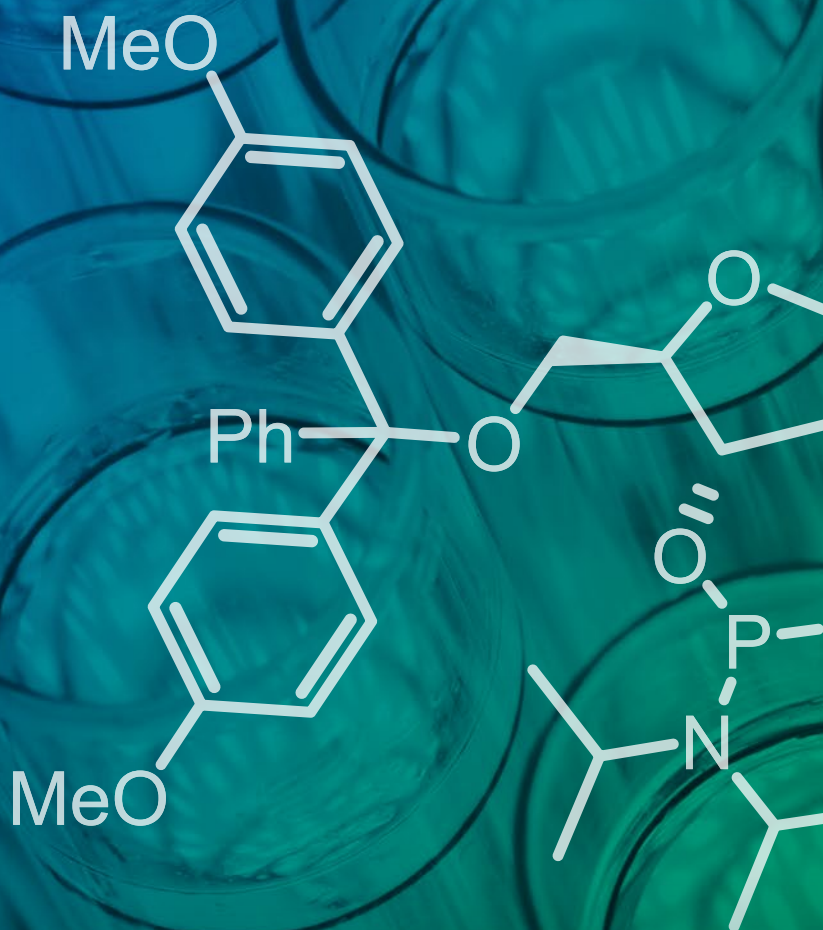


NUCLEOSYN, CATALOG OF DNA & RNA SYNTHESIS REAGENTS

High-quality products
developed for the synthesis
of oligonucleotides:

- Amino-modifiers
- Thiol-modifiers
- Phosphorylating-modifiers
- Biotin labeling
- Fluorescein amidites
- Spacer-modifiers
- Duplex-modifiers
- Quenchers
- Solid Supports
- Custom Products



About Nucleosyn

Nucleosyn is a company created to develop compounds derived from Organic Chemistry dedicated to genomics, (bio)-analysis, vaccines, and diagnostics.

Nucleosyn is the French innovation and R&D subsidiary of the Biosolve Group. Since its creation in 2006, its main objective has been to develop new ranges of innovative products to implement the catalog of reagents and solvents already offered by the group. These specialty products are widely addressed to the private sector (chemical, pharmaceuti-

cal, cosmetics, biotechnology industry, biomedical analysis laboratory) and the public domain (hospitals, academic research institutions, CNRS, INSERM, etc.).

Nucleosyn has developed a significant range of DNA & RNA synthesis reagents, stable isotope-labeled molecules, and synthetic lipids (used in vaccines as vectorization/transfection agents) with many customized compounds. The company also acquired strong skills and knowledge in the field of custom synthesis, which contributed to building the reputation of Nucleosyn.

Capabilities & Expertise

Nucleosyn provides access to a reliable and sustainable source of synthetic lipids, stable isotope-labeled molecules, and DNA & RNA synthesis reagents that meet your specifications in terms of quality thanks to our chemists and our global supply network. We propose therefore, with the support of the Biosolve Group, an extensive and detailed catalog of amidite and phosphoramidite reagents, to ensure the highest performances on oligonucleotide synthesizers, including:

- 5'-Amino & Internal-modifiers
- 5'- & 3'-Thiol-modifiers
- 5'- & 3'-Phosphorylating-modifiers
- Biotin labeling
- Fluorescein amidites
- Spacer-modifiers
- Duplex-modifiers
- Quenchers
- 3'-Solid Support CPG
- Custom products



Nucleosyn has developed its chemistry expertise by undertaking many diverse projects. Custom synthesis of innovative synthetic tools such as modified sugars, phosphate backbones, or nucleic bases also represents a significant part of the company's research work in the field of DNA & RNA synthesis reagents. Nucleosyn's chemists use their expertise and knowledge to devise innovative solutions or improve synthetic pathways to provide a higher-quality end product.

High-quality compounds

Over the years, Nucleosyn has earned a strong reputation for providing high-quality compounds. The company is committed to ensuring the purity and identity of the produced molecules. To demonstrate this, a complete analysis certificate of supplied compounds is provided.

Special attention is given to the quality of the analysis performed:

- ¹H & ³¹P NMR spectra free of any residual side impurity signals**
- Fine optimization of the LC-UV (254 nm) conditions for an unambiguous high-purity determination**
- Accurate UV spectrometry analysis to determine the loading of the solid-support reagents provided**



In addition, special care is given to the aspect of the compounds to ensure reproducible experiments, high performances, and reliable results:

- Clear and free of any foreign matter**
- Removal of the undesired color**

Packaging & Shipment

Nucleosyn proposes standard and precise amidites packaging sizes: 50 µmol, 100 µmol, or 250 mg vials. To ensure long-term stability, compounds are all conditioned in sealed low actinic amber color glassware (for light-sensitive products) and under

an argon atmosphere (for air- & moisture-sensitive products).

Under request, any packaging size of the compounds is possible, up to multi-gram quantities in pure form.



