Reagents and building blocks for oligonucleotide synthesis
Reagents for RNA and DNA synthesis

Universal Solid Support III

The universal support strategy offers the following clear advantages: eliminates the possibility of errors in parallel synthesis applications where up to 384 wells may contain different supports; eliminates the need for at least four supports for DNA synthesis and four for RNA synthesis; simplifies the preparation of oligonucleotides with modified or unusual nucleosides at the 3’-terminus.

Like our initial version of Universal Solid supports - USII, the new type of supports - USIII, would be appropriate for the production of DNA oligos, long and short, as well as those requiring mild deprotection. It is compatible with the synthesis of RNA, (including siRNA) as well as virtually any oligonucleotide analogs (2’-F-RNA, 2’-OMe-RNA, LNA, oligonucleotide N3’→P5’ phosphoramidates, etc.). The reagent used for the cleavage/dephosphorylation step is commercially available and the procedures described are fully compatible with high-throughput Synthesis. The difference lies in the higher stability of USIII than that of USII upon prolong storage. In addition, the preparation of the new USIII support appears to be more consistent and reliable.

Universal Solid Supports, type USII and USIII are subject to proprietary rights of Glen Research Corporation and are synthesized and sold under the following licensed patents: US Patent No.: 6,770,754 and European Patent No.: 1404695. The new carbomoylation chemistry, resulting in the stable urea fragment, bridging the Universal linker and aminoalkylated solid phase, is subject to proprietary rights of Metkinen Chemistry (U.S. Patent Application Serial No 60/854,721; International Patent Application No. PCT/FI2007/050575).
Reagents for RNA and DNA synthesis

Universal Solid Support III

USIII – Truly Universal Solid Support for synthesis of DNA, RNA & any type of modified oligonucleotides.

Catalogue number: 103-00

Description: Chemically modified Macroporous Aminomethyl polystyrene. White to off-white powder.

Storage of dry compound: 1 year at +20ºC

Loading: USIII with 20-80 µmol/g loadings is available. Please enquire for custom loading.

Oligo synthesis on USIII: Perform oligonucleotide assembly, using standard protocols, recommended by your synthesizer manufacturer. Upon the completion of synthesis wash the oligonucleotide bound support with pure acetonitrile. Do not perform any washing steps with solvents, containing basic reagents (diethylamine, triethylamine, dimethylamine, etc.) and water!

Cleavage: Cleave the oligo from the support using 3.5N - 4.5N ammonia in methanol (dilute cold 7N ammonia in methanol, Aldrich Cat. No 499145-100ML, with cold anhydrous methanol) at room temperature for 30 minutes. Do not use aqueous ammonium hydroxide and/or mixtures of ammonium hydroxide and methanol for cleavage!

Deprotection AFTER Cleavage:
Standard: After Cleavage, add 1 volume of 3.5N - 4.5N ammonia in methanol, seal and deprotect for 8-15 hours at 60 ºC for removal of the protecting groups on the nucleobases.

or

Alternatively: add 1 volume of 30% ammonium hydroxide, seal and deprotect using the conditions appropriate for removal of the protecting groups on the nucleobases (e.g. at 55 ºC for 5 hours).
Reagents for RNA and DNA synthesis

Chemical Phosphorylation Reagent II

Chemical Phosphorylation Reagent (CPR II) contains a DMT group which can be left on the oligonucleotide and used for rapid purification of oligonucleotide 5’-phosphates by the popular DMTr-on technique, which employs disposable RP cartridges or “Trityl-on” RP HPLC purification. The DMTr group is removed with aqueous acid (e.g., 2%TFA in the case of Cartridge Purification) and the remaining linker is then eliminated after brief treatment with aqueous ammonium hydroxide (12 -15% ammonium hydroxide at room temperature for 15 minutes) to yield the 5’-phosphate.

Catalogue number: 103-10

Description: amorphous colorless glass

Storage of dry compound: 1 year at -20ºC

Coupling Conditions: 6 minute coupling time.

Omit the capping step after the addition of this reagent!

[3-(4,4'-Dimethoxytrityloxy)-2,2-dicarboxyethyl]propyl-(2-cyanoethyl)-(N,N-diisopropyl)-phosphoramidite
Protein mutagenesis can be used to fine tune a variety of properties, such as improved stability to high temperatures, denaturants, or non-aqueous solvents; higher affinity binding to a target molecule; increased rates of enzymatic reactions; or changes of specificities. However, generating and finding these improved proteins can be a difficult task. One of the most popular methods is to make pools of degenerate oligonucleotides, which can be incorporated into the genes as cassettes or by PCR by using the degenerate oligo as a primer. Degenerate oligonucleotides are synthesized as a mixture of A/C/G/T phosphoramidites (N) at the site of the codons to be mutated. Problems arise, though, from using an equimolar solution of each base. First there is a coding bias. Out of the 64 possible codon combinations of A, C, G and T, 18 code for leucine, arginine or serine, but only 2 for tryptophan or methionine. As a result, only 3% of the mutagenic oligonucleotides will contain methionine or tryptophan, and over 28% will contain either leucine, arginine or serine. In addition, the three nonsense codons will lead to chain termination in 4.7% of the sequences. There are ways to improve this situation. For instance, using two degenerate mixes of bases, N and G/C, on the DNA synthesizer to insert NNG/C into the sequence will halve the number of the most degenerate codons, but still code for all 20 amino acids. However, still 59% of the clones will code for just eight amino acids and 3% will have a stop codon inserted.
Reagents for RNA and DNA synthesis

