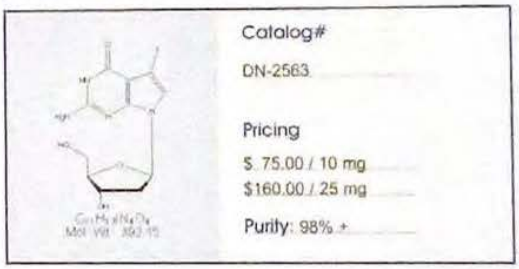
DN-2561

Pricing

$ 75.00 / 10 mg
$160.00 / 25 mg

Purity: 98% +

7-Deaza-7-Iodo deoxy Guanosine



Catalog#

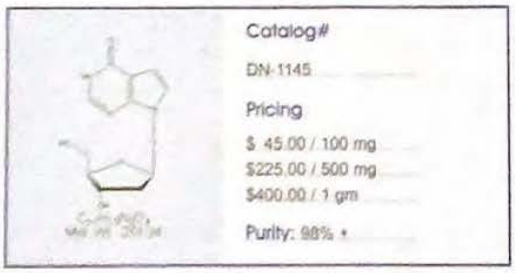
DN-2563

Pricing

$ 75.00 / 10 mg
$160.00 / 25 mg

Purity: 98% +

7-Deaza deoxy Inosine



Catalog#

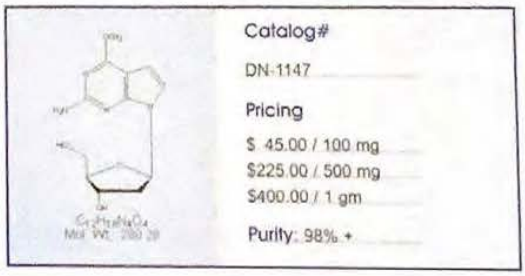
DN-1145

Pricing

$ 45.00 / 100 mg
$225.00 / 500 mg
$400.00 / 1 gm

Purity: 98% +

7-Deaza-6-methoxy deoxy Guanosine



Catalog#

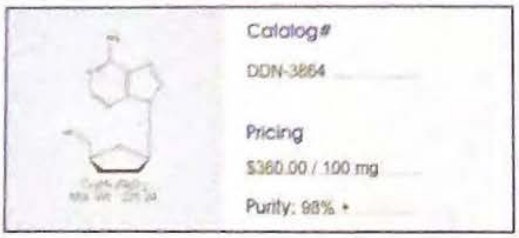
DN-1147

Pricing

$ 45.00 / 100 mg
$225.00 / 500 mg
$400.00 / 1 gm

Purity: 98% +

7-Deaza-2',3'-dideoxy Adenosine



Catalog#

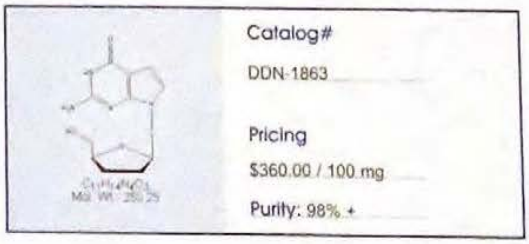
DDN-3864

Pricing

$360.00 / 100 mg

Purity: 98% +

7-Deaza-2,3-dideoxy Guanosine



Catalog#

DDN-1863

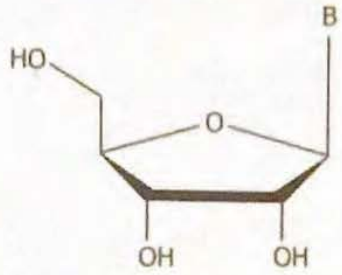
Pricing

$360.00 / 100 mg

Purity: 98% +

Nucleosides & Reagents

Unprotected Nucleosides



Ribo Nucleosides

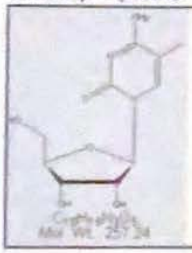
B	Catalog#
A	RP-1183
C	RP-1184
G	RP-1185
U	RP-1186
I	RP-1187

Catalog#	Product Name	1gm	5gm	100gm	1kg
RP-1183	ribo Adenosine, M.W. 267.25	$4	$ 8	$ 45	$1,125
RP-1184	ribo Cytidine, M.W. 243.22	$5	$13	$185	$1,265
RP-1185	ribo Guanosine, M.W. 283.24	$4	$ 8	$185	$1,125
RP-1186	ribo Uridine, M.W. 244.20	$4	$11	$165	$1,120
RP-1187	ribo Inosine, M.W. 268.23	$4	$ 9	$165	$1,120

Purity: All the above produced have a purity of 98% +

Modified Ribo Nucleosides

5-Methyl Cytidine

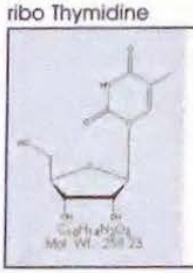


Catalog# RP-1832

Pricing
$ 40.00 / 25 mg
$ 70.00 / 50 mg
$1,260.00 / 1 gm

Purity: 98% +

ribo Thymidine

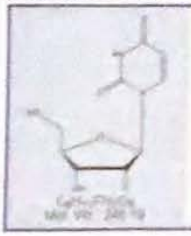


Catalog# RP-1188

Pricing
$ 16.00 / 25 mg
$ 48.00 / 100 mg
$430.00 / 1 gm

Purity: 98% +

2'-Fluoro Uridine

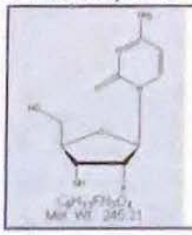


Catalog# RP-1217

Pricing
$325.00 / 500 mg

Purity: 98% +

2'-Fluoro Cytidine

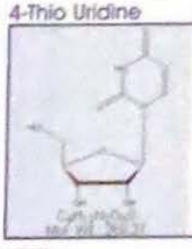


Catalog# RP-1218

Pricing
$350.00 / 500 mg

Purity: 98% +

4-Thio Uridine



RP-2304

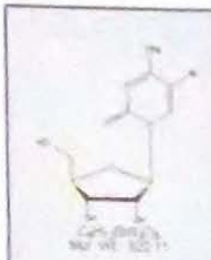
Pricing
$110.00 / 100 mg
$220.00 / 250 mg

Purity: 98% +

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Modified Ribo Nucleosides

5-Bromo Cytidine

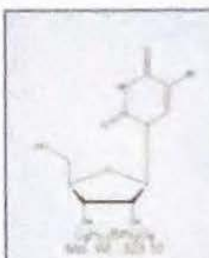


Catalog# RP-1215

Pricing
$ 70.00 / 1 gm
$310.00 / 5 gm

Purity: 98% +

5-Bromo Uridine

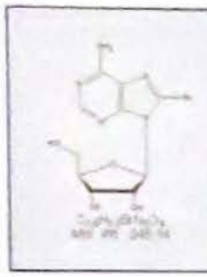


Catalog# RP-1192

Pricing
$20.00 / 250 mg
$30.00 / 500 mg
$50.00 / 1 gm

Purity: 98% +

8-Bromo Adenosine

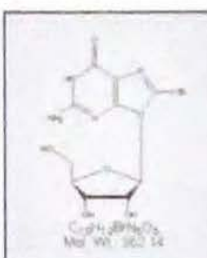


Catalog# RP-1214

Pricing
$ 26.00 / 1 gm
$110.00 / 5 gm

Purity: 98% +

8-Bromo Guanosine

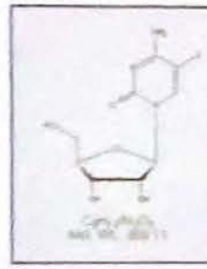


Catalog# RP-1216

Pricing
$ 26.00 / 1 gm
$110.00 / 5 gm

Purity: 98% +

5-Iodo Cytidine

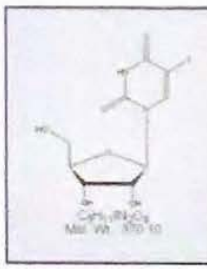


Catalog# RP-1221

Pricing
$ 35.50 / 25 mg
$125.00 / 100 mg

Purity: 98% +

5-Iodo Uridine

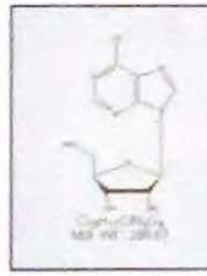


Catalog# RP-1089

Pricing
$ 16.50 / 250 mg
$ 30.00 / 500 mg
$ 50.00 / 1 gm
$225.00 / 5 gm

Purity: 98% +

6-Chloro Inosine

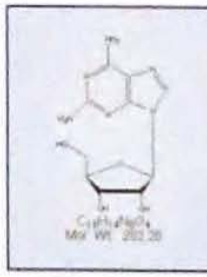


Catalog# RP-6649

Pricing
$ 48.00 / 1 gm
$225.00 / 5 gm

Purity: 98% +

2,6-Diaminopurine riboside



Catalog# RP-8334

Pricing
$ 26.00 / 1 gm
$255.00 / 10 gm

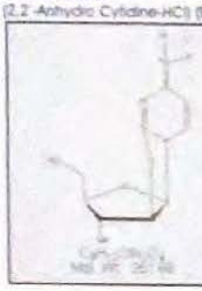
Purity: 98% +

Nucleosides & Reagents

Unprotected Nucleosides

Modified Ribo Nucleosides

Ancitabine
(2,2'-Anhydro Cytidine-HCl) (Beta-D-O^2, 2'-Cyclocytidine)



Catalog#
RP-3765
Pricing
$ 40.00 / 1 gm
$180.00 / 5 gm
Purity: 98% +

2,2'-Anhydro Uridine
(Beta-D-O^2, 2'-Cycluridine)



Catalog#
RP-4807
Pricing
$ 30.00 / 1 gm
$135.00 / 5 gm
Purity: 98% +

Etheno Adenosine



Catalog#
RP-2310
Pricing
$ 38.00 / 25 mg
$135.00 / 100 mg
Purity: 98% +

Etheno Cytidine



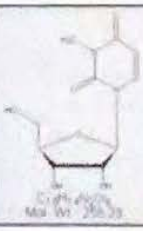
Catalog#
RP-2311
Pricing
$ 34.00 / 25 mg
$120.00 / 100 mg
Purity: 98% +

N^3-Methyl Cytidine



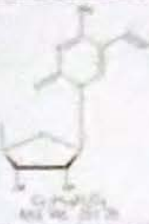
Catalog#
RP-2317
Pricing
$115.00 / 25 mg
$410.00 / 100 mg
Purity: 98% +