Certificate of Analysis

CoA's reference

Batch number

Physical description

Recommended storage conditions & Solubility

Expiry date

Names, identification and structure

Purity
³¹P-NMR and LC-UV (254 nm)

Address of issuing body

Certificate of Analysis
The chemistry you need

CoA #: COA202404230943-4LSC3233-MAC051

Product: 5'-Thiol Modifier C6 SS Phosphoramidite

Other names:

Catalog #: 4LSC3233

CAS #:

Unlabeled CAS #:

Related CAS #:

Formula: C₂₂H₃₀N₂O₅P₂S₂

Molecular weight: 769.05 g/mol

Batch #: MAC051

Test	Method	Specification	Result
Appearance	Visual	Clear and free of foreign matter	Colorless oil
Identification	¹ H NMR CDCl ₃ , 400 MHz, 295K	N/A	Consistent with structure
Identification	³¹ P NMR CDCl ₃ , 162 MHz, 295K	> 95.0%	99.5%
Purity	LC/UV (254 nm) purity	> 95.0%	99.0%

Intended use: For R&D use only

Recommended long term storage: At -18°C under argon away from moisture and direct sunlight

Solubility: Acetonitrile, Dichloromethane, Ethyl acetate

Expiry date: 23rd April, 2025

Project leader: Maxime CHANTOISEAU

QC Supervisor: Jean-Christophe Truffert, PhD

Our CoAs are computer printouts and therefore valid without signature. SDS is available upon request.

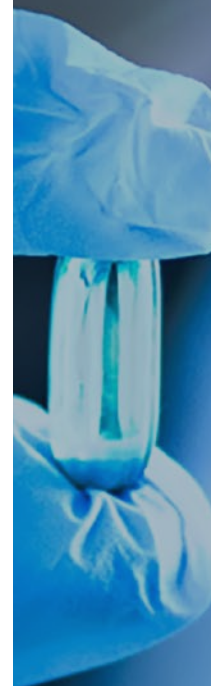
Nucleosyn Sarl
111, Bd Duhamel de Monceau - CS30638 45166 Olivet Cedex France
RCS Orléans B491083192

Catalog of DNA & RNA synthesis reagents

DNA & RNA Phosphoramidite chemistry is the method of choice for oligonucleotide manufacturing. It was enhanced over the years with the development of solid-phase supports and automated synthetic processes.

Among the nucleoside phosphoramidites used to build oligonucleotides, specific monomers can be incorporated into the sequence, such as Dark Quenchers amidites, to decrease the fluorescent intensity, or Duplex-modifiers with suitable properties such as stabilization of the duplexes. Non-nucleoside phosphoramidites are also useful tools to add a wide range of functional groups at the termini of oligonucleotides or inside the sequences. This category includes various types of modifiers: Amino-modifiers, Thiol-modifiers, Biotin labeling, Phosphorylating-modifiers, or Spacer-modifiers.

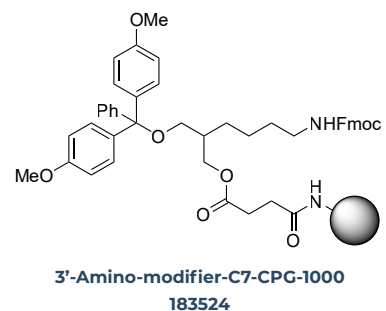
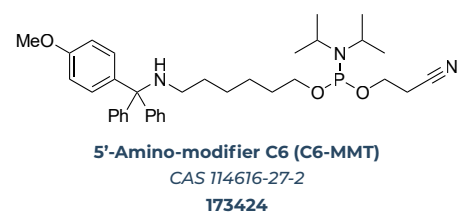
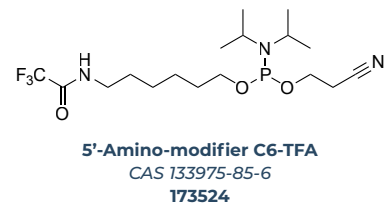
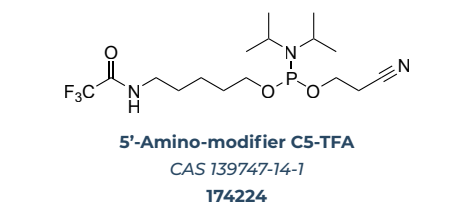
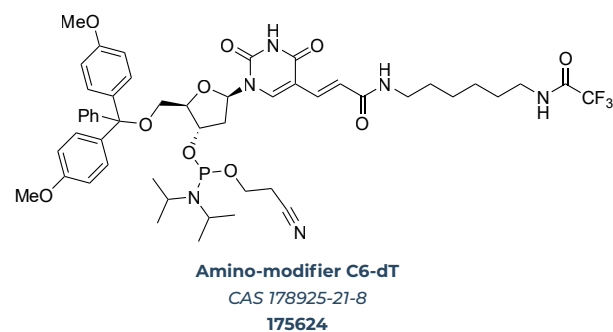
Nucleosyn produces and supplies an extensive line of DNA & RNA synthesis reagents up to multi-gram quantities. These building blocks are intended as oligonucleotide precursors for developing therapeutic, diagnostic, and research applications. Our chemical expertise includes custom synthesis services to support the development of modified oligonucleotides.



5'-, 3'-Amino & Internal-modifiers

5'-, 3'-Amino-, and Internal-modifiers are used to produce a functional amine group on targeted oligonucleotides. The modifiers provided by Nucleosyn incorporate a C5, C6, or C7 spacer with a primary amino group for subsequent conjugation to various amine-reactive agents.

MMT-protected Amino-modifiers are recommended when a preliminary purification is necessary, whereas TFA-protected modifiers should be used when no prior purification is required. Modifiers on solid-phase support are also available with a Fmoc-protected amine. Fmoc group allows a selective deprotection of the amine without cleavage from the support for a subsequent solid-phase conjugation of the desired label.



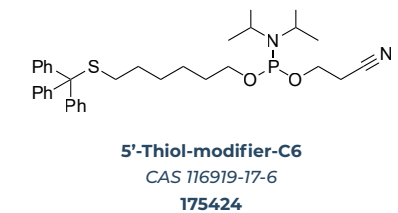
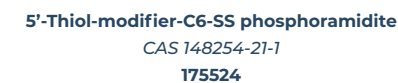
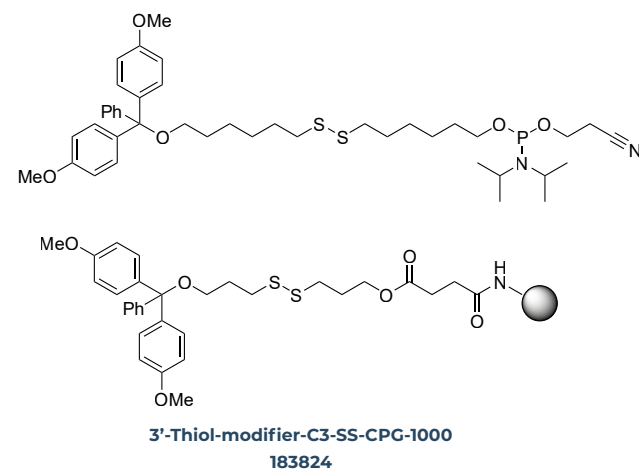
Product	CAS	Product ref.	Packing sizes	Specification
5'-Amino-modifier C5-TFA	139747-14-1	174224	100 µmol / 250 mg	>95% (LC-UV)
5'-Amino-modifier C6-TFA	133975-85-6	173524	100 µmol / 250 mg	>95% (LC-UV)
5'-Amino-modifier C6 (C6-MMT)	114616-27-2	173424	100 µmol / 250 mg	>95% (LC-UV)
Amino-modifier C6-dT	178925-21-8	175624	100 µmol / 250 mg	>95% (LC-UV)
3'-Amino-modifier-C7-CPG-1000*	-	183524	0,1 g / 1,0 g	Loading 25-40 µmol/g