**Trinucleotide (TRIMER CODON) Phosphoramidites**

The generation of redundant sequences and stop codons makes searching a clonal library inefficient. However, it is possible to improve the efficiency of this process by using a mixture of trinucleotide (trimer) phosphoramidites.\(^2\)\(^-\)\(^5\) By synthesizing a set of trimers that cover all 20 amino acids, the mutation of a gene can be carried out at the codon level rather than at individual bases. Therefore, unlike other methods of mutagenesis, trimer phosphoramidites lead to no codon bias, no frame-shift mutations, and no production of stop codons, making them one of the most efficient tools to explore sequence space in protein regions that are important for function \(^6\) – even in nonsaturating conditions.\(^7\)\(^,\)\(^8\)

**References:**

Reagents for RNA and DNA synthesis

Dimer Phosphoramidites

Catalogue number: 103-21

As an alternative to Trimer Phosphoramidites we offer less expensive Dimer Phosphoramidites for generation of randomised oligonucleotide libraries. All 16 dimeric building blocks are available separately or as a custom mixture.

2’-Fluoro-2’-Deoxyguanosine

9-(2-fluoro-2-deoxy-β-D-ribofuranosyl)-guanine

Catalogue number: 203-15

CAS number: 125291-17-0

IUPAC name: 2’-Deoxy-2’-fluoroguanosine

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4ºC

Note: Gram to Kilogram scale production. Please request prices for bulk!
2’-Fluoro-2’-Deoxynucleosides & Derivatives

2’-Fluoro-2’-Deoxyadenosine

9-(2-Deoxy-2-fluoro-ß-D-ribofuranosyl)-adenine

Catalogue number: 203-17

CAS number: 64183-27-3

IUPAC name: 2’-Deoxy-2’-fluoroadenosine

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4ºC

Note: Gram to Kilogram scale production. Please request prices for bulk!
2’-Fluoro-2’-deoxynucleosides & Derivatives

2’-Fluoro-2’-Deoxyguanosine-3’-CE-phosphoramidite

Catalogue Number: 203-50

Purity: > 95%

Description: white to off-white amorphous powder

Storage of dry compound: 3 years at -20°C
2’-Fluoro-2’-Deoxyadenosine-3’-CE-phosphoramidite

Catalogue Number: 203-51

Purity: > 95%

Description: white to off-white amorphous powder

Storage of dry compound: 3 years at -20°C
2’-Fluoro-2’-deoxynucleosides & Derivatives

2’-Fluoro-2’-Deoxyuridine-3’-CE-phosphoramidite

Catalogue Number: 203-52

Purity: > 95%

Description: white to off-white amorphous powder

Storage of dry compound: 3 years at -20°C
2’-Fluoro-2’-Deoxynucleosides & Derivatives

2’-Fluoro-2’-Deoxycytidine-3’-CE-phosphoramidite

Catalogue Number: 203-53

Purity: > 95%

Description: white to off-white amorphous powder

Storage of dry compound: 3 years at -20°C
2’-Fluoro-2’-deoxynucleosides & Derivatives

2’-Fluoro-2’-deoxynucleoside 5’-triphosphates

2’-Fluoro-2’-deoxynucleoside 5’-triphosphates are popular products for various applications: PCR, DNA- and RNA-polymerase, reverse transcriptase based assays, etc. Nowadays these compounds find diverse use in siRNA and Aptamer research.

**Product Note:** All of our Triphosphates are lithium salts. They are analyzed by NMR, UV, HPLC and are accompanied by a Product Data Sheet.

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3’-Amino-2’,3’-Dideoxyadenosine

9-(3-Amino-2,3-dideoxy-β-D-ribofuranosyl)adenine

Catalogue number: 203-11

CAS number: 7403-25-0

IUPAC name: 3’-Amino-2’,3’-dideoxyadenosine

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4ºC
**3’ Amino -2’, 3’ Dideoxynucleosides & Derivatives**

**3’-Amino-2’,3’-Dideoxyguanosine**

9-(3-Amino-2,3-dideoxy-ß-D-ribofuranosyl)guanine

![Chemical Structure](image)

**Catalogue number:** 203-10

**CAS number:** 66323-49-7

**IUPAC name:** 3’-Amino-2’,3’-dideoxyguanosine

**Purity:** > 99%

**Description:** white to off-white crystals

**Storage of dry compound:** 3 years at +4ºC
3’ Amino -2’, 3’ Dideoxynucleosides & Derivatives

3’- Amino-2’,3’-dideoxy-2-fluoroadenosine

9-(3-amino-2,3-dideoxy- β-D-ribofuranosyl)-2-fluoroadenine

Catalogue number: 203-30

IUPAC name: 3’- Amino-2’,3’-dideoxy-2-fluoroadenosine

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4ºC

Resistant to enzymatic deamination
3’ Amino -2’, 3’ Dideoxynucleosides & Derivatives