N^3-Methyl Uridine



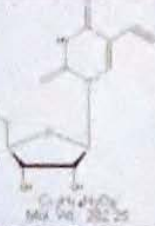
Catalog#
RP-1034
Pricing
$ 65.00 / 25 mg
$230.00 / 100 mg
Purity: 98% +

5-propynyl Cytidine



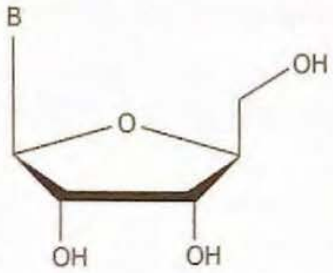
Catalog#
RP-1546
Pricing
$150.00 / 10 mg
$335.00 / 25 mg
Purity: 98% +

5-propynyl Uridine



Catalog#
RP-1842
Pricing
$ 90.00 / 100 mg
$810.00 / 1 gm
Purity: 98% +

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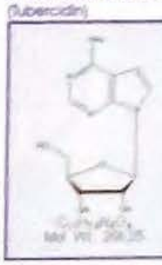
β-L Ribo Nucleosides

B	Catalog#
A	RP-9031
C	RP-9032
G	RP-9033
U	RP-9034
T	RP-9035
I	RP-9036

Catalog#	Product Name	10mg	25mg	100mg
RP-9031	β-L Adenosine, M.W. 267.24	$65	$120	$430
RP-9032	β-L Cytidine, M.W. 243.22	$65	$120	$430
RP-9033	β-L Guanosine, M.W. 283.24	$78	$122	$440
RP-9034	β-L Uridine, M.W. 244.20	$65	$120	$430
RP-9035	β-L ribo Thymidine, M.W. 258.23	$75	$122	$440
RP-9036	β-L Inosine, M.W. 268.23	$78	$125	$444

7-Deaza Ribo Nucleosides

7-Deaza ribo Adenosine
(Tubercidin)



Catalog#

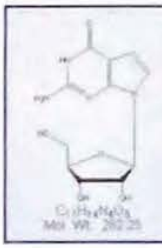
RP-2312

Pricing

$ 18.50 / 10 mg
$132.00 / 100 mg
$295.00 / 250 mg

Purity: 98% +

7-Deaza ribo Guanosine



Catalog#

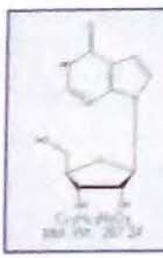
RP-2313

Pricing

$ 18.50 / 10 mg
$132.00 / 100 mg
$295.00 / 250 mg

Purity: 98% +

7-Deaza ribo Inosine



Catalog#

RP-2314

Pricing

$ 30.00 / 10 mg
$175.00 / 100 mg
$330.00 / 250 mg

Purity: 98% +

2'-O-Methyl Ribo Nucleosides

2'-(O-Methyl)-Adenosine

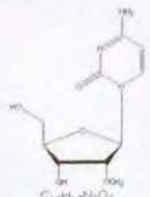


Catalog# RP-1901

Pricing
$ 38.00 / 100 mg
$ 95.00 / 1 gm
$855.00 / 10 gm

Purity: 98% +

2'-(O-Methyl)-Cytidine

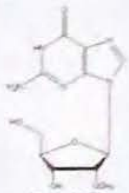


Catalog# RP-1902

Pricing
$ 38.00 / 100 mg
$ 95.00 / 1 gm
$855.00 / 10 gm

Purity: 98% +

2'-(O-Methyl)-Guanosine

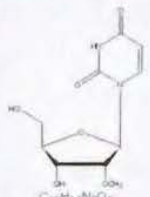


Catalog# RP-1903

Pricing
$ 38.00 / 100 mg
$ 95.00 / 1 gm
$855.00 / 10 gm

Purity: 98% +

2'-(O-Methyl)-Uridine



Catalog# RP-1904

Pricing
$ 22.00 / 100 mg
$ 55.00 / 1 gm
$495.00 / 10 gm

Purity: 98% +

2'-(O-Methyl)-Inosine

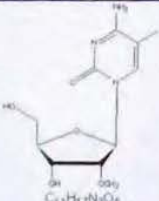


Catalog# RP-1906

Pricing
$ 18.50 / 100 mg
$165.00 / 1 gm

Purity: 98% +

2'-(O-Methyl)-5-Methyl Cytidine



Catalog# RP-1907

Pricing
$ 168.00 / 100 mg
$1,510.00 / 1 gm

Purity: 98% +

2'-(O-Methyl)-5-Iodo Uridine



Catalog# RP-1905

Pricing
$112.00 / 100 mg
$975.00 / 1 gm

Purity: 98% +

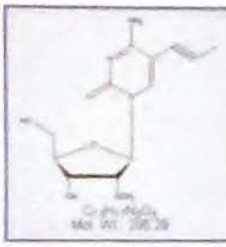
ChemGenes CORPORATION

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2'-O-Methyl Ribo Nucleosides

5-Propynyl-2'-(O-Methyl)-Cytidine



Catalog#

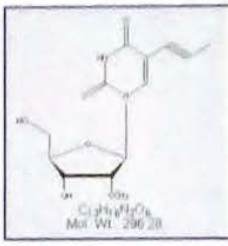
RP-1548

Pricing

$210.00 / 10 mg
$470.00 / 25 mg

Purity: 98% +

5-Propynyl-2'-(O-Methyl)-Uridine



Catalog#

RP-1856

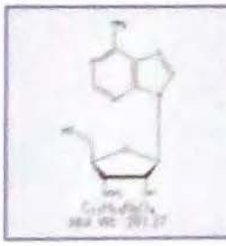
Pricing

$108.00 / 10 mg
$970.00 / 100 mg

Purity: 98% +

3'-O-Methyl Ribo Nucleosides

3'-(O-Methyl)-Adenosine



Catalog#

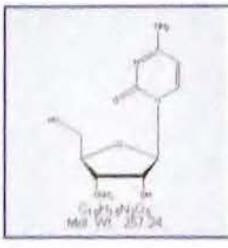
RP-2911

Pricing

$ 50.00 / 10 mg
$450.00 / 100 mg

Purity: 98% +

3'-(O-Methyl)-Cytidine



Catalog#

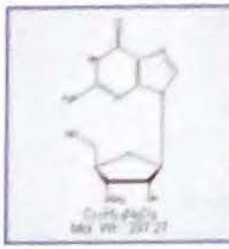
RP-2912

Pricing

$ 44.00 / 10 mg
$395.00 / 100 mg

Purity: 98% +

3'-(O-Methyl)-Guanosine



Catalog#

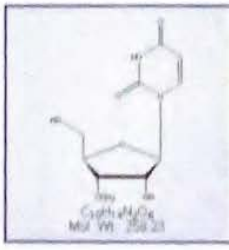
RP-2913

Pricing

$ 55.00 / 10 mg
$495.00 / 100 mg

Purity: 98% +

3'-(O-Methyl)-Uridine



Catalog#

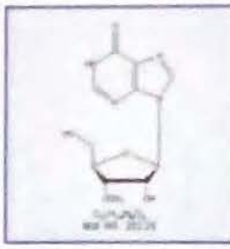
RP-2914

Pricing

$ 32.00 / 10 mg
$288.00 / 100 mg

Purity: 98% +

3'-(O-Methyl)-Inosine



Catalog#

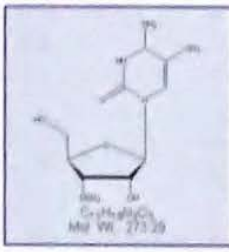
RP-2915

Pricing

$ 60.00 / 10 mg
$540.00 / 100 mg

Purity: 98% +

3'-(O-Methyl)-5-Methyl Cytidine



Catalog#

RP-2916

Pricing

$ 70.00 / 10 mg
$630.00 / 100 mg

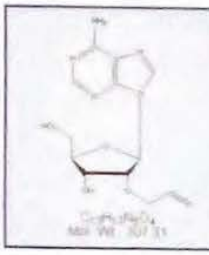
Purity: 98% +

Nucleosides & Reagents

Unprotected Nucleosides

2'-O-Allyl Ribo Nucleosides

2'-(O-Allyl) Adenosine



Catalog#

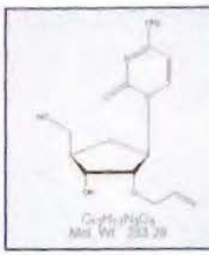
RP-3511

Pricing

$ 44.00 / 10 mg
$395.00 / 100 mg

Purity: 98% +

2'-(O-Allyl) Cytidine



Catalog#

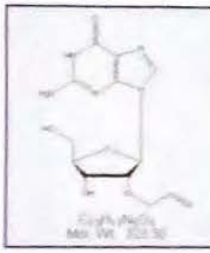
RP-3512

Pricing

$ 44.00 / 10 mg
$395.00 / 100 mg

Purity: 98% +

2'-(O-Allyl) Guanosine



Catalog#

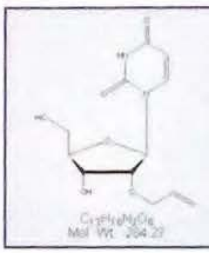
RP-3513

Pricing

$ 44.00 / 10 mg
$395.00 / 100 mg

Purity: 98% +

2'-(O-Allyl) Uridine



Catalog#

RP-3514

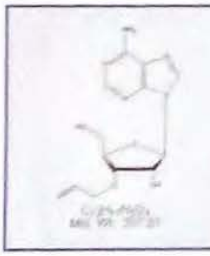
Pricing

$ 38.00 / 10 mg
$340.00 / 100 mg

Purity: 98% +

3'-O-Allyl Ribo Nucleosides

3'-(O-Allyl) Adenosine



Catalog#

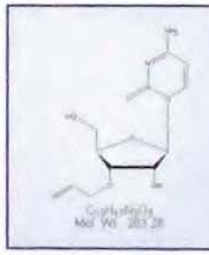
RP-3111

Pricing

$ 48.00 / 10 mg
$430.00 / 100 mg

Purity: 98% +

3'-(O-Allyl) Cytidine



Catalog#

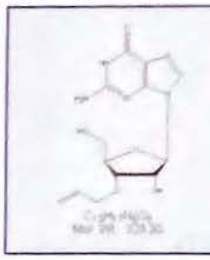
RP-3112

Pricing

$ 46.00 / 10 mg
$410.00 / 100 mg

Purity: 98% +

3'-(O-Allyl) Guanosine



Catalog#

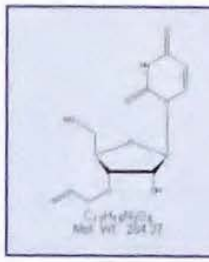
RP-3113

Pricing

$ 52.00 / 10 mg
$465.00 / 100 mg

Purity: 98% +

3'-(O-Allyl) Uridine



Catalog#

RP-3114

Pricing

$ 46.00 / 10 mg
$410.00 / 100 mg

Purity: 98% +

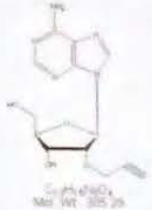
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2'-O-Propargyl Ribo Nucleosides