* Under request, any packaging size is possible, up to multi-gram quantities in pure form

5'- & 3'-Thiol-modifiers

5'-Thiol-modifiers are phosphoramidites that produce a functional thiol group on the 5'- terminus of targeted oligonucleotides. Thiol modification allows the attachment of various products, such as fluorescent dyes, labeling with thiol-specific tags like maleimide and iodoacetamide compounds, biotin, and proteins. 3'-Thiol-modifiers are used to produce 3'-Thiol-modified oligonucleotides where a different label is desired for the 5'-terminus.

The Thiol-modification of oligonucleotides is important for conjugating enzymes like horseradish peroxidase or alkaline phosphatase. Thiol-modified oligonucleotides can also be attached to gold nanoparticles for a wide range of applications, including recognizing and detecting other molecules.



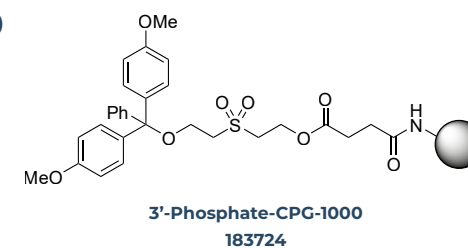
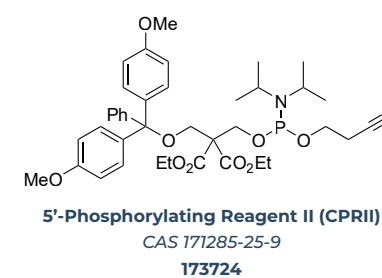
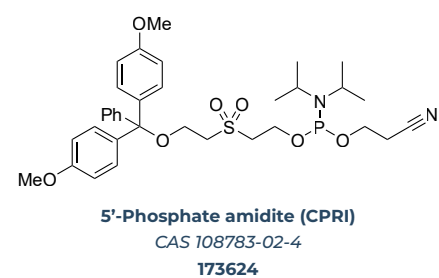
Product	CAS	Product ref.	Packing sizes	Specification
5'-Thiol-modifier-C6-SS phosphoramidite	148254-21-1	175524	100 µmol / 250 mg	>95% (LC-UV)
5'-Thiol-modifier-C6	116919-17-6	175424	100 µmol / 250 mg	>95% (LC-UV)
3'-Thiol-modifier-C3-SS-CPG-1000*	-	183824	0,1 g / 1,0 g	Loading 25-40 µmol/g

* Under request, any packaging size is possible, up to multi-gram quantities in pure form

5'- & 3'-Phosphorylating-modifiers

Phosphorylating-modifiers are important tools to phosphorylate oligonucleotides and determine the efficiency of the phosphorylation step. 5'-Phosphate amidite (CPRI) and 5'-Phosphorylating Reagent II (CPRII) are mostly involved in 5'-terminus phosphorylation processes since 3'-Phosphate-CPG-1000 allows the direct preparation of oligonucleotides bearing a 3'-phosphate group.

The DMT group of 5'-Phosphate amidite (CPRI) and 5'-Phosphorylating Reagent II (CPRII) is stable to base cleavage. The corresponding oligonucleotides can therefore be purified by reversed-phase chromatography without any cleavage of the protecting group which is later removable with an acidic treatment.



Product	CAS	Product ref.	Packing sizes	Specification
5'-Phosphate amidite (CPRI)	108783-02-4	173624	100 µmol / 250 mg	>95% (LC-UV)
5'-Phosphorylating Reagent II (CPRII)	171285-25-9	173724	100 µmol / 250 mg	>95% (LC-UV)
3'-Phosphate-CPG-1000*	-	183724	0,1 g / 1,0 g	Loading 25-40 µmol/g

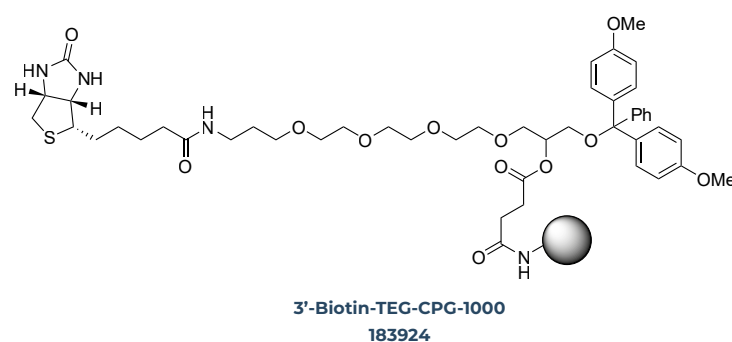
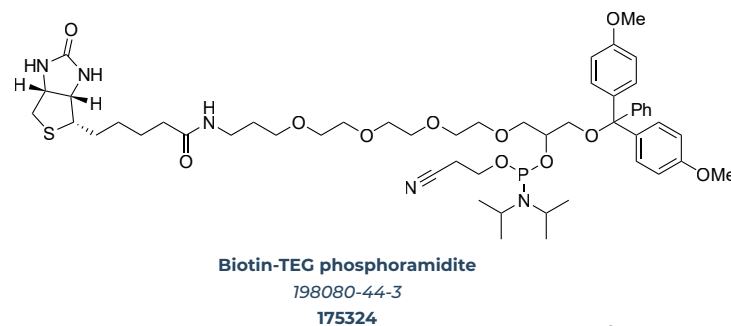
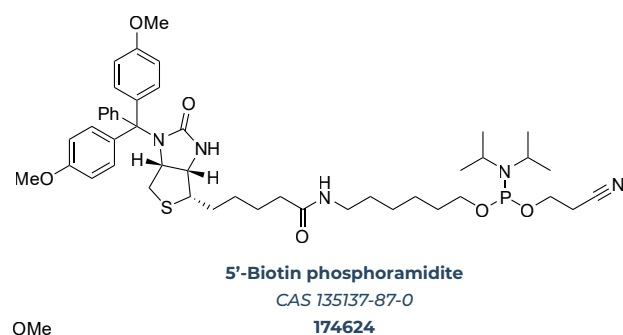
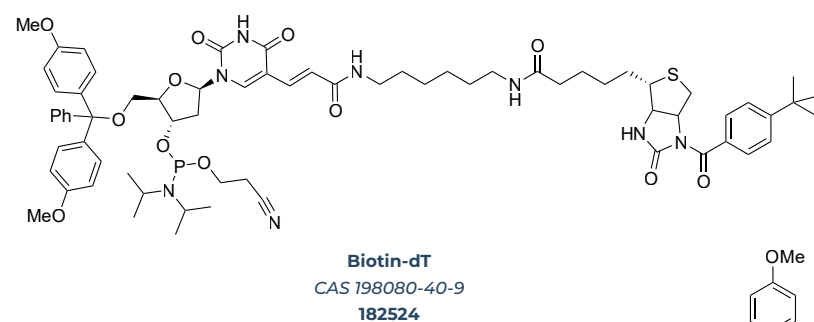
* Under request, any packaging size is possible, up to multi-gram quantities in pure form