3’-Amino-2’,3’-Dideoxy-2,6 Diaminopurineriboside

9-(3-Amino-2,3-dideoxy-β-D-ribofuranosyl)- 2,6-diaminopurine

Catalogue number: 203-12

IUPAC name: 3’-Amino-2’,3’-dideoxy-2,6-diaminopurineriboside

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4ºC

For bulk quantities please enquire
Purine Nucleosides

2’-Amino-2’-deoxyadenosine

9-(2-amino-2-deoxy-β-D-ribofuranosyl)-adenine

Catalogue number: 203-27

CAS number: 10414-81-0

IUPAC name: 2’-Amino-2’-deoxyadenosine

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4ºC

For bulk quantities please enquire
Purine Nucleosides

2’-Amino-2’-deoxy-2-fluoroadenosine

9-(2-amino-2-deoxy-ß-D-ribofuranosyl)-2-fluoro adenine

Catalogue number: 203-31

IUPAC name: 2’-Amino-2’-deoxy-2-fluoro adenosine

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4°C

Resistant to enzymatic deamination
Purine Nucleosides

2’-Amino-2’-deoxy-2,6-diaminopurineriboside

9-(2-amino-2-deoxy-β-D-ribofuranosyl)-2,6-diaminopurine

Catalogue number: 203-28

IUPAC name: 2’-Amino-2’-deoxy-2,6-diaminopurineriboside

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4°C

For bulk quantities please enquire
Purine Nucleosides

2’-Amino-2’-deoxyguanosine

9-(2-amino-2-deoxy-β-D-ribofuranosyl)-guanine

Catalogue number: 203-29

CAS number: 60966-26-9

IUPAC name: 2’-Amino-2’-deoxyguanosine

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4ºC

For bulk quantities please enquire
Purine Nucleosides

2’-Amino-2’-deoxyinosine

9-(2-amino-2-deoxy-ß-D-ribofuranosyl)-hypoxanthine

Catalogue number: 203-41

IUPAC name: 2’-Amino-2’-deoxyinosine

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4°C

For bulk quantities please enquire
Purine Nucleosides

Arabinofuranosyl-Adenine

9-(β-D-Arabinofuranosyl)adenine

Catalogue number: 203-05

CAS number: 5536-17-4

IUPAC name: Arabinofuranosyl-adenine

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4°C

For bulk quantities please enquire
**Purine Nucleosides**

**Arabinofuranosyl-6-Benzylaminopurine**

9-(β-D-arabinoribofuranosyl)-6-Benzylaminopurine

![Chemical Structure](image)

**Catalogue number:** 203-20

**IUPAC name:** Arabinofuranosyl-6-Benzylaminopurine

**Purity:** > 99%

**Description:** white to off-white crystals

**Storage of dry compound:** 3 years at +4ºC

**For bulk quantities please enquire**
**Arabinofuranosyl-2,6-Diaminopurine**

9-(β-D-Arabinofuranosyl)-2,6-diaminopurine

**Catalogue number:** 203-06

**IUPAC name:** Arabinofuranosyl-2,6-diaminopurine

**Purity:** > 99%

**Description:** white to off-white crystals

**Storage of dry compound:** 3 years at +4°C

For bulk quantities please enquire
Purine Nucleosides

Arabinofuranosyl-2-fluoroadenine

9-(β-D-arabinoribofuranosyl)-2-fluoroadenine

Catalogue number: 203-32

CAS number: 21679-14-1

IUPAC name: Arabinofuranosyl-2-fluoroadenine

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4°C

Resistant to enzymatic deamination
**Purine Nucleosides**

**Arabinofuranosyl-Guanine**

9-(β-D-Arabinofuranosyl)guanine

Catalogue number: 203-03

CAS number: 38819-10-2

IUPAC name: Arabinofuranosyl-guanine

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4°C

For bulk quantities please enquire
Purine Nucleosides

Arabinofuranosyl-isoguanine

9-(β-D-arabinoribofuranosyl)-isoguanine

Catalogue number: 203-37

IUPAC name: Arabinofuranosyl-isoguanine

Purity: > 98%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4°C

For bulk quantities please enquire
Purine Nucleosides

6-Benzylaminopurine 2’-deoxyriboside

9-(2-deoxy- β-D-ribofuranosyl)-6-Benzylaminopurine

Catalogue number: 203-21

IUPAC name: 6-Benzylaminopurine 2’-deoxyriboside

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4°C

For bulk quantities please enquire
2-Chloro-2’-deoxyadenosine (2-CdA, cladribine)

9-(2-deoxy-ß-D-ribofuranosyl)-2-chloro-adenine

Catalogue number: 203-25

CAS number: 4291-63-8

IUPAC name: 2-Chloro-2’-deoxyadenosine

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4ºC

For bulk quantities please enquire
Purine Nucleosides

2’-deoxy-2-fluoroadenosine

(9-(2-deoxy-ß-D-ribofuranosyl)-2-fluoroadenine)