2'-(O-Propargyl) Adenosine

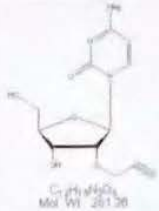


Catalog# RP-3401

Pricing
$ 60.00 / 10 mg
$540.00 / 100 mg

Purity: 98% +

2'-(O-Propargyl) Cytidine

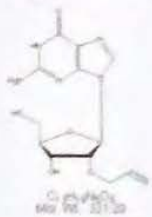


Catalog# RP-3402

Pricing
$ 60.00 / 10 mg
$540.00 / 100 mg

Purity: 98% +

2'-(O-Propargyl) Guanosine

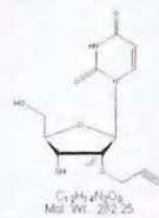


Catalog# RP-3403

Pricing
$ 60.00 / 10 mg
$540.00 / 100 mg

Purity: 98% +

2'-(O-Propargyl) Uridine



Catalog# RP-3404

Pricing
$ 50.00 / 10 mg
$450.00 / 100 mg

Purity: 98% +

3'-O-Propargyl Ribo Nucleosides

3'-(O-Propargyl) Adenosine

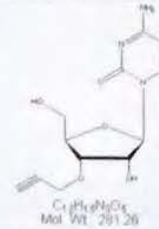


Catalog# RP-3301

Pricing
$ 48.00 / 10 mg
$430.00 / 100 mg

Purity: 98% +

3'-(O-Propargyl) Cytidine

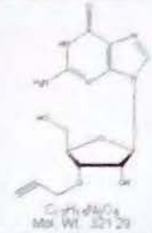


Catalog# RP-3302

Pricing
$ 46.00 / 10 mg
$410.00 / 100 mg

Purity: 98% +

3'-(O-Propargyl) Guanosine

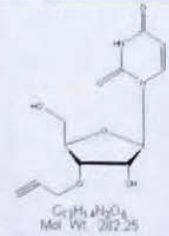


Catalog# RP-3303

Pricing
$ 52.00 / 10 mg
$465.00 / 100 mg

Purity: 98% +

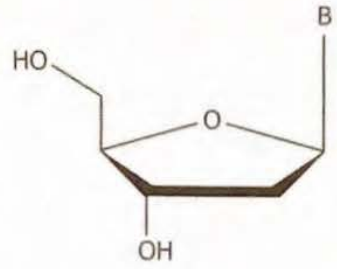
3'-(O-Propargyl) Uridine



Catalog# RP-3304

Pricing
$ 46.00 / 10 mg
$410.00 / 100 mg

Purity: 98% +



Base Protected (Standard & Labile) deoxy Nucleosides

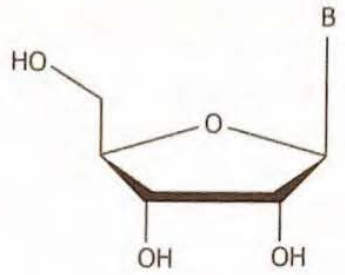
B	Protection	Catalog#
A	n-bz	PM-1101
C	n-bz	PM-1102
G	n-ibu	PM-1103
C	n-ibu	PM-1104
C	n-acetyl	PM-1105
A	n-PAC	PM-9996
C	n-PAC	PM-9997
G	n-PAC	PM-9998
A	n,n-dmf	PM-1588
G	n,n-dmf	PM-3183

Catalog#	Product Name	1gm	5gm	10gm
PM-1101	deoxy Adenosine (n-bz), *M.W. 355.35*	$12	$55	$ 99
PM-1102	deoxy Cytidine (n-bz), *M.W. 331.32*	$12	$55	$ 99
PM-1103	deoxy Guanosine (n-ibu), *M.W. 337.33*	$15	$60	$108
PM-1104	deoxy Cytidine (n-ibu), *M.W. 297.31*	$15	$70	$126
PM-1105	deoxy Cytidine (n-acetyl), *M.W. 269.25*	$18	$85	$153
PM-9996	deoxy Adenosine (n-PAC), *M.W. 385.37*	$22	$82	$148
PM-9997	deoxy Cytidine (n-PAC), *M.W. 361.35*	$22	$82	$148
PM-9998	deoxy Guanosine (n-PAC), *M.W. 401.37*	$22	$82	$148
PM-1588	deoxy Adenosine (n,n-dmf), *M.W. 308.32*	$15	$65	$117
PM-3183	deoxy Guanosine (n,n-dmf), *M.W. 322.32*	$15	$65	$117

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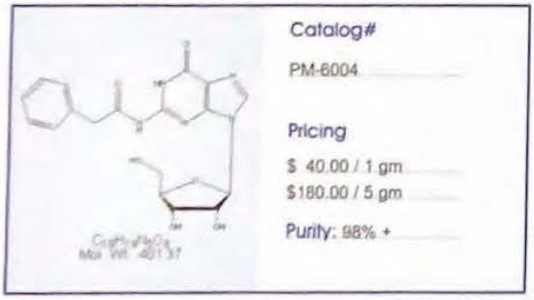
Base Protected (Standard & Labile) Ribo Nucleosides

B	Protection	Catalog#
A	n-bz	PM-2101
C	n-bz	PM-2102
G	n-ibu	PM-2103
C	n-ibu	PM-2105
C	n-acetyl	PM-2106
A	n-PAC	PM-6001
C	n-PAC	PM-6002
G	n-PAC	PM-6003

Catalog#	Productname	1gm	5gm
PM-2101	Adenosine (n-bz), *M.W. 371.35*	$27	$125
PM-2102	Cytidine (n-bz), *M.W. 347.32*	$27	$125
PM-2103	Guanosine (n-ibu), *M.W. 353.33*	$33	$130
PM-2105	Cytidine (n-ibu), *M.W. 313.31*	$33	$130
PM-2106	Cytidine (n-acetyl), *M.W. 285.25*	$37	$155
PM-6001	Adenosine (n-PAC), *M.W. 401.37*	$40	$180
PM-6002	Cytidine (n-PAC), *M.W. 377.35*	$40	$180
PM-6003	Guanosine (n-PAC), *M.W. 417.37*	$40	$180

Purity: All the above products have a purity of 98.5% +

ribo Guanosine (n-phenyl acetyl)



Catalog#

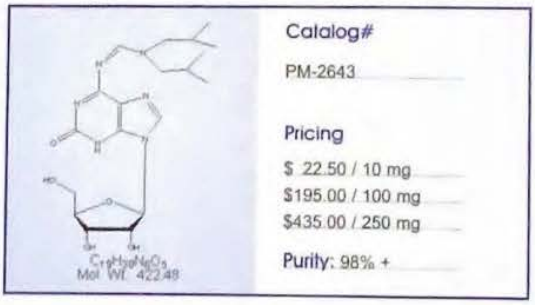
PM-6004

Pricing

$ 40.00 / 1 gm
$180.00 / 5 gm

Purity: 98% +

ribo isoGuanosine (n,n-diisobutylformamidine)



Catalog#

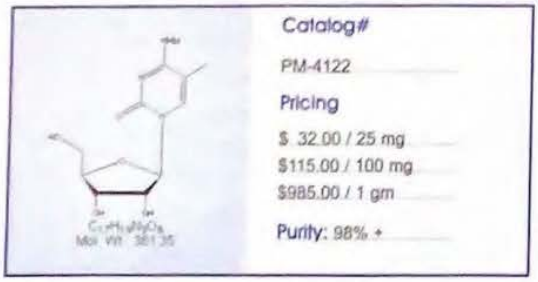
PM-2643

Pricing

$ 22.50 / 10 mg
$195.00 / 100 mg
$435.00 / 250 mg

Purity: 98% +

5-Methyl Cytidine (n-bz)



Catalog#

PM-4122

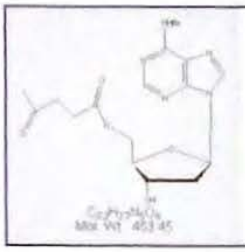
Pricing

$ 32.00 / 25 mg
$115.00 / 100 mg
$985.00 / 1 gm

Purity: 98% +

5'-Levulinyl Nucleosides

5'-Levulinyl deoxy Adenosine (n-bz)

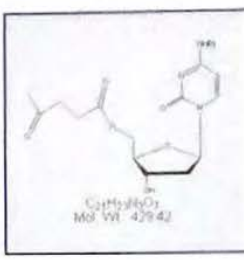


Catalog# DN-6601

Pricing
$ 40.00 / 1 gm
$180.00 / 5 gm

Purity: 98% +

5'-Levulinyl deoxy Cytidine (n-bz)

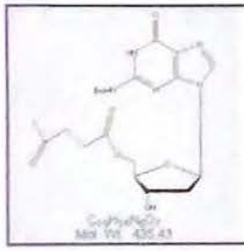


Catalog# DN-6602

Pricing
$ 40.00 / 1 gm
$180.00 / 5 gm

Purity: 98% +

5'-Levulinyl deoxy Guanosine (n-ibu)

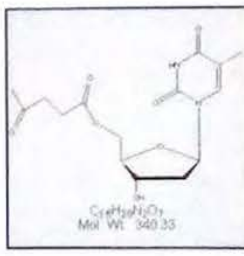


Catalog# DN-6603

Pricing
$ 40.00 / 1 gm
$180.00 / 5 gm

Purity: 98% +

5'-Levulinyl Thymidine



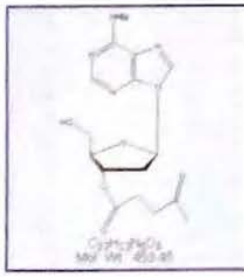
Catalog# DN-6604

Pricing
$ 35.00 / 1 gm
$160.00 / 5 gm

Purity: 98% +

3'-Levulinyl Nucleosides

3'-Levulinyl deoxy Adenosine (n-bz)