Biotin labeling

Biotin amidites are used in the labeling of oligonucleotides. 5'-Biotin phosphoramidite can be added only once at the 5'-terminus of an oligonucleotide. In contrast, Biotin-TEG phosphoramidite was designed for single or even multiple additions at the 5'- or 3'-terminus of targeted oligonucleotides for diagnostic probe development, to enhance the sensitivity of

detection. Biotin-TEG-CPG-1000 allows the direct synthesis of oligonucleotides bearing a biotin label at the 3'-terminus.

Biotin labeling can be captured by avidin or streptavidin. The biotin phosphoramidite is a good alternative to the biotin-NHS ester procedure.



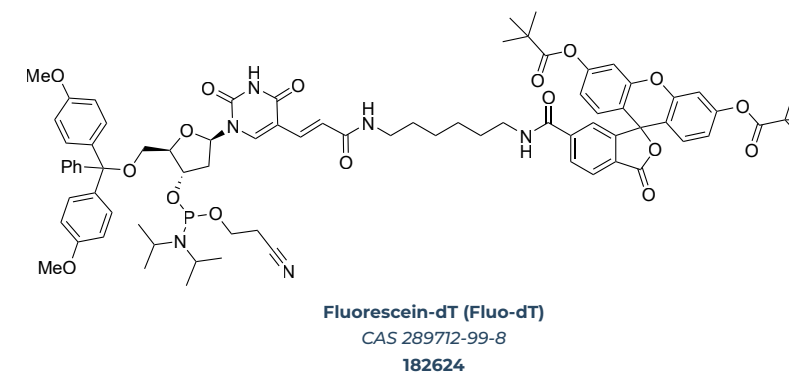
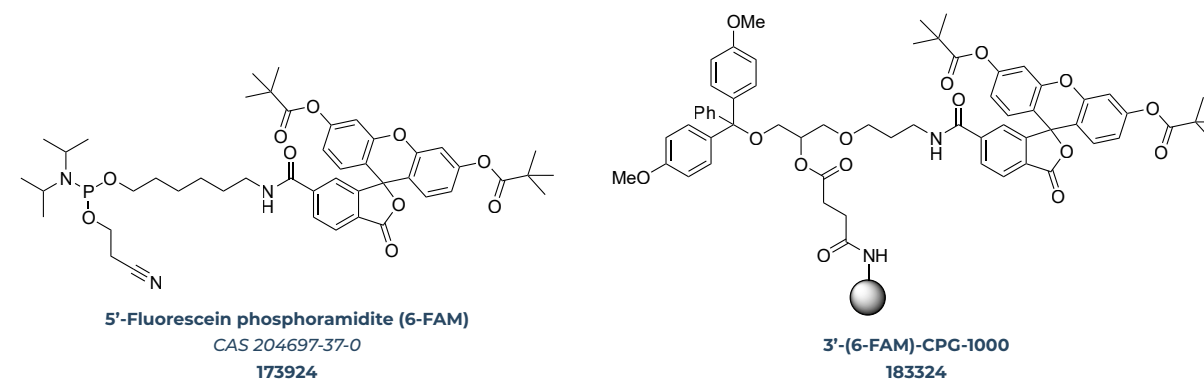
Product	CAS	Product ref.	Packing sizes	Specification
Biotin-dT	198080-40-9	182524	100 µmol / 250 mg	>95% (LC-UV)
5'-Biotin phosphoramidite	135137-87-0	174624	100 µmol / 250 mg	>95% (LC-UV)
Biotin-TEG phosphoramidite	198080-44-3	175324	100 µmol / 250 mg	>95% (LC-UV)
3'-Biotin-TEG-CPG-1000*	-	183924	0,1 g / 1,0 g	Loading 25-40 µmol/g

* Under request, any packaging size is possible, up to multi-gram quantities in pure form

Fluorescein amidites

Fluorescein-dT (Fluo-dT) is a monomer of choice for modifying oligonucleotides within the sequence to replace a dT residue. Fluorescein-labeled oligo can be obtained by normal cleavage or deprotection. 5'-Fluorescein phosphoramidite (6-FAM) is mostly used to label the 5'-terminus during oligonucleotide

synthesis and has found applications in genomic research, such as DNA sequencing and amplification. The 3'-(6-FAM)-CPG proved to be very useful for the simple insertion of a fluorescein group at the 3'-terminus of an oligonucleotide.