Catalogue number: 203-35

CAS number: 21679-12-9

IUPAC name: 2’-deoxy-2-fluoroadenosine

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4ºC

Resistant to enzymatic deamination.
2’-Fluoro-2’-deoxy-2-fluoroadenosine

9-(2-fluoro-2-deoxy-β-D-ribofuranosyl)-2-fluoroadenine

Catalogue number: 203-36

IUPAC name: 2’-deoxy-2’-fluoro-2-fluoroadenosine

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4ºC

Resistant to enzymatic deamination.
Purine Nucleosides

2’-Fluoro-2’-Deoxy-2,6-Diaminopurineriboside

9-(2-Deoxy-2-fluoro-β-D-ribofuranosyl)-2,6-diaminopurine

Catalogue number: 203-18

IUPAC name: 2’-Deoxy-2’-fluoro-2,6-diaminopurineriboside

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4°C

For bulk quantities please enquire
Purine Nucleosides

2’-Fluoro-2’-Deoxyinosine

9-(2-Deoxy-2-fluoro-ß-D-ribofuranosyl)hypoxanthine

Catalogue number: 203-14

IUPAC name: 2’-Deoxy-2’-fluoroinosine

Purity: > 99%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4°C

For bulk quantities please enquire
Purine Nucleosides

2’-deoxyisoguanosine

9-(2-deoxy- β-D-ribofuranosyl)-isoguanine

Catalogue number: 203-38

CAS number: 106449-56-3

IUPAC name: 2’-Deoxyisoguanosine

Purity: > 98%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4°C

For bulk quantities please enquire
Purine Nucleosides

2’-deoxy-2’-fluoroisoguanosine

9-(2-deoxy-2-fluoro-ß-D-ribofuranosyl)-isoguanine

Catalogue number: 203-40

IUPAC name: 2’-Deoxy-2’-fluoroisoguanosine

Purity: > 98%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4°C

For bulk quantities please enquire
Purine Nucleosides

2,6-Diaminopurine 2’-deoxyriboside

9-(2-deoxy-ß-D-ribofuranosyl)-2,6-Diaminopurine

Catalogue number: 203-23

Description: white to off-white crystals

Storage of dry compound: 3 years at +4°C

For bulk quantities please enquire
Purine Nucleosides

Isoguanosine

9-(β-D-ribofuranosyl)-isoguanine

Catalogue number: 203-39

CAS number: 1818-71-9

IUPAC name: Isoguanosine

Purity: > 98%

Description: white to off-white crystals

Storage of dry compound: 3 years at +4ºC

For bulk quantities please enquire
Labeled 2’-Deoxyuridine 5’-Triphosphates

Biotin-11-dUTP

5-[3-(6-(Biotinamido)hexanoylamido)propenyl]-2’-deoxyuridine-5’-triphosphate, triethylammonium or tetralithium (optional) salt

Catalogue number: 303-11

Diluent: dd-H2O

Storage: Freezer storage, -10 to -30°C, dry.

Stability in Solution: 1 month as 1 mM solution in water or neutral buffers at +4°C, 6 months as 1 mM solution in water or neutral buffers at -20°C.
Labeled 2’-Deoxyuridine 5’-Triphosphates

6-FAM-11-dUTP

5-[3-(6-(fluoresceinyl-6-carboxamido)hexanoylamido)-propenyl]-2’-deoxyuridine-5’-triphosphate, triethylammonium or tetralithium (optional) salt

Catalogue number: 303-12

Diluent: dd-H2O

Storage: Freezer storage in dark, -10 to -30°C, dry.

Stability in Solution: 1 month as 1 mM solution in water or neutral buffers at +4°C, 6 months as 1 mM solution in water or neutral buffers at -20°C in dark.
Labeled 2’-Deoxyuridine 5’-Triphosphates

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Biotin-16-dUTP

5-[3-{3-(6-(Biotinylamido)hexanoylamido)bytyrylamido}propenyl]-2'-deoxyuridine-5’-triphosphate, triethylammonium or tetrалithium (optional) salt

Catalogue Number: 303-14

Diluent: dd-H₂O

Storage: Freezer storage, -10 to -30°C, dry.

Stability in Solution: 1 month as 1 mM solution in water or neutral buffers at +4°C, 6 months as 1 mM solution in water or neutral buffers at -20°C.
Labeled 2’-Deoxycytidine 5’-Triphosphates

Biotin-11-dCTP

5-[3-(6-(Biotinylamido)hexanoylamido)propenyl]-2’-deoxycytidine-5’-triphosphate, triethylammonium or tetralithium (optional) salt

Catalogue number: 303-21

Diluent: dd-H2O

Storage: Freezer storage, -10 to -30°C, dry.

Stability in Solution: 1 month as 1 mM solution in water or neutral buffers at +4°C, 6 months as 1 mM solution in water or neutral buffers at -20°C.
Labeled 2’-Deoxycytidine 5’-Triphosphates

6-FAM-11-dCTP

5-[3-(6-(fluoresceinyl-6-carboxamido)hexanoylamido)-propenyl]-2'-deoxycytidine-5'-triphosphate, triethylammonium or tetralithium (optional) salt

Catalogue number: 303-22

Diluent: dd-H2O

Storage: Freezer storage in dark, -10 to -30°C, dry.