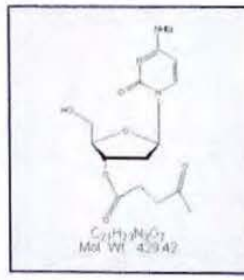


Catalog# PM-6611

Pricing
$100.00 / 1 gm
$475.00 / 5 gm

Purity: 98% +

3'-Levulinyl deoxy Cytidine (n-bz)

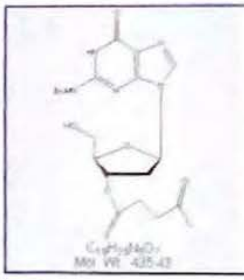


Catalog# PM-6612

Pricing
$100.00 / 1 gm
$475.00 / 5 gm

Purity: 98% +

3'-Levulinyl deoxy Guanosine (n-ibu)

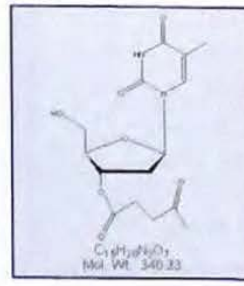


Catalog# PM-6613

Pricing
$100.00 / 1 gm
$475.00 / 5 gm

Purity: 98% +

3'-Levulinyl Thymidine



Catalog# PM-6614

Pricing
$ 90.00 / 1 gm
$425.00 / 5 gm

Purity: 98% +

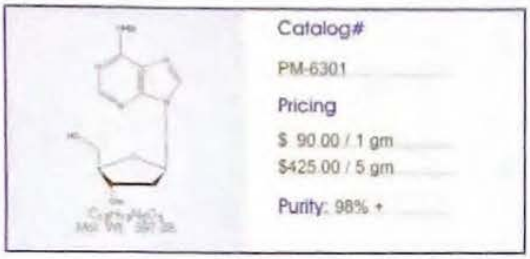
ChemGenes CORPORATION

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Acetyl & Isopropylidine Nucleosides

3'-(O-Acetyl) Adenosine (n-bz)

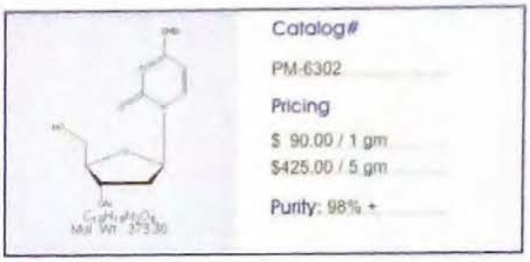


Catalog# PM-6301

Pricing
$ 90.00 / 1 gm
$425.00 / 5 gm

Purity: 98% +

3'-(O-Acetyl) Cytidine (n-bz)

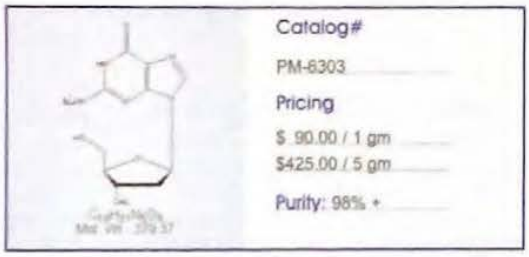


Catalog# PM-6302

Pricing
$ 90.00 / 1 gm
$425.00 / 5 gm

Purity: 98% +

3'-(O-Acetyl) Guanosine (n-ibu)

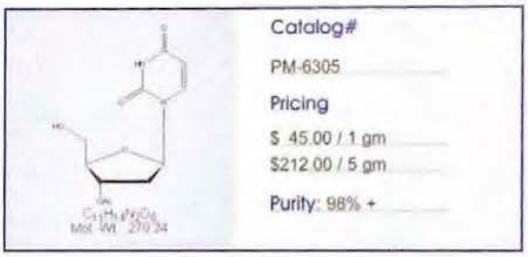


Catalog# PM-6303

Pricing
$ 90.00 / 1 gm
$425.00 / 5 gm

Purity: 98% +

3'-(O-Acetyl) 2'-deoxy Uridine

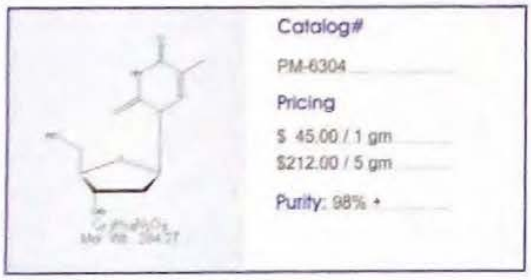


Catalog# PM-6305

Pricing
$ 45.00 / 1 gm
$212.00 / 5 gm

Purity: 98% +

3'-(O-Acetyl) Thymidine

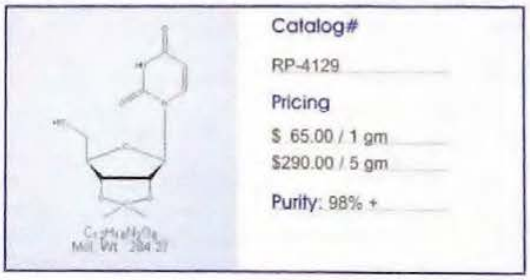


Catalog# PM-6304

Pricing
$ 45.00 / 1 gm
$212.00 / 5 gm

Purity: 98% +

Uridine-2',3'-isopropylidine

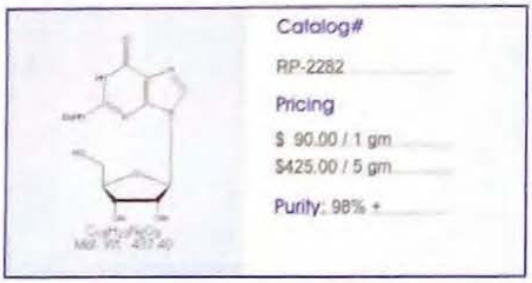


Catalog# RP-4129

Pricing
$ 65.00 / 1 gm
$290.00 / 5 gm

Purity: 98% +

2',3'-Diacetyl Guanosine (n-ibu)

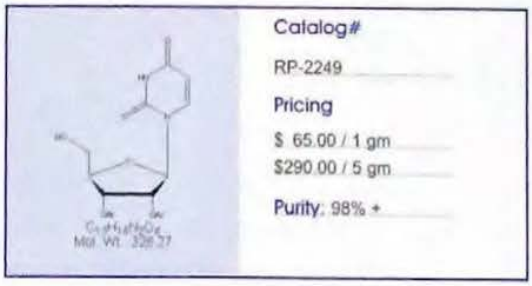


Catalog# RP-2282

Pricing
$ 90.00 / 1 gm
$425.00 / 5 gm

Purity: 98% +

2',3'-Diacetyl Uridine



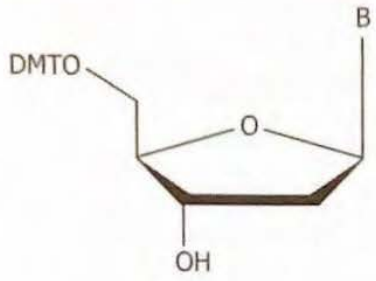
Catalog# RP-2249

Pricing
$ 65.00 / 1 gm
$290.00 / 5 gm

Purity: 98% +

Nucleosides & Reagents

DMT-protected Nucleosides



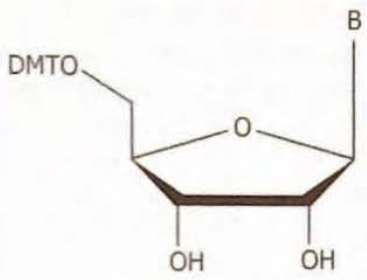
DMT Protected and base Protected (Standard & Labile) deoxy Nucleosides

B	Protection	Catalog#
A	n-bz	PM-1109
C	n-bz	PM-1110
G	n-ibu	PM-1111
T	n/a	PM-1112
C	n-ibu	PM-1117
C	n-acetyl	PM-1118
A	n-acetyl	PM-3015
A	n-PAC	PM-3101
C	n-PAC	PM-3102
G	n-PAC	PM-3103
G	n-tBPAC	PM-1483

Catalog#	Product Name	1gm	5gm	10gm	100gm
PM-1109	5'-DMT deoxy Adenosine (n-bz), *M.W. 657.71*	$18	$ 80	$145	$1,200
PM-1110	5'-DMT deoxy Cytidine (n-bz), *M.W. 633.69*	$18	$ 80	$145	$1,200
PM-1111	5'-DMT deoxy Guanosine (n-ibu), *M.W. 639.70*	$18	$ 80	$145	$1,200
PM-1112	5'-DMT Thymidine, *M.W. 544.60*	$12	$ 52	$ 92	$ 850
PM-1117	5'-DMT deoxy Cytidine (n-ibu), *M.W. 599.67*	$18	$ 80	$145	$1,200
PM-1118	5'-DMT deoxy Cytidine (n-acetyl), *M.W. 571.62*	$18	$ 80	$145	$1,200
PM-3015	5'-DMT deoxy Adenosine (n-acetyl), *M.W. 595.65*	$25	$112	$198	$1,782
PM-3101	5'-DMT deoxy Adenosine (n-PAC), *M.W. 687.74*	$25	$112	$198	$1,782
PM-3102	5'-DMT deoxy Cytidine (n-PAC), *M.W. 663.7*	$25	$112	$198	$1,782
PM-3103	5'-DMT deoxy Guanosine (n-PAC), *M.W. 703.74*	$28	$126	$224	$2,000
PM-1483	5'-DMT deoxy Guanosine (n-tBPAC), *M.W. 759.85*	$40	$190	$342	$3,000

Purity: Ultrapure products: > 98.5% +

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DMT Protected and base Protected (Standard & Labile) Ribo Nucleosides

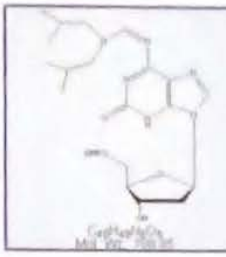
B	Protection	Catalog#
A	n-bz	PM-2109
C	n-bz	PM-2110
G	n-ibu	PM-2111
U	n/a	PM-2112
C	n-ibu	PM-2113
C	n-acetyl	PM-2114
A	n-PAC	PM-2203
C	n-PAC	PM-2204
G	n-PAC	PM-2205