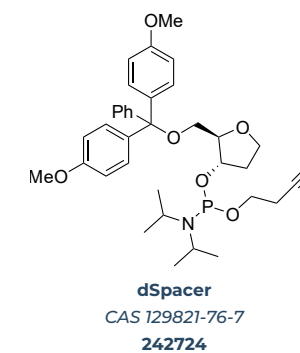


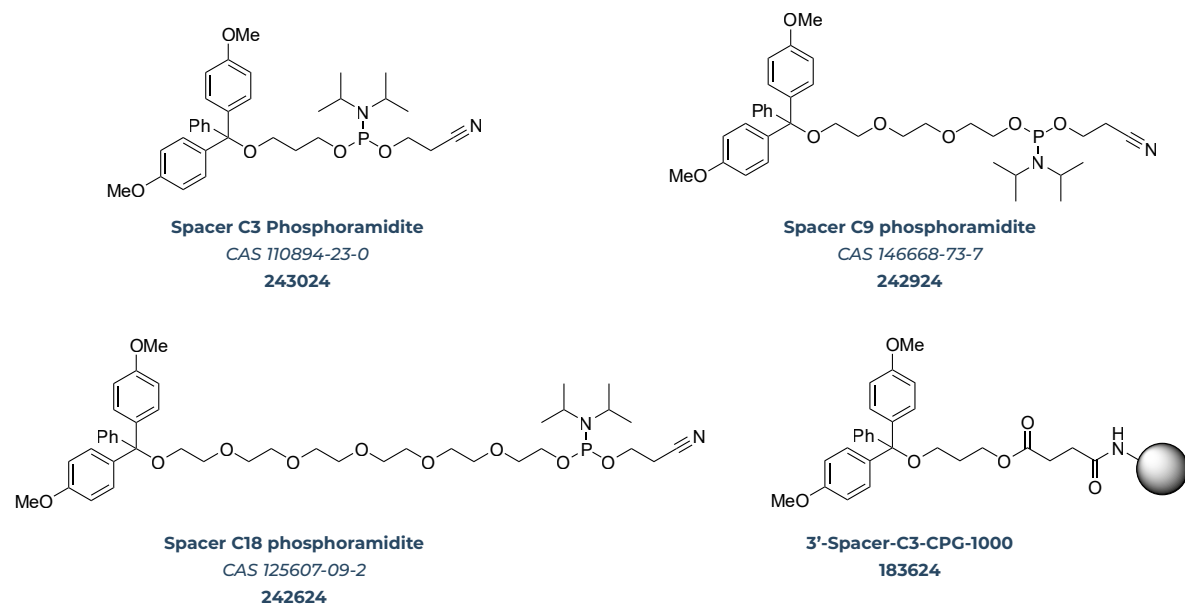
Product	CAS	Product ref.	Packing sizes	Specification
5'-Fluorescein phosphoramidite (6-FAM)	204697-37-0	173924	100 µmol / 250 mg	>95% (LC-UV)
Fluorescein-dT (Fluo-dT)	289712-99-8	182624	100 µmol / 250 mg	>95% (LC-UV)
3'-(6-FAM)-CPG-1000*	-	183324	0,1 g / 1,0 g	Loading 25-40 µmol/g

* Under request, any packaging size is possible, up to multi-gram quantities in pure form

Spacer-modifiers

Spacer-modifiers C3, C9, and C18 were designed to insert a spacer arm in an oligonucleotide for internal or 5'-modification. Spacer phosphoramidites, including an aliphatic or a polyethylene glycol linker, may allow multiple additions when a longer arm is required. The aliphatic linker of Spacer C3 phosphoramidite may also act as a blocker of both exonuclease and polymerase activities at the 3'-terminus. dSpacer introduces a stable abasic site (neither purine nor pyrimidine bases) within an oligonucleotide.





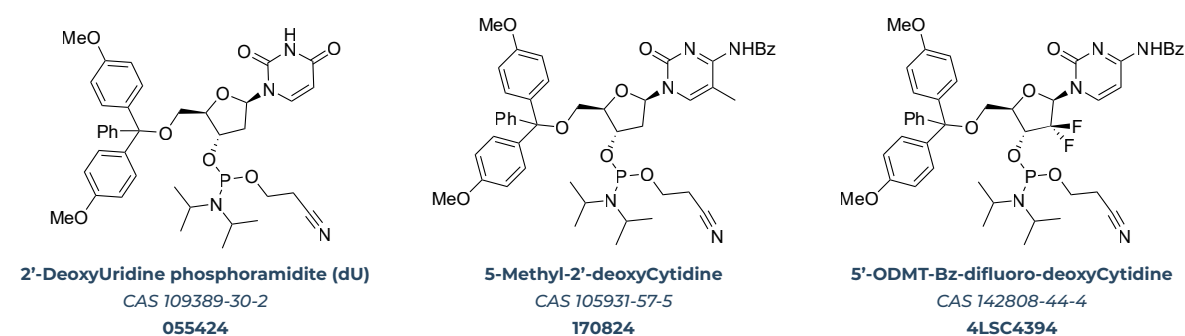
Product	CAS	Product ref.	Packing sizes	Specification
dSpacer	129821-76-7	242724	100 µmol / 250 mg	>95% (LC-UV)
Spacer C3 phosphoramidite	110894-23-0	243024	100 µmol / 250 mg	>95% (LC-UV)
Spacer C9 phosphoramidite	146668-73-7	242924	100 µmol / 250 mg	>95% (LC-UV)
Spacer C18 phosphoramidite	125607-09-2	242624	100 µmol / 250 mg	>95% (LC-UV)
3'-Spacer-C3-CPG-1000*	-	183624	0,1 g / 1,0 g	Loading / 25-40 µmol/g

* Under request, any packaging size is possible, up to multi-gram quantities in pure form

Duplex-modifiers

The degeneracy of the genetic code frequently complicates the design of primers. Nondiscriminatory bases, also known as universal bases such as inosine or uridine, can be used to tackle this problem. These bases are introduced thanks to the corresponding Duplex-modifiers 2'-DeoxyInosine and 2'-DeoxyUridine phosphoramidites.

Other Duplex-modifiers provided by Nucleosyn can induce suitable effects including stabilization of the duplexes in the case of methylated bases or applications in gene silencing experiments in the case of 5'-ODMT-Bz-difluoro-deoxycytidine.