Stability in Solution: 1 month as 1 mM solution in water or neutral buffers at +4°C in dark, 6 months as 1 mM solution in water or neutral buffers at -20°C in dark.
Labeled uridine 5’-Triphosphates

**Biotin-11-UTP**

5-[3-(6-(Biotinylamido)hexanoylamido)propenyl]-uridine-5’-triphosphate, triethylammonium or tetralithium (optional) salt

**Catalogue number:** 303-31

**Diluent:** dd-H2O

**Storage:** Freezer storage, -10 to -30°C, dry.

**Stability in Solution:** 1 month as 1 mM solution in water or neutral buffers at +4°C, 6 months as 1 mM solution in water or neutral buffers at -20°C.
Labeled uridine 5’-Triphosphates

6-FAM-11-UTP

5-[3-(6-(fluoresceinyl-6-carboxamido)hexanoylamido)-propenyl]- uridine-5’-triphosphate, triethylammonium or tetralithium (optional) salt

Catalogue number: 303-32

Diluent: dd-H2O

Storage: Freezer storage in dark, -10 to -30°C, dry.

Stability in Solution: 1 month as 1 mM solution in water or neutral buffers at +4°C in dark, 6 months as 1 mM solution in water or neutral buffers at -20°C in dark.
**Labeled 2’-Deoxyadenosine 5’-Triphosphates**

**Biotin-11-dATP**

5-[3-{3-(6-(Biotinlamido)hexanoylamido)bytyrylamido}propenyl]-2’-deoxy-7-deazaadenosine-5’-triphosphate, triethylammonium or tetralithium (optional) salt

![Chemical Structure of Biotin-11-dATP](image)

**Catalogue number:** 303-71

**Diluent:** dd-H₂O

**Storage:** Freezer storage, -10 to -30°C, dry.

**Stability in Solution:** 1 month as 1 mM solution in water or neutral buffers at +4°C, 6 months as 1 mM solution in water or neutral buffers at -20°C.
FAM Phosphoramidites and CPG

5’-Fluorescein phosphoramidite (6-FAM)

\[
[(3',6'-dipivaloylfluoresceinyl)-6-carboxamidoheptyl]-1-O-(2-cyanoethyl)-(N,N-diisopropyl)-
phosphoramidite
\]

Catalogue number: 303-41

Diluent: Anhydrous Acetonitrile

Coupling: 3 minute coupling time recommended

Deprotection: No changes needed from standard method recommended by synthesizer manufacturer.

Storage: Freezer storage, -10 to -30°C, dry.

Stability in Solution: 2-3 days, <90% efficient after 4 days

Store labeled oligo in the dark, either dry or in a neutral aqueous media at -20°C. Do not store crude fluorescently labeled oligonucleotides in ammonia.
FAM Phosphoramidites and CPG

5’-Fluorescein phosphoramidite (5-FAM)

[(3’,6’-dipivaloylfluoresceinyl)-5-carboxamidohexyl]-1-O-(2-cyanoethyl)-(N,N-diisopropyl)-phosphoramidite

Catalogue number: 303-42

Diluent: Anhydrous Acetonitrile

Coupling: 3 minute coupling time recommended

Deprotection: No changes needed from standard method recommended by synthesizer manufacturer.

Storage: Freezer storage, -10 to -30°C, dry.

Stability in Solution: 2-3 days, <90% efficient after 4 days

Store labeled oligo in the dark, either dry or in a neutral aqueous media at -20°C.
Do not store crude fluorescently labeled oligonucleotides in ammonia.
Fluorescein phosphoramidite (I)

\[(2S,4R)-N-(6-(3',6'-dipivaloylfluoresceinyl-5-carboxamido)hexanoylamido)-4-O-[(2-cyanoethyl)-(N,N-diisopropyl)-phosphoramidite]-2-(dimethoxytrityloxymethyl)pyrrolidine\]

Catalogue number: 303-43

Diluent: Anhydrous Acetonitrile

Coupling: 10 minute coupling time recommended

Deprotection: No changes needed from standard method recommended by synthesizer manufacturer.

Storage: Freezer storage, -10 to -30°C, dry.

Stability in Solution: 7-10 days, <90% efficient after 14 days

Store labeled oligo in the dark, either dry or in a neutral aqueous media at -20°C. Do not store crude fluorescently labeled oligonucleotides in ammonia.
**FAM Phosphoramidites and CPG**

**Fluorescein phosphoramidite (II)**

\[(2S,4R)-\text{N-(6-}(3',6'-\text{dipivaloylfluoresceiny}-6\text{-carboxamido})\text{hexanoylamido})-4-\text{O-}[\text{(2-cyanoethyl)-(N,N-diisopropyl)-phosphoramidite}]-2-(\text{dimethoxytrityloxymethyl})\text{pyrrolidine}\]