Catalog#	Product Name	1gm	5gm	10gm
PM-2109	5'-DMT Adenosine (n-bz), *M.W. 673.71*	$33	$142	$256
PM-2110	5'-DMT Cytidine (n-bz), *M.W. 649.69*	$33	$142	$256
PM-2111	5'-DMT Guanosine (n-ibu), *M.W. 655.70*	$35	$148	$265
PM-2112	5'-DMT Uridine, *M.W. 546.57*	$26	$128	$230
PM-2113	5'-DMT Cytidine (n-ibu), *M.W. 615.67*	$40	$180	$324
PM-2114	5'-DMT Cytidine (n-acetyl), *M.W. 587.62*	$42	$185	$333
PM-2203	5'-DMT Adenosine (n-PAC), *M.W. 703.74*	$35	$155	$275
PM-2204	5'-DMT Cytidine (n-PAC), *M.W. 679.72*	$35	$148	$275
PM-2205	5'-DMT Guanosine (n-PAC), *M.W. 719.74*	$35	$148	$275

Purity: All the above products have a purity of 98.5% +

DMT Protected Modified Deoxy Nucleosides

5'-DMT deoxy isoGuanosine (n,n-diisobutylformamidine)



Catalog#

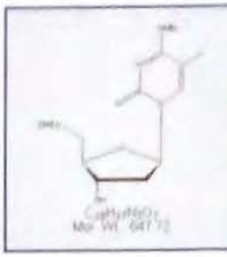
PM-1643

Pricing

$425.00 / 1 gm

Purity: 98% +

5'-DMT-5-Methyl deoxy Cytidine (n-bz)



Catalog#

PM-1967

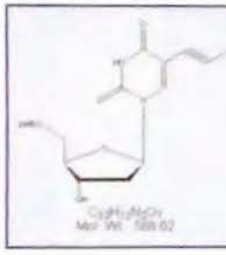
Pricing

$ 45.00 / 1 gm

$220.00 / 5 gm

Purity: 98% +

5'-DMT-5-Propynyl deoxy Uridine



Catalog#

PM-1022

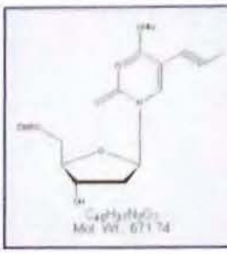
Pricing

$ 165.00 / 100 mg

$1,320.00 / 1 gm

Purity: 98% +

5'-DMT-5-Propynyl deoxy Cytidine (n-bz)



Catalog#

PM-1124

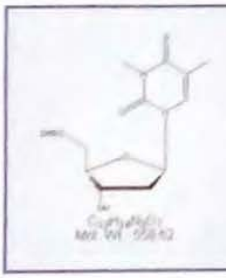
Pricing

$110.00 / 100 mg

$985.00 / 1 gm

Purity: 98% +

5'-DMT-N^3-Methyl Thymidine



Catalog#

PM-1591

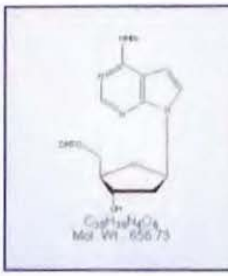
Pricing

$ 65.00 / 1 gm

$290.00 / 5 gm

Purity: 98% +

5'-DMT-7-Deaza deoxy Adenosine (n-bz)



Catalog#

PM-6431

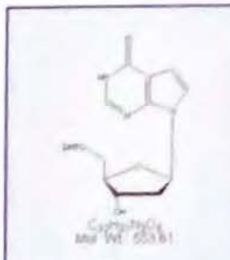
Pricing

$ 450.00 / 1 gm

$1,800.00 / 5 gm

Purity: 98% +

5'-DMT-7-Deaza deoxy Inosine



Catalog#

PM-6434

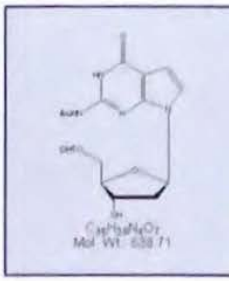
Pricing

$ 450.00 / 1 gm

$1,800.00 / 5 gm

Purity: 98% +

5'-DMT-7-Deaza deoxy Guanosine (n-ibu)



Catalog#

PM-6433

Pricing

$ 450.00 / 1 gm

$1,800.00 / 5 gm

Purity: 98% +

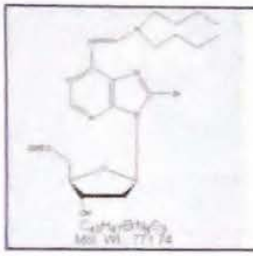
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DMT Protected Modified Deoxy Nucleosides

5'-DMT-8-Bromo deoxy Adenosine (n,n-dibuf)



Catalog#

PM-4791

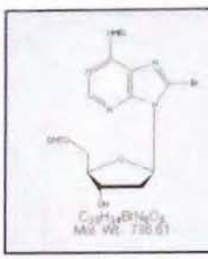
Pricing

$165.00 / 1 gm

$740.00 / 5 gm

Purity: 98% +

5'-DMT-8-Bromo deoxy Adenosine (n-bz)



Catalog#

PM-7210

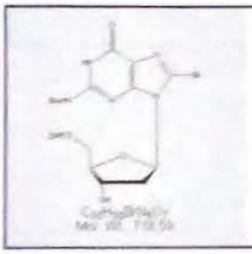
Pricing

$150.00 / 1 gm

$675.00 / 5 gm

Purity: 98% +

5'-DMT-8-Bromo deoxy Guanosine (n-ibu)



Catalog#

PM-7211

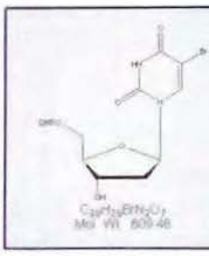
Pricing

$150.00 / 1 gm

$675.00 / 5 gm

Purity: 98% +

5'-DMT-5-Bromo deoxy Uridine



Catalog#

PM-2808

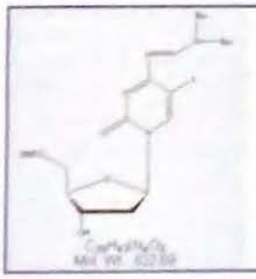
Pricing

$ 45.00 / 1 gm

$200.00 / 5 gm

Purity: 98% +

5'-DMT-5-Iodo deoxy Cytidine (n,n-isobudmf)



Catalog#

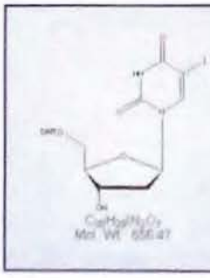
PM-1979

Pricing

$150.00 / 1 gm

Purity: 98% +

5'-DMT-5-Iodo deoxy Uridine



Catalog#

PM-2864

Pricing

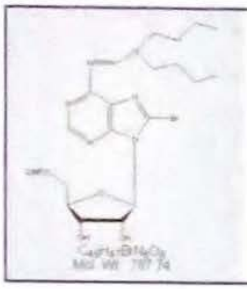
$ 45.00 / 1 gm

$200.00 / 5 gm

Purity: 98% +

DMT Protected Modified Ribo Nucleosides

5'-DMT-8-Bromo Adenosine (n,n-dibuf)



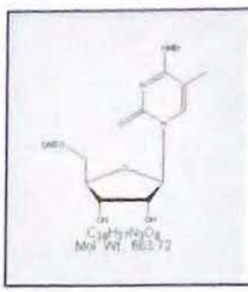
Catalog# PM-1834

Pricing

$160.00 / 1 gm

Purity: 98% +

5'-DMT-5-Methyl Cytidine (n-bz)



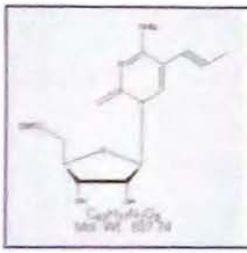
Catalog# PM-2647

Pricing

$134.00 / 1 gm

Purity: 98% +

5'-DMT-5-Propynyl Cytidine (n-bz)



Catalog# PM-1126

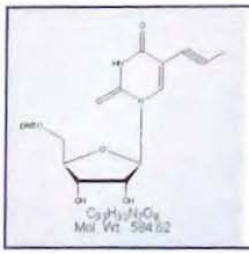
Pricing

$ 115.00 / 100 mg

$1,035.00 / 1 gm

Purity: 98% +

5'-DMT-5-Propynyl Uridine



Catalog# PM-1024

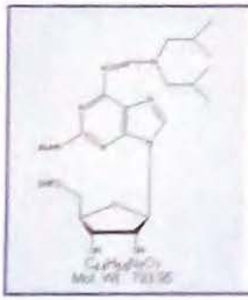
Pricing

$ 180.00 / 100 mg

$1,620.00 / 1 gm

Purity: 98% +

5'-DMT-2,6-diamino purine riboside (n^6,n^6-dmf) (n^2-ibu)



Catalog# PM-2476

Pricing

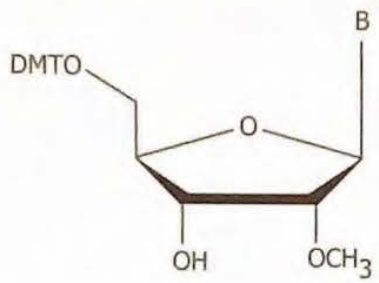
$115.00 / 1 gm

Purity: 98% +

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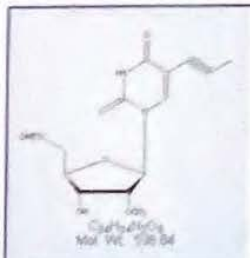
DMT Protected 2'-O-Methyl Nucleosides

B	Protection	Catalog#
A	n-bz	PM-5731
C	n-bz	PM-5732
G	n-ibu	PM-5733
U	n/a	PM-5734
C	n-acetyl	PM-5735
A	n-PAC	PM-3701
C	n-PAC	PM-3702
G	n-PAC	PM-3703

Catalog#	Productname	500mg	1gm
PM-5731	5'-DMT 2'-O-Methyl Adenosine (n-bz), M.W. 687.74	$180	$340
PM-5732	5'-DMT 2'-O-Methyl Cytidine (n-bz), M.W. 663.72	$150	$280
PM-5733	5'-DMT 2'-O-Methyl Guanosine (n-ibu), M.W. 669.72	$180	$340
PM-5734	5'-DMT 2'-O-Methyl Uridine, M.W. 560.59	$150	$280
PM-5735	5'-DMT 2'-O-Methyl Cytidine (n-acetyl), M.W. 601.65	$180	$340
PM-3701	5'-DMT 2'-O-Methyl Adenosine (n-PAC), M.W. 717.77	$225	$405
PM-3702	5'-DMT 2'-O-Methyl Cytidine (n-PAC), M.W. 693.74	$225	$405
PM-3703	5'-DMT 2'-O-Methyl Guanosine (n-PAC), M.W. 733.77	$225	$405

Purity: Ultrapure products: Isomeric impurity undetected by HPLC.