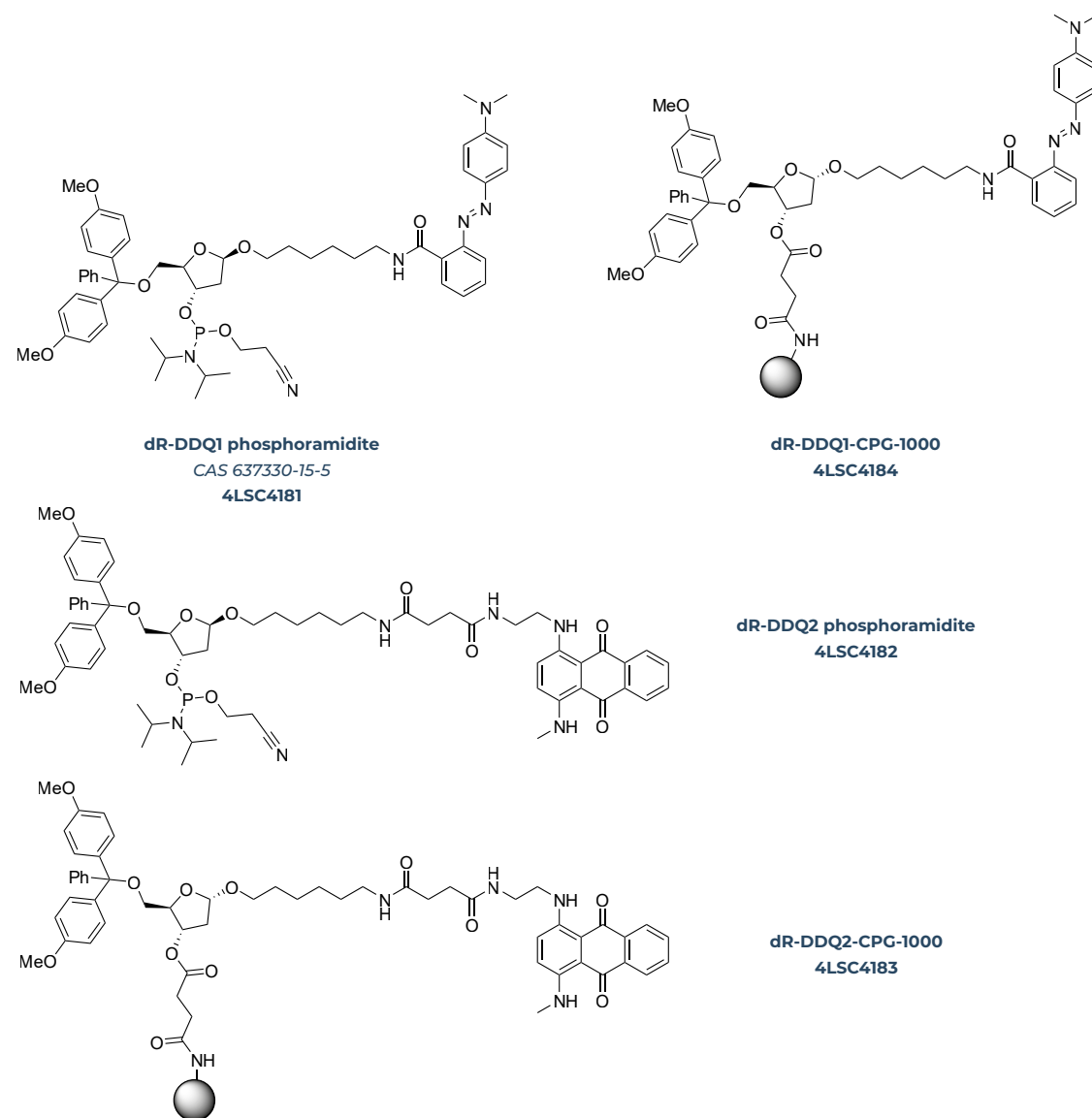
Product	CAS	Product ref.	Packing sizes	Specification
2'-DeoxyInosine phosphoramidite (dI)	141684-35-7	054824	100 µmol / 250 mg	>95% (LC-UV)
2'-DeoxyUridine phosphoramidite (dU)	109389-30-2	055424	100 µmol / 250 mg	>95% (LC-UV)
5-Methyl-2'-deoxyCytidine	105931-57-5	170824	100 µmol / 250 mg	>95% (LC-UV)
5'-ODMT-Bz-difluoro-deoxyCytidine	142808-44-4	4LSC4394	100 µmol / 250 mg	>95% (LC-UV)

Quenchers

Deep Dark Quenchers

The Deep Dark Quenchers are non-fluorescent molecules used to quench the lower wavelength dyes, such as fluorescein, that can be incorporated at the 3'- and 5'-terminus of oligonucleotides. dR-DDQ1 and dR-DDQ2 phosphoramidites are respectively based on Methyl Red and Disperse Blue 3.

In the case of double-dye probes, dR-DDQ1 is not suitable for quenching fluorescent dyes that emit at higher wavelengths, whereas dR-DDQ2 has a broad absorbance spectrum (570 to 680 nm) which overlaps the emission maxima of popular reporter dyes (especially long wave emitters) including TAMRA, Cy[®]3, ROX, or Cy[®]5.



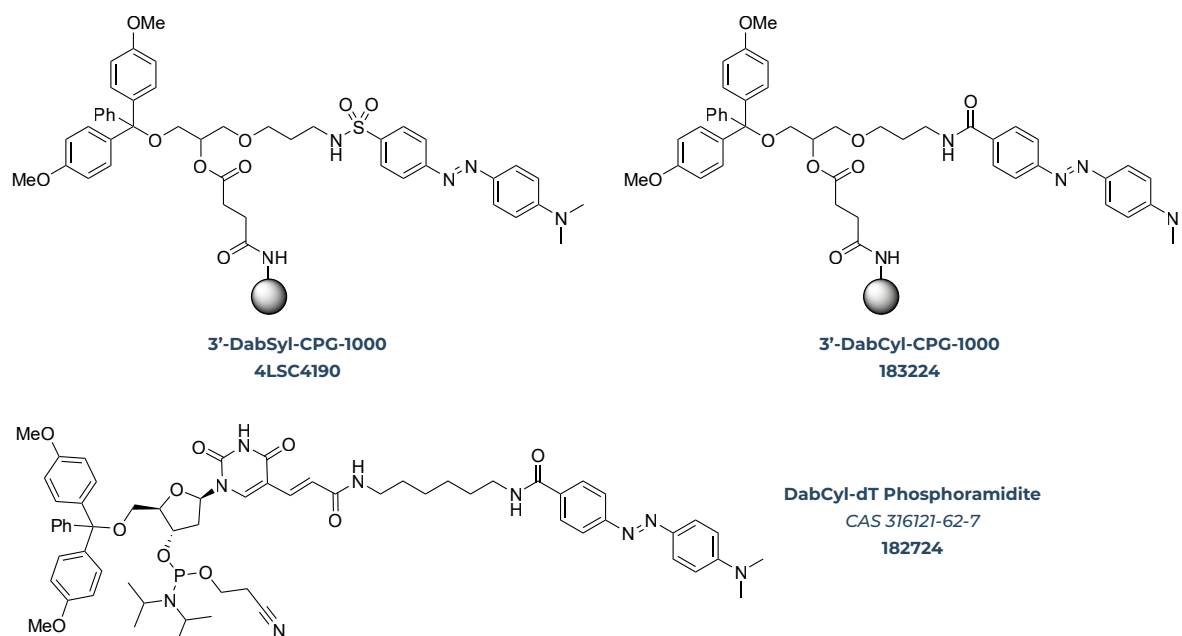
Product	CAS	Product ref.	Packing sizes	Specification
dR-DDQ1 phosphoramidite*	637330-15-5	4LSC4181	0,1 g / 1,0 g	>95% (LC-UV)
dR-DDQ1-CPG-1000*	-	4LSC4184	0,1 g / 1,0 g	Loading 25-40 µmol/g
dR-DDQ2 phosphoramidite*	-	4LSC4182	0,1 g / 1,0 g	>95% (LC-UV)
dR-DDQ2-CPG-1000*	-	4LSC4183	0,1 g / 1,0 g	Loading 25-40 µmol/g

* Under request, any packaging size is possible, up to multi-gram quantities in pure form

Universal Quenchers

DabCyl is a universal quencher, commonly used for labeling oligos and peptides. The obtained conjugates are often used as diagnostic probes such as Molecular Beacons and Protease substrates. The quencher is located at the 5'-terminus, and DabCyl-dT places it

inside the sequence, leaving the 3'-terminus available for polymerase extension, whereas 3'-DabSyl-CPG and 3'-DabCyl-CPG are used to prepare probes with the quencher blocking the 3'-terminus.