**Catalogue number:** 303-44

**Diluent:** Anhydrous Acetonitrile

**Coupling:** 10 minute coupling time recommended

**Deprotection:** No changes needed from standard method recommended by synthesizer manufacturer.

**Storage:** Freezer storage, -10 to -30°C, dry.

**Stability in Solution:** 7-10 days, <90% efficient after 14 days

Store labeled oligo in the dark, either dry or in a neutral aqueous media at -20°C. Do not store crude fluorescently labeled oligonucleotides in ammonia.
6-Fluorescein dT phosphoramidite

5’-Dimethoxytrityl-5-[3-(6-(fluoresceinyl-6-carboxamido)hexanoylamido)-propenyl]-uridine, 3’- (2-cyanoethyl)-(N,N-diisopropyl)-phosphoramidite

Catalogue number: 303-45

Diluent: Anhydrous Acetonitrile

Coupling: 10 minute coupling time recommended

Deprotection: No changes needed from standard method recommended by synthesizer manufacturer.

Storage: Freezer storage, -10 to -30°C, dry.

Stability in Solution: 7-10 days, <90% efficient after 14 days

Store labeled oligo in the dark, either dry or in a neutral aqueous media at -20°C. Do not store crude fluorescently labeled oligonucleotides in ammonia.
FAM Phosphoramidites and CPG

5'-Fluorescein dT phosphoramidite

5'-Dimethoxytrityl-5-[3-(6-(fluoresceinyl-5-carboxamido)hexanoylamido)-propenyl] uridine-3'-(2-cyanoethyl)-(N,N-diisopropyl)-phosphoramidite

Catalogue number: 303-46

Diluent: Anhydrous Acetonitrile

Coupling: 10 minute coupling time recommended

Deprotection: No changes needed from standard method recommended by synthesizer manufacturer.

Storage: Freezer storage, -10 to -30°C, dry.

Stability in Solution: 7-10 days, <90% efficient after 14 days

Store labeled oligo in the dark, either dry or in a neutral aqueous media at -20°C. Do not store crude fluorescently labeled oligonucleotides in ammonia.
FAM Phosphoramidites and CPG

3’-(6-Fluorescein)-CPG

(2S,4R)-N-(6-((3’,6’)-dipivaloylfluoresceinyl-6-carboxamido)hexanoylamido)-4-O-(diglycoyl-long chain alkylamino-CPG)-2-(dimethoxytrityloxymethyl)pyrrolidine

Catalogue number: 303-47

Diluent: Not Applicable

Coupling: This support should be used in a manner identical to normal protected nucleoside support since it contains the DMT group.

Deprotection: No changes needed from standard method recommended by synthesizer manufacturer.

Storage: Freezer storage, -10 to -30°C, dry.

Stability in Solution: Not Applicable

Store labeled oligo in the dark, either dry or in a neutral aqueous media at -20°C. Do not store crude fluorescently labeled oligonucleotides in ammonia.
FAM Phosphoramidites and CPG

3’-(5-Fluorescein)-CPG

\[
(2S,4R)-N-(6-(3’,6’-dipivaloylfluoresceinyl-5-carboxamido)hexanoylamido)-4-O-(diglycoyl-long chain alkylamino-CPG)-2-(dimethoxytrityloxymethyl)pyrrolidine
\]

1-Dimethoxytrityloxy-3-aza-3-\{1-oxo-3-\{(di-O-pivaloyl-fluorescein)-5-carboxamido\}propyl\}heptyl-6-Odiglycoyl-long chain alkylamino-CPG

Catalogue number: 303-48

Diluent: Not Applicable

Coupling: This support should be used in a manner identical to normal protected nucleoside support since it contains the DMT group.

Deprotection: No changes needed from standard method recommended by synthesizer manufacturer.

Storage: Freezer storage, -10 to -30°C, dry.

Stability in Solution: Not Applicable

Store labeled oligo in the dark, either dry or in a neutral aqueous media at -20°C. Do not store crude fluorescently labeled oligonucleotides in ammonia.
**HEX Phosphoramidites and CPG**

**HEX phosphoramidite**

\[
\text{[(4,7,2',4',5',7'-hexachloro-3',6'-dipivaloylfluoresceinyl)-6-carboxamidohexyl]-1-O-}
(2-cyanoethyl)-(N,N-diisopropyl)-phosphoramidite
\]

Catalogue number: 303-51

Diluent: Anhydrous Acetonitrile

Coupling: 3 minute coupling time recommended

Deprotection: Ammonium Hydroxide for 24 hrs at room temperature.

Storage: Freezer storage, -10 to -30°C, dry.