5'-DMT-5-Propynyl-2'-(O-Methyl) Uridine

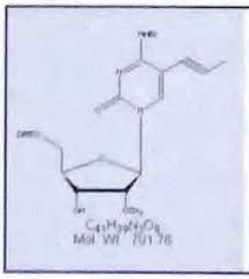


Catalog# PM-1027

Pricing $375.00 / 100 mg

Purity: 98% + Isomeric impurity undected by HPLC.

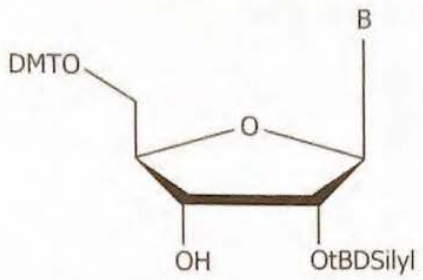
5'-DMT-5-Propynyl-2'-(O-Methyl) Cytidine (n-bz)



Catalog# PM-1129

Pricing $1,300.00 / 100 mg

Purity: 98% + Isomeric impurity undected by HPLC.



DMT Protected 2'-tBDSilyl Ribo Nucleosides

B	Protection	Catalog#
A	n-bz	PM-5851
C	n-bz	PM-5852
G	n-ibu	PM-5853
U	n/a	PM-5854
I	n/a	PM-5855
C	n-acetyl	PM-5856
A	n,n-dibz	PM-5857
A	n-PAC	PM-3501
C	n-PAC	PM-3502
G	n-PAC	PM-3503

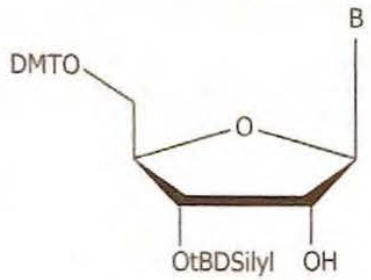
Catalog#	Productname	1gm	5gm	10gm
PM-5851	5'-DMT 2'-tBDSilyl Adenosine (n-bz), *M.W. 787.97*	$75	$356	$675
PM-5852	5'-DMT 2'-tBDSilyl Cytidine (n-bz), *M.W. 763.95*	$75	$356	$675
PM-5853	5'-DMT 2'-tBDSilyl Guanosine (n-ibu), *M.W. 769.96*	$95	$555	$845
PM-5854	5'-DMT 2'-tBDSilyl Uridine, *M.W. 650.83*	$75	$356	$675
PM-5855	5'-DMT 2'-tBDSilyl Inosine, *M.W. 684.85*	$98	$451	$845
PM-5856	5'-DMT 2'-tBDSilyl Cytidine (n-acetyl), *M.W. 701.88*	$95	$555	$845
PM-5857	5'-DMT 2'-tBDSilyl Adenosine (n,n-dibz), *M.W. 892.08*	$95	$555	$845
PM-3501	5'-DMT 2'-tBDSilyl Adenosine (n-PAC), *M.W. 818.00*	$83	$380	$700
PM-3502	5'-DMT 2'-tBDSilyl Cytidine (n-PAC), *M.W. 793.98*	$83	$380	$700
PM-3503	5'-DMT 2'-tBDSilyl Guanosine (n-PAC), *M.W. 834.00*	$93	$388	$705

Purity: 0% Isomeric Impurity. These are Ultrapure Products.

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DMT Protected 3'-tBDSilyl Nucleosides

B	Protection	Catalog#
A	n-bz	PM-5861
C	n-bz	PM-5862
G	n-ibu	PM-5863
U	n/a	PM-5864

Catalog#	Productname	1gm	5gm
PM-5861	5'-DMT 3'-tBDSilyl Adenosine (n-bz). M.W. 787.97	$ 90	$427
PM-5862	5'-DMT 3'-tBDSilyl Cytidine (n-bz). M.W. 763.95	$ 90	$427
PM-5863	5'-DMT 3'-tBDSilyl Guanosine (n-ibu). M.W. 789.96	$126	$577
PM-5864	5'-DMT 3'-tBDSilyl Uridine. M.W. 660.83	$ 90	$427

Purity: Ultrapure Products. Isomeric impurity undetected by HPLC.

Activation Reagents

1,2,4-Triazole



Catalog#	Pricing
RN-1412	$ 30.00 / 25 gm
	$ 95.00 / 100 gm
	$425.00 / 500 gm

Dicyanoimidazole (DCI)



Catalog#	Pricing
RN-1571	$ 15.00 / 1 gm
	$ 65.00 / 5 gm
	$ 180.00 / 50 gm
	$ 320.00 / 100 gm
	$1,020.00 / 1 kg

Diisopropyl Ammonium Tetrazolide



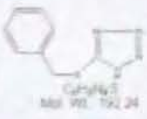
Catalog#	Pricing
RN-1413	$ 80.00 / 5 gm
	$ 240.00 / 50 gm
	$ 420.00 / 100 gm
	$1,050.00 / 1 kg

Mesitylene Sulphonyl-3-nitro-1,2,4-Triazole (MSNT)



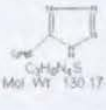
Catalog#	Pricing
RN-1403	$ 36.00 / 1 gm
	$120.00 / 5 gm
	$198.00 / 10 gm

5-benzylthio Tetrazole



Catalog#	Pricing
RN-1415	$ 18.00 / 1 gm
	$ 78.00 / 5 gm
	$ 216.00 / 50 gm
	$ 354.00 / 100 gm
	$1,020.00 / 1 kg

5-ethylthio Tetrazole



Catalog#	Pricing
RN-6397	$ 18.00 / 1 gm
	$ 78.00 / 5 gm
	$ 216.00 / 50 gm
	$ 354.00 / 100 gm
	$1,020.00 / 1 kg

5-ethylthio Tetrazole in RNA Synthesis

5-ethylthio-tetrazole has been demonstrated to be a superior coupling reagent for oligoribonucleotide synthesis. This reagent increases the stepwise coupling efficiency by 2-3% as compared to the conventional activator 1-H Tetrazole *(B. Sproat, F. Colonna, B. Mullah, D. Tsou, A. Andrus, A. Hampel, R. Vinayak, Nucleosides & Nucleotides, 14, 255, 1995)*. The total oligonucleotide yield and quality have been shown to increase dramatically when using 5-ethylthio-tetrazole. Perhaps the greater acidity and stability of 5-ethylhio-tetrazole accounts for its superior performance. This reagent is especially suitable for large scale oligoribonucleotide synthesis.

Damha et. al. have utilized this reagent in RNA synthesis of natural linkage (3', 5') and unnatural linkage (2', 5') and observed coupling efficiencies > 99% and a 7.5 minute coupling time *(Marita Wasner, Dominique Ariohn, Gadi Borkow, Anne Noronha, Andre Uddin, Michael Parniak and Masad Damha, Biochemistry, 37, 7478-7486 1998)*

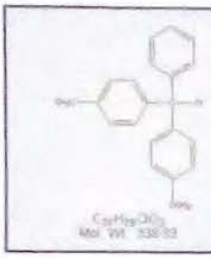
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Beaucage Reagents & Trityl Chlorides

DMT-Chloride



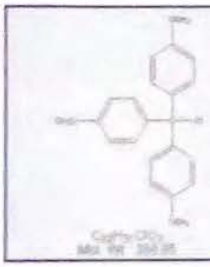
Catalog#	
RN-1401	
Pricing	
$ 15.00 / 5 gm	
$ 50.00 / 25 gm	
$165.00 / 100 gm	
$650.00 / 1 kg	

MMT-Chloride



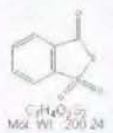
Catalog#	
RN-1574	
Pricing	
$ 18.00 / 5 gm	
$ 55.00 / 25 gm	
$195.00 / 100 gm	
$850.00 / 1 Kg	

TMT-Chloride



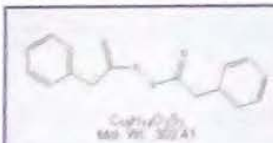
Catalog#	
RN-1491	
Pricing	
$ 45.00 / 5 gm	
$195.00 / 25 gm	

3H-1,2-Benzodithiole-3-One-1,1-dioxide / Beaucage Reagent (Sulfurizing Reagent)



Catalog#	
RN-1535	
Pricing	
$15.00 / 100 mg	
$50.00 / 1 gm	
$90.00 / 2 gm	

Phenylacetyl Disulfide (PADS)



Catalog#	Pricing
RN-1496	$26.50 / 5 gm
	$115.00 / 25 gm

Silanized Bottle (for Beaucage Reagent)

Catalog#	Pricing
BL-1536	$8.00 / 100 ml
	$8.00 / 250 ml
	$8.00 / 500 ml

DMT Chloride: Typical Lot Analysis

Elemental Analysis:	Chlorine analysis results within 1 gm/mole of the theoretical value and < 0.4gm variation per 100gm. Theoretical Chlorine Value: 35.44 gm/mole Observed Chlorine Value: 36.42 gm/mole
Color:	Off-white to faint pink, produces colorless DMT-nucleosides.
Application:	Protecting agent in polynucleotide synthesis.
Reactivity:	1.2 equivalent reacts to produce colorless DMT-deoxynucleosides quantitatively.

Nucleosides & Reagents

Phosphoramidite Chemistry Reagents

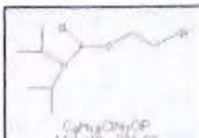
Phosphorylating Reagents

Dichloromethoxy phosphite



Catalog#	Pricing
RN-1407	$18.00 / 1 gm
	$84.00 / 5 gm

N,N-Diisopropylamino Cyanoethyl phosphonamidic-Cl



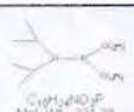
Catalog#	Pricing
RN-1505	$ 13.50 / 1 gm
	$ 55.50 / 5 gm
	$250.00 / 25 gm
	$700.00 / 100 gm

N,N-Diisopropylamino methyl phosphonamidic-chloride



Catalog#	Pricing
RN-1510	$ 165.00 / 5 gm
	$1,350.00 / 50 gm

Diethoxy N,N-Diisopropyl phosphoramidite



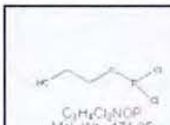
Catalog#	Pricing
RN-1410	$90.00 / 5 gm

Bis (diisopropylamino) chlorophosphine



Catalog#	Pricing
RN-8882	$15.00 / 1 gm
	$70.00 / 5 gm

Cyanoethyl dichlorophosphite



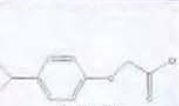
Catalog#	Pricing
RN-8883	$16.00 / 1 gm
	$75.00 / 5 gm

Methoxy N,N,N,N-tetraisopropylphosphane



Catalog#	Pricing
RN-8881	$20.00 / 1 gm
	$95.00 / 5 gm

4-Isopropyl Phenoxy Acetyl Chloride



Catalog#	Pricing
RN-1705	$15.00 / 1 gm
	$70.00 / 5 gm

Diethoxy N,N-Diisopropyl phosphoramidite: A stable capping Reagent

This reagent is utilized for capping directly during oligodeoxynucleotide synthesis by phosphoramidite method and avoids preparation of the commonly used and rather unstable Diethylphosphotriazolide capping reagent.