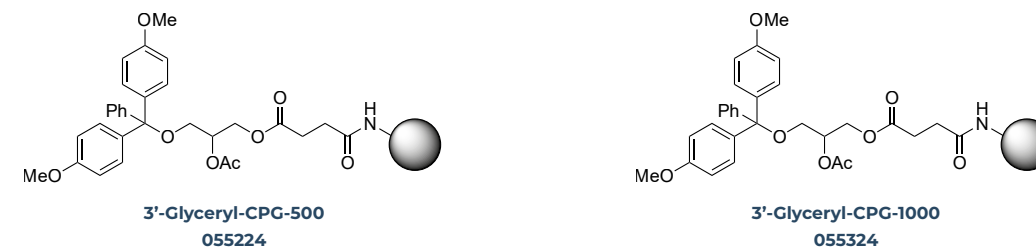
Product	CAS	Product ref.	Packing sizes	Specification
DabCyl-dT Phosphoramidite	316121-62-7	182724	100 µmol / 250 mg	>95% (LC-UV)
3'-DabCyl-CPG-1000*	-	183224	0,1 g / 1,0 g	Loading 25-40 µmol/g
3'-DabSyl-CPG-1000*	-	4LSC4190	0,1 g / 1,0 g	Loading 25-40 µmol/g

* Under request, any packaging size is possible, up to multi-gram quantities in pure form

3'-Glyceryl-CPG

The 3'-glyceryl function can form a 3'-phosphoglycer-aldehyde on the 3'-terminus of an oligonucleotide by an oxidation reaction with sodium periodate. The resulting aldehyde can be further oxidized into the

corresponding carboxylic acid. Both carbonyl groups are suitable for subsequent conjugation to an amine-containing product.