Stability in Solution: 2-3 days, <90% efficient after 4 days

Store labeled oligo in the dark, either dry or in a neutral aqueous media at -20°C.
Do not store crude fluorescently labeled oligonucleotides in ammonia.
**HEX Phosphoramidites and CPG**

**Internal HEX phosphoramidite**

\[(2S,4R)\]-N-(4,7,2',4',5',7'-hexachloro-6-(3',6'-dipivaloylfluoresceinyl-6-carboxamido)hexanoylamido)-4-O-[(2-cyanoethyl)-(N,N-diisopropyl)-phosphoramidite]-2-(dimethoxytrityloxy methyl)pyrroolidine

**Catalogue number:** 303-52

**Diluent:** Anhydrous Acetonitrile

**Coupling:** 3 minute coupling time recommended

**Deprotection:** Ammonium Hydroxide for 24 hrs at room temperature.

**Storage:** Freezer storage, -10 to -30°C, dry.

**Stability in Solution:** 2-3 days, <90% efficient after 4 days

Store labeled oligo in the dark, either dry or in a neutral aqueous media at -20°C. Do not store crude fluorescently labeled oligonucleotides in ammonia.
**HEX Phosphoramidites and CPG**

**HEX-dT phosphoramidite**

5'-Dimethoxytrityl-5-[3-(6-(4,7,2',4',5',7'-hexachloro-3',6'-dipivaloylfluoresceinyl-6-carboxamido)-hexanoylamido)-propenyl]uridine, 3’-(2-cyanoethyl)-(N,N-diisopropyl)-phosphoramidite

![Chemical structure of HEX-dT phosphoramidite](image)

**Catalogue number:** 303-53

**Diluent:** Anhydrous Acetonitrile

**Coupling:** 10 minute coupling time recommended

**Deprotection:** Ammonium Hydroxide for 24 hrs at room temperature.

**Storage:** Freezer storage, -10 to -30°C, dry.

**Stability in Solution:** 7-10 days, <90% efficient after 14 days

Store labeled oligo in the dark, either dry or in a neutral aqueous media at -20°C. Do not store crude fluorescently labeled oligonucleotides in ammonia.
HEX Phosphoramidites and CPG

3’-HEX-CPG

(2S,4R)-N-(6-(4,7,2’,4’,5’,7’-hexachloro-3’,6’-dipivaloylfluoresceinyl-6-carboxamido)-hexanoylamido)-4-O-(diglycoyl-long chain alkylamino-CPG)-2-(dimethoxytrityloxymethyl)-pyrrolidine

Catalogue number: 303-54

Diluent: Not Applicable

Coupling: This support should be used in a manner identical to normal protected nucleoside support since it contains the DMT group.

Deprotection: Ammonium Hydroxide for 24 hrs at room temperature.

Storage: Freezer storage, -10 to -30°C, dry.

Stability in Solution: Not Applicable

Store labeled oligo in the dark, either dry or in a neutral aqueous media at -20°C. Do not store crude fluorescently labeled oligonucleotides in ammonia.
SIMA (HEX analogue) Phosphoramidite

**SIMA phosphoramidite**

\[
[(3',6'-dipivaloyl-2',7'-diphenyl-4,7-dichlorofluoresceinyl)-6-carboxamidoxy-1-O-(2-cyanoethyl)-(N,N-diisopropyl)-phosphoramidite]
\]

**Catalog Number:** 303-55

SIMA is a full spectral analog of HEX in all fluorescent applications, but has significantly improved stability. It has a higher quantum yield and molecular extinction than HEX. SIMA is also more versatile in oligo synthesis especially due to improved stability during deprotection and simple purification of labeled oligos.

**Formula:** $C_{58}H_{64}Cl_{2}N_{3}O_{10}P$

M.W.: 1065.0

**Diluent:** Anhydrous Acetonitrile

**Coupling:** No changes needed from standard method recommended by synthesizer manufacturer.

**Deprotection:** No changes needed from standard method recommended by synthesizer manufacturer. SIMA labeled oligos are stable at 55°C in ammonium hydroxide (up to 6-8 hours) and can be deprotected with AMA.

**Storage:** Freezer storage, -10 to -30°C, dry.

**Stability in Solution:** 2-3 days, <90% efficient after 4 days

Store labeled oligo in the dark, either dry or in a neutral aqueous media at -20°C. Do not store crude fluorescently labeled oligonucleotides in ammonia.
TET Phosphoramidites and CPG

TET phosphoramidite

\[
[(4,7,2',7'-tetrachloro-3',6'-dipivaloylfluoresceinyl)-6-carboxamidoxy]-1-O-(2-cyanoethyl)-(N,N-diisopropyl)-phosphoramidite
\]

Catalogue number: 303-61

Diluent: Anhydrous Acetonitrile

Coupling: 3 minute coupling time recommended

Deprotection: Ammonium Hydroxide for 24 hrs at room temperature.

Storage: Freezer storage, -10 to -30°C, dry.

Stability in Solution: 2-3 days, <90% efficient after 4 days

Store labeled oligo in the dark, either dry or in a neutral aqueous media at -20°C. Do not store crude fluorescently labeled oligonucleotides in ammonia.

www.metkinenchemistry.com
Modifying nucleosides

Pyrene Derivative

3’-O-(diisopropylamino-2-cyanethoxyphosphinyl)-5’-O-(4,4’-dimethoxytrityl)-5-(pyren-1-ylethynyl)-
2’-deoxyuridine

Catalogue number: 403-03

Appearance: Yellow amorphous solid

Diluent: Mixture CH₃CN - CH₂Cl₂ (1:1), v/v

Coupling: 5 minute coupling time recommended

Storage: Freezer storage, -10 to -30°C, dry.