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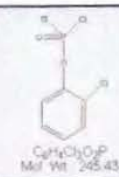
Phosphorylating Reagents

N,N-Diisopropylamino methoxy phosphonamidic-Cl



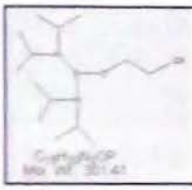
Catalog#	Pricing
RN-1409	$ 17.00 / 5 gm
	$264.00 / 25 gm
	$895.00 / 100 gm

o-Chlorophenyl phosphorodichloridate



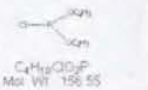
Catalog#	Pricing
RN-1421	$ 30.00 / 5 gm
	$115.00 / 25 gm

2-Cyanoethyl N,N,N,N-tetraisopropyl phosphane



Catalog#	Pricing
RN-1545	$ 12.00 / 1 gm
	$ 40.00 / 5 gm
	$550.00 / 100 gm

Diethyl phosphorochloride



Catalog#	Pricing
RN-1408	$ 30.00 / 5 gm
	$135.00 / 25 gm

Bis-Silyating Reagent

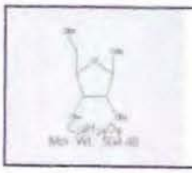


Catalog#	Pricing
RN-1521	$ 72.00 / 1 gm
	$ 320.00 / 5 gm
	$1,280.00 / 25 gm

Nucleosides & Reagents

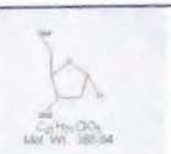
Sugars & Purines for Synthesis

2,3,5-O-Tribenzoyl-β-D-Ribofuranosyl-1-Acetate



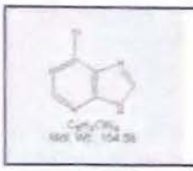
Catalog#	Pricing
RN-4131	$ 26.00 / 5 gm
	$115.00 / 25 gm

1-alpha-chloro-3,5-ditoluoyl-2-deoxy-D-ribose



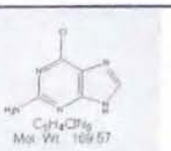
Catalog#	Pricing
RN-4130	$ 45.00 / 1 gm
	$200.00 / 5 gm

6-Chloro Purine



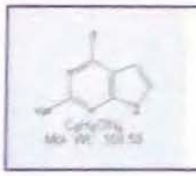
Catalog#	Pricing
RN-1030	$20.00 / 1 gm
	$80.00 / 5 gm

6-Chloro Guanine



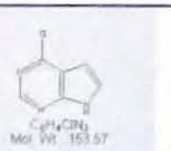
Catalog#	Pricing
RN-1051	$ 40.00 / 1 gm
	$190.00 / 5 gm

6-Chloro-7-Deaza Guanine



Catalog#	
BS-1011	
Pricing	
$138.00 / 1 gm	
Purity: 98% +	

6-Chloro-7-Deaza Purine



Catalog#	
RP-1021	
Pricing	
$138.00 / 1 gm	
Purity: 98% +	

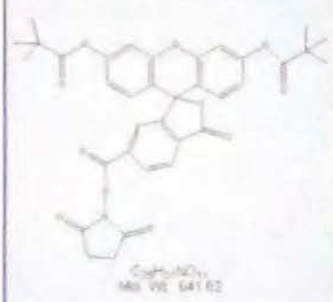
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5 & 6 Fluorescein

6-Fluorescein Dipivalate NHS Ester
(6-FAM Dipivalate NHS Ester)

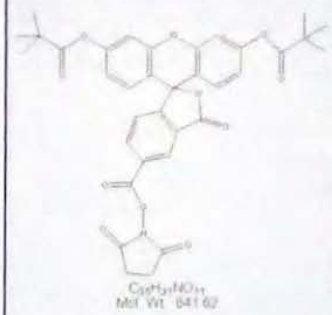


Catalog# RN-9651

Pricing
$ 67.00 / 10 mg
$ 303.75 / 50 mg
$ 545.00 / 100 mg

Purity: 98% +

5-Fluorescein Dipivalate NHS Ester
(5-FAM Dipivalate NHS Ester)

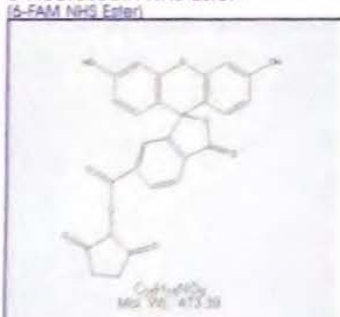


Catalog# RN-9652

Pricing
$ 74.25 / 10 mg
$334.00 / 50 mg
$601.00 / 100 mg

Purity: 98% +

6-Fluorescein NHS Ester
(5-FAM NHS Ester)

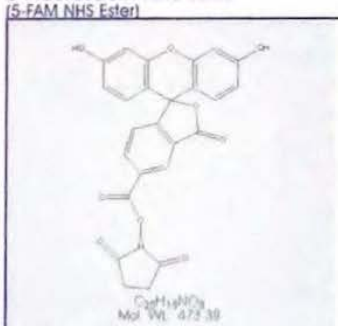


Catalog# RN-9661

Pricing
$ 22.00 / 10 mg
$ 144.00 / 100 mg
$1,296.00 / 1 gm

Purity: 98% +

5-Fluorescein NHS Ester
(5-FAM NHS Ester)



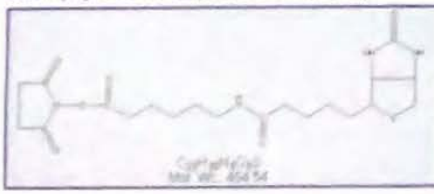
Catalog# RN-9662

Pricing
$ 24.75 / 10 mg
$ 178.50 / 100 mg
$1,606.00 / 1 gm

Purity: 98% +

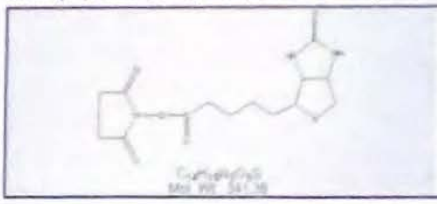
Biotin

Biotin(+)-Amido Caproate-N-Hydroxy



Catalog#	Pricing
RN-1449	$12.00 / 25 mg
	$42.00 / 100 mg

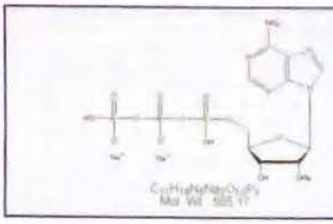
Biotin(+) Ester (N-Hydroxysuccinimide)



Catalog#	Pricing
RN-1500	$30.00 / 100 mg

Triphosphates

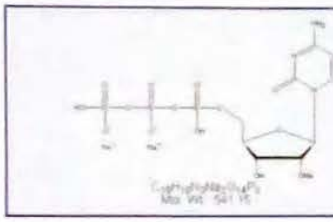
2'-(O-Methyl) Adenosine 5'-triphosphate disodium salt



Catalog#	Pricing
NTP-3386	$145.00 / 1 mg (1 µmole = 0.57 mg) $255.00 / 2 mg (2 µmole = 1.30 mg) $615.00 / 5 mg (5 µmole = 2.83 mg)

Purity: 98% +

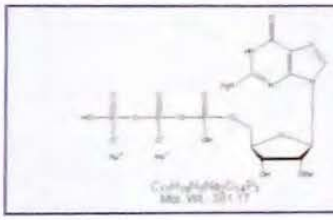
2'-(O-Methyl) Cytidine 5'-triphosphate disodium salt



Catalog#	Pricing
NTP-3387	$145.00 / 1 mg (1 µmole = 0.54 mg) $255.00 / 2 mg (2 µmole = 1.08 mg) $615.00 / 5 mg (5 µmole = 2.71 mg)

Purity: 98% +

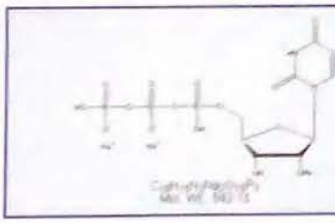
2'-(O-Methyl) Guanosine 5'-triphosphate disodium salt



Catalog#	Pricing
NTP-3388	$145.00 / 1 mg (1 µmole = 0.58 mg) $255.00 / 2 mg (2 µmole = 1.16 mg) $615.00 / 5 mg (5 µmole = 2.90 mg)

Purity: 98% +

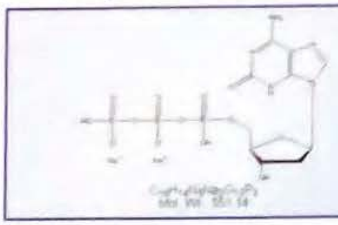
2'-(O-Methyl) Uridine 5'-triphosphate disodium salt



Catalog#	Pricing
NTP-3389	$145.00 / 1 mg (1 µmole = 0.54 mg) $255.00 / 2 mg (2 µmole = 1.08 mg) $615.00 / 5 mg (5 µmole = 2.71 mg)

Purity: 98% +

deoxy Isoguanosine 5'-triphosphate disodium salt

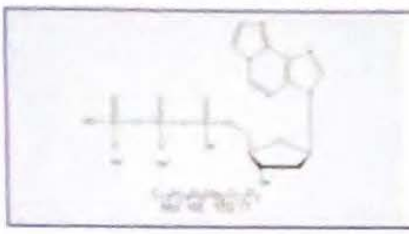


Catalog#	Pricing
NTP-4396	$ 330.00 / 1 mg (1 µmole = 0.55 mg) $ 560.00 / 2 mg (2 µmole = 1.10 mg) $1,300.00 / 5 mg (5 µmole = 2.76 mg)

Purity: 98% +

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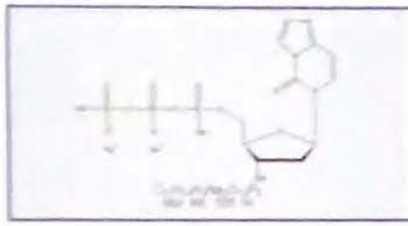
Etheno deoxy Adenosine 5'-triphosphate disodium salt