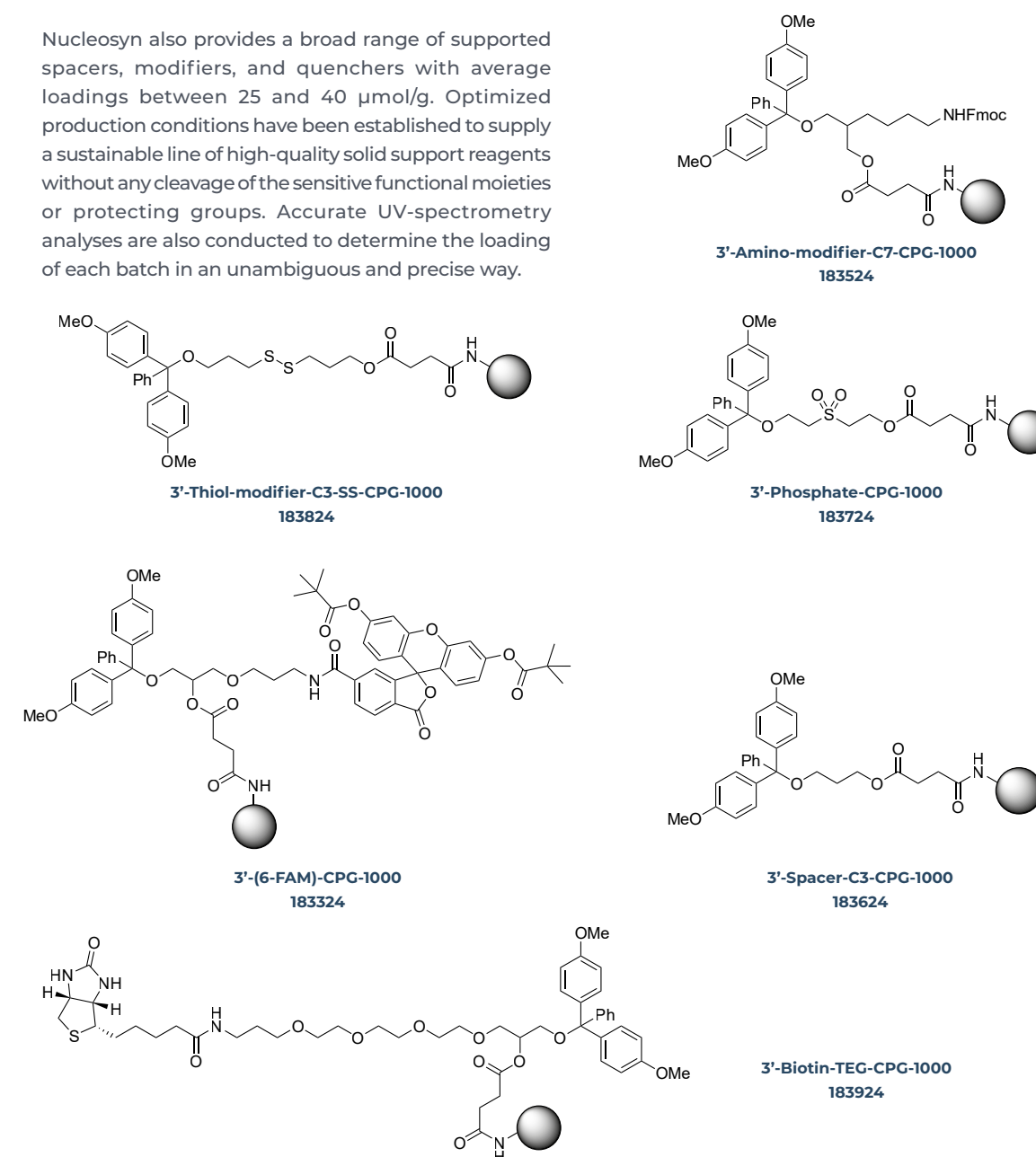


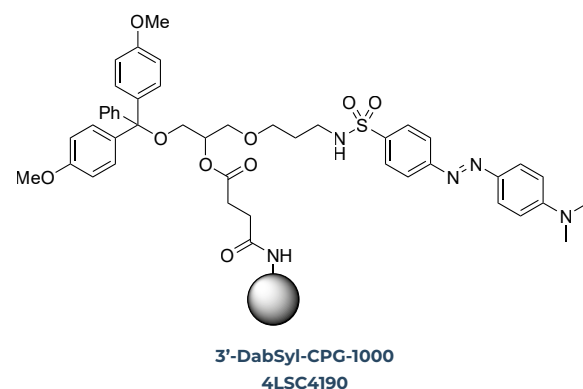
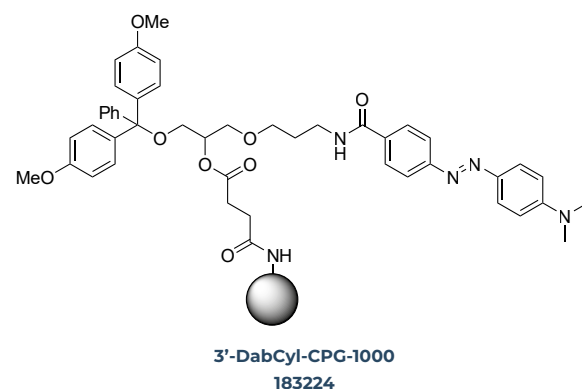
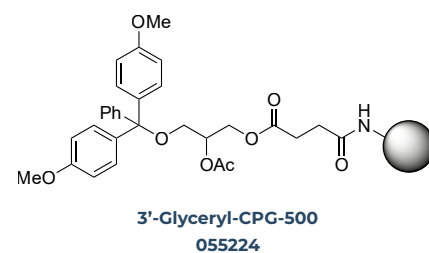
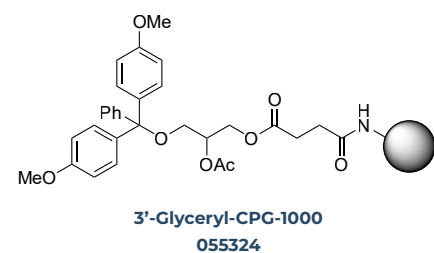
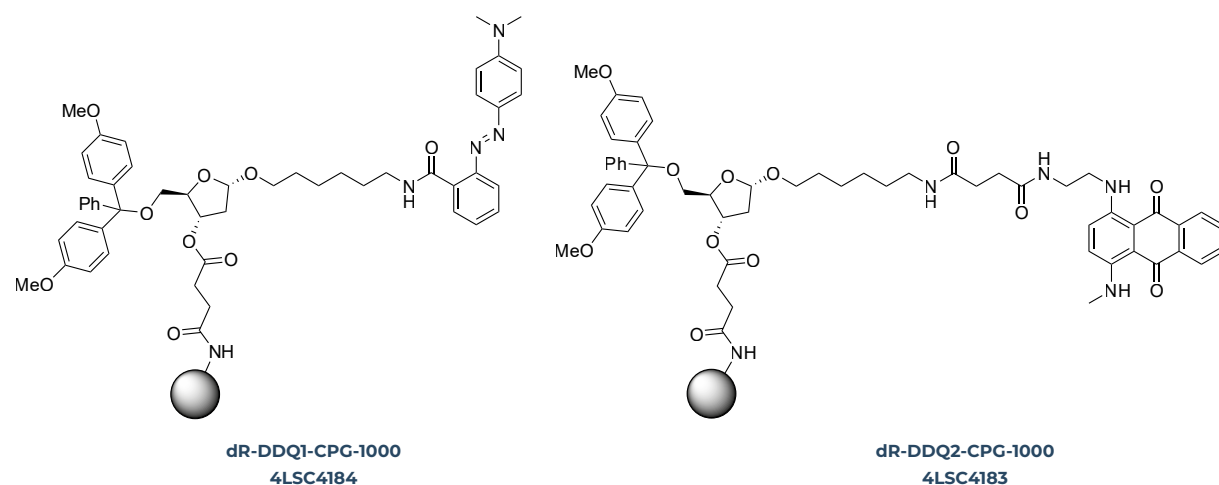
Product	CAS	Product ref.	Packing sizes	Specification
3'-Glyceryl-CPG-500*	-	055224	0,1 g / 1,0 g	Loading 25-40 µmol/g
3'-Glyceryl-CPG-1000*	-	055324	0,1 g / 1,0 g	Loading 25-40 µmol/g

* Under request, any packaging size is possible, up to multi-gram quantities in pure form

3'-Solid Support CPG

Nucleosyn also provides a broad range of supported spacers, modifiers, and quenchers with average loadings between 25 and 40 µmol/g. Optimized production conditions have been established to supply a sustainable line of high-quality solid support reagents without any cleavage of the sensitive functional moieties or protecting groups. Accurate UV-spectrometry analyses are also conducted to determine the loading of each batch in an unambiguous and precise way.





Product	CAS	Product ref.	Packing sizes	Specification
3'-Amino-modifier-C7-CPG-1000*	-	183524	0,1 g / 1,0 g	Loading / 25-40 µmol/g
3'-Thiol-modifier-C3-SS-CPG-1000*	-	183824	0,1 g / 1,0 g	Loading / 25-40 µmol/g
3'-Phosphate-CPG-1000*	-	183724	0,1 g / 1,0 g	Loading / 25-40 µmol/g
3'-Biotin-TEG-CPG-1000*	-	183924	0,1 g / 1,0 g	Loading / 25-40 µmol/g
3'-(6-FAM)-CPG-1000*	-	183324	0,1 g / 1,0 g	Loading / 25-40 µmol/g
3'-Spacer-C3-CPG-1000*	-	183624	0,1 g / 1,0 g	Loading / 25-40 µmol/g
dR-DDQ1-CPG-1000*	-	4LSC4184	0,1 g / 1,0 g	Loading / 25-40 µmol/g
dR-DDQ2-CPG-1000*	-	4LSC4183	0,1 g / 1,0 g	Loading / 25-40 µmol/g
3'-Glyceryl-CPG-500*	-	055224	0,1 g / 1,0 g	Loading / 25-40 µmol/g
3'-Glyceryl-CPG-1000*	-	055324	0,1 g / 1,0 g	Loading / 25-40 µmol/g
3'-DabCyl-CPG-1000*	-	183224	0,1 g / 1,0 g	Loading / 25-40 µmol/g
3'-DabSyl-CPG-1000*	-	4LSC4190	0,1 g / 1,0 g	Loading / 25-40 µmol/g

* Under request, any packaging size is possible, up to multi-gram quantities in pure form

Custom synthesis