Stability: 3-4 days, <90% efficient after 5 days

Store labeled oligo in the dark.

5-(Pyren-1-ylethynyl)-2’-deoxyuridine contains pyrene chromophore conjugated with nucleobase through the triple bond. Its fluorescent properties are different from those of non-conjugated pyrene thus making this nucleoside suitable for hybridization studies including FRET, mismatch detection, electron injection studies, and other applications.
Modifying nucleosides

Pyrene Derivative

3’-O-(N,N-diisopropylamino-2-cyanethoxyphosphoryl)-5’-O-(4,4’-dimethoxytrityl)-5-(perylene-3-ylethynyl)-2’-deoxyuridine

Catalogue number: 403-06

Appearance: Orange amorphous solid

Diluent: Mixture CH3CN - CH2Cl2 (1:1), v/v

Coupling: 5 minute coupling time recommended

Storage: Freezer storage, -10 to -30°C, dry.

Stability: 3-4 days, <90% efficient after 5 days

Store labeled oligo in the dark.

5-(Perylen-3-ylethynyl)-2’-deoxyuridine contains perylene conjugated to uracil. Emission wavelength maximum is 490 nm. In DNA probes this compound shows increase in fluorescence intensity.
Aminolinker Phosphoramidites

C6 TFA Aminolinker Phosphoramidite

Catalogue number: 501-01
Purity: > 90%
Formula: C_{17}H_{31}F_{3}N_{3}O_{3}P
Dilution (for 0.1M): 0.25g/6.0 ml
1.0g/24.0 ml
Description: Colorless to light yellow oil
Storage: Frozen, -10 to -20°C
Aminolinker Phosphoramidites

DMT C6-Aminolinker Phosphoramidite

Catalogue Number: 501-02

Purity: > 90%

Formula: C_{36}H_{50}N_{3}O_{4}P

Dilution (for 0.1M): 0.25g/4.03 ml
1.0g/16.1 ml

Description: Colorless to light yellow oil

Storage: -20°C
Aminolinker Phosphoramidites

C3 MMTr-Aminolinker Phosphoramidite

![Chemical Structure]

**Catalogue Number:** 501-03

**Purity:** > 95%

**Formula:** $C_{32}H_{42}N_3O_3P$

**Dilution (for 0.1M):**
- $0.25g/4.56$ ml
- $1.0g/18.2$ ml

**Description:** Colorless to light yellow oil

**Storage:** Refrigerated, 2-8°C
Aminolinker Phosphoramidites

C6 MMTr-Aminolinker Phosphoramidite

Catalogue number: 501-04

Purity: > 90%

Formula: C_{35}H_{48}N_{3}O_{3}P

Dilution (for 0.1M): 0.25g/4.2 ml
1.0g/17 ml

Description: Colorless to light yellow oil

Storage: Refrigerated, 2-8°C
Spacer Phosphoramidites

Spacer 18 Phosphoramidite

Catalogue number: 501-05

Purity: > 90%

Formula: \( \text{C}_{42}\text{H}_{61}\text{N}_{2}\text{O}_{10}\text{P} \)

Dilution (for 0.1M):  
- 0.25g/3.2 ml
- 1.0g/12.7 ml

Description: Colorless to light yellow oil

Storage: Frozen -10 to -20°C
Acetylenic Amidites

**Reagent 1-amidite**

**Catalogue number:** 501-06

**Purity:** > 95%

A hydroxyprolinol-derived reagent (enantiomerically pure). Suitable for 5’ and internal labeling. Stable to all ONS steps and ammonolysis. Oligonucleotides synthesized undergo smooth conjugation to azides in the presence of copper(I) species.
Acetylenic Amidites

Reagent 2-amidite

Catalogue number: 501-07

Purity: > 95%

A 2,4-dihydroxybutyramide-derived reagent, enantiomerically pure. Suitable for 5’ and internal labeling. Stable to all ONS steps. When on 5’, stable to ammonolysis with DMT-on. Oligonucleotides synthesized undergo smooth conjugation to azides in the presence of copper(I) species. When the label is 5’-terminal, oligonucleotide should be subjected to ammonolysis only in DMT-on mode.

References:


Acetylenic Amidites

Reagent 3-amidite

Catalogue Number: 501-08

Purity: > 95%

A 3,3-dimethyl-2,4-dihydroxybutyramide-derived reagent, enantiomerically pure. Suitable for 5’ and internal labeling. Stable to all ONS steps. When on 5’, stable to ammonolysis with DMT-on. When the label is 5’-terminal, oligonucleotide should be subjected to ammonolysis only in DMT-on mode.

References:
# Prices

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## Reagents for RNA and DNA synthesis

### 2’ – Fluoro- 2’- deoxynucleosides & derivatives

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Prices in Euro are valid through December 31st, 2008.
*Metkinen Chemistry reserves the right to re-quote USD price for any item.
Standard Metkinen Chemistry Oy sales terms apply.

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Metkinen Chemistry
Liekokatu 2, 21620 Kuusisto, Finland
info@metkinenchemistry.com

www.metkinenchemistry.com