Catalog#	Pricing
NTP-4344	$ 330.00 / 1 mg (1 µmole = 0.56 mg)
	$ 620.00 / 2 mg (2 µmole = 1.12 mg)
	$1,290.00 / 5 mg (5 µmole = 2.80 mg)

Purity: 98% +

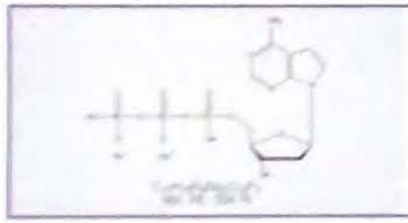
Etheno deoxy Cytidine 5'-triphosphate disodium salt



Catalog#	Pricing
NTP-4346	$ 330.00 / 1 mg (1 µmole = 0.54 mg)
	$ 620.00 / 2 mg (2 µmole = 1.07 mg)
	$1,300.00 / 5 mg (5 µmole = 2.68 mg)

Purity: 98% +

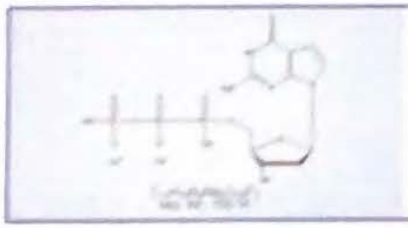
7-deaza deoxy Adenosine 5'-triphosphate disodium salt



Catalog#	Pricing
NTP-4384	$ 306.00 / 1 mg (1 µmole = 0.53 mg)
	$ 550.00 / 2 mg (2 µmole = 1.07 mg)
	$1,300.00 / 5 mg (5 µmole = 2.67 mg)

Purity: 98% +

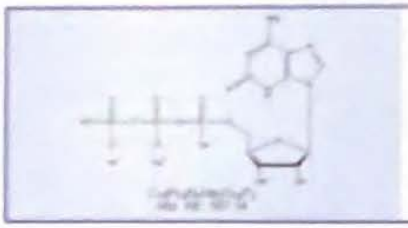
7-deaza deoxy Guanosine 5'-triphosphate disodium salt



Catalog#	Pricing
NTP-4386	$ 306.00 / 1 mg (1 µmole = 0.55 mg)
	$ 550.00 / 2 mg (2 µmole = 1.10 mg)
	$1,300.00 / 5 mg (5 µmole = 2.75 mg)

Purity: 98% +

Isoguanosine 5'-triphosphate disodium salt

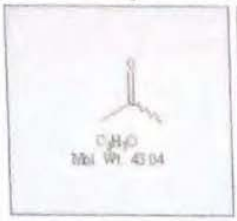


Catalog#	Pricing
NTP-4348	$ 330.00 / 1 mg (1 µmole = 0.57 mg)
	$ 560.00 / 2 mg (2 µmole = 1.13 mg)
	$1,360.00 / 5 mg (5 µmole = 2.84 mg)

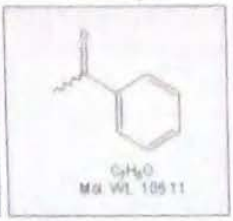
Purity: 98% +

Common Abbreviations

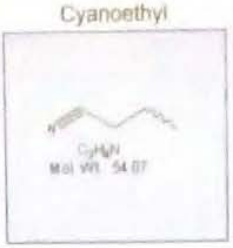
Acetyl



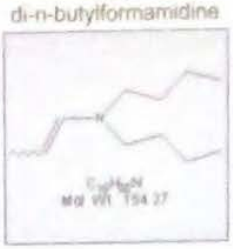
bz
Benzoyl



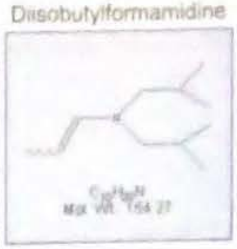
CE
Cyanoethyl



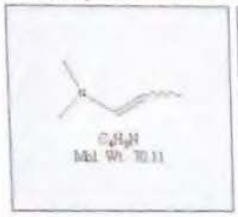
dibuf
di-n-butylformamidine



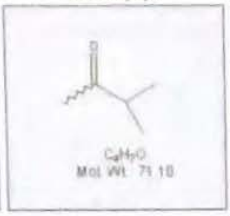
dibudmf
Diisobutylformamidine



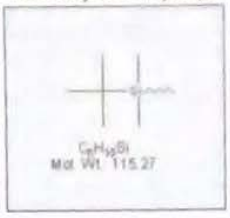
dmf
Dimethylformamidine



ibu
isobutyryl



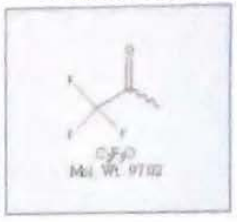
tBDSilyl
tert-butyldimethylsilyl



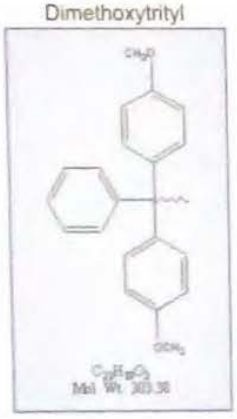
TEA
triethylammonium



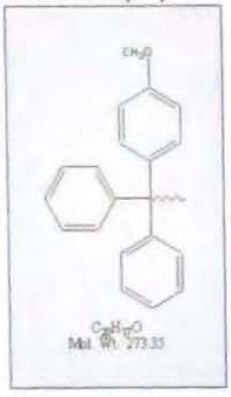
TFA
Trifluoroacetyl



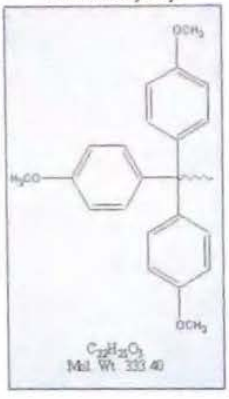
DMT
Dimethoxytrityl



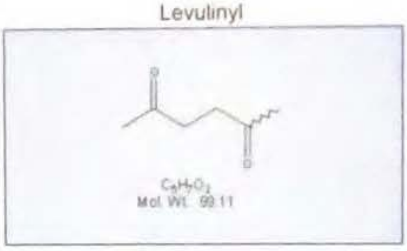
MMT
Monomethoxytrityl



TMT
Trimethoxytrityl

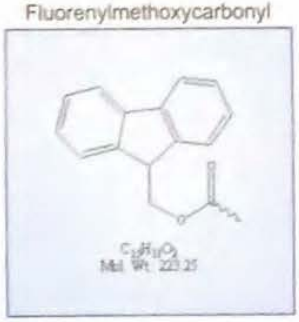


Levulinyl

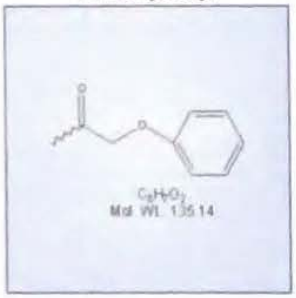


THF: tetrahydrofuran
lcaa: long chain alkylamine
CPG: Control Pore Glass
AMA: Ammonium and Methyl amine(aq)

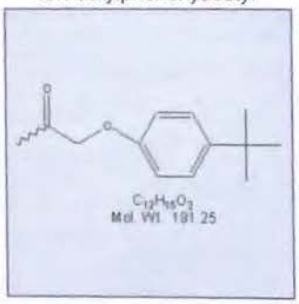
Fmoc
Fluorenylmethoxycarbonyl



PAC
Phenoxyacetyl



tBPAC
tert-butylphenoxyacetyl



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INDEX, ad-cy

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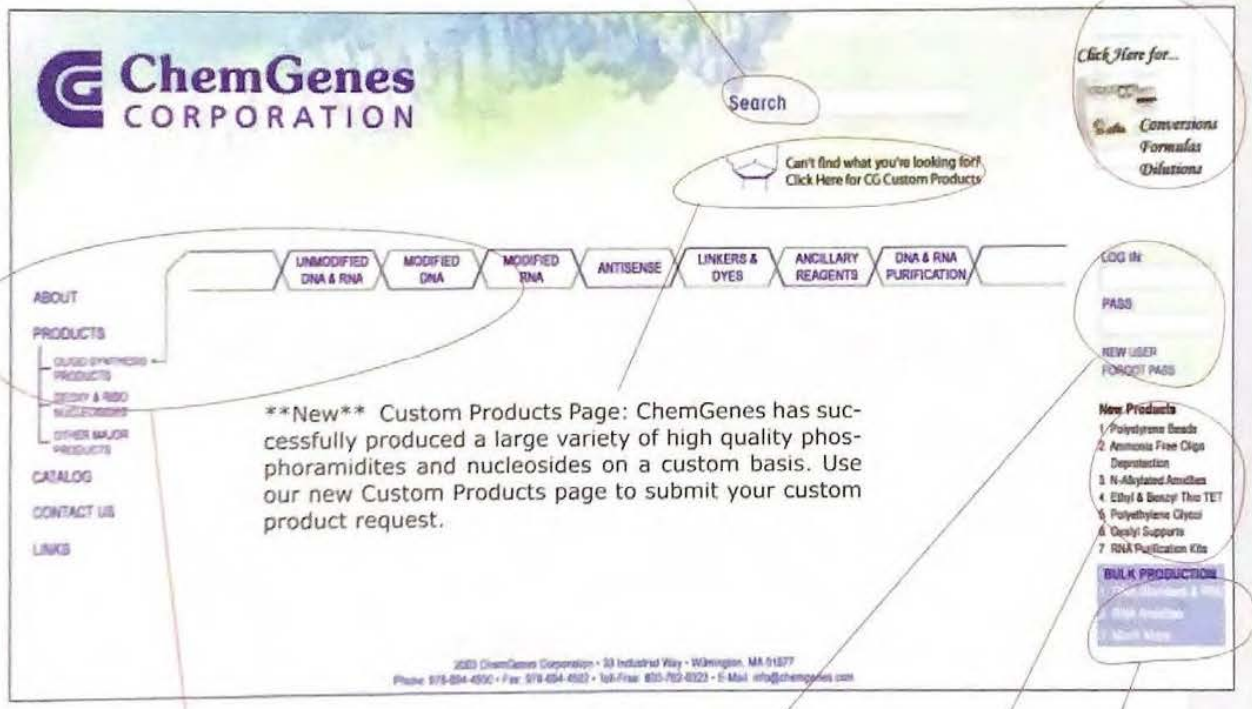
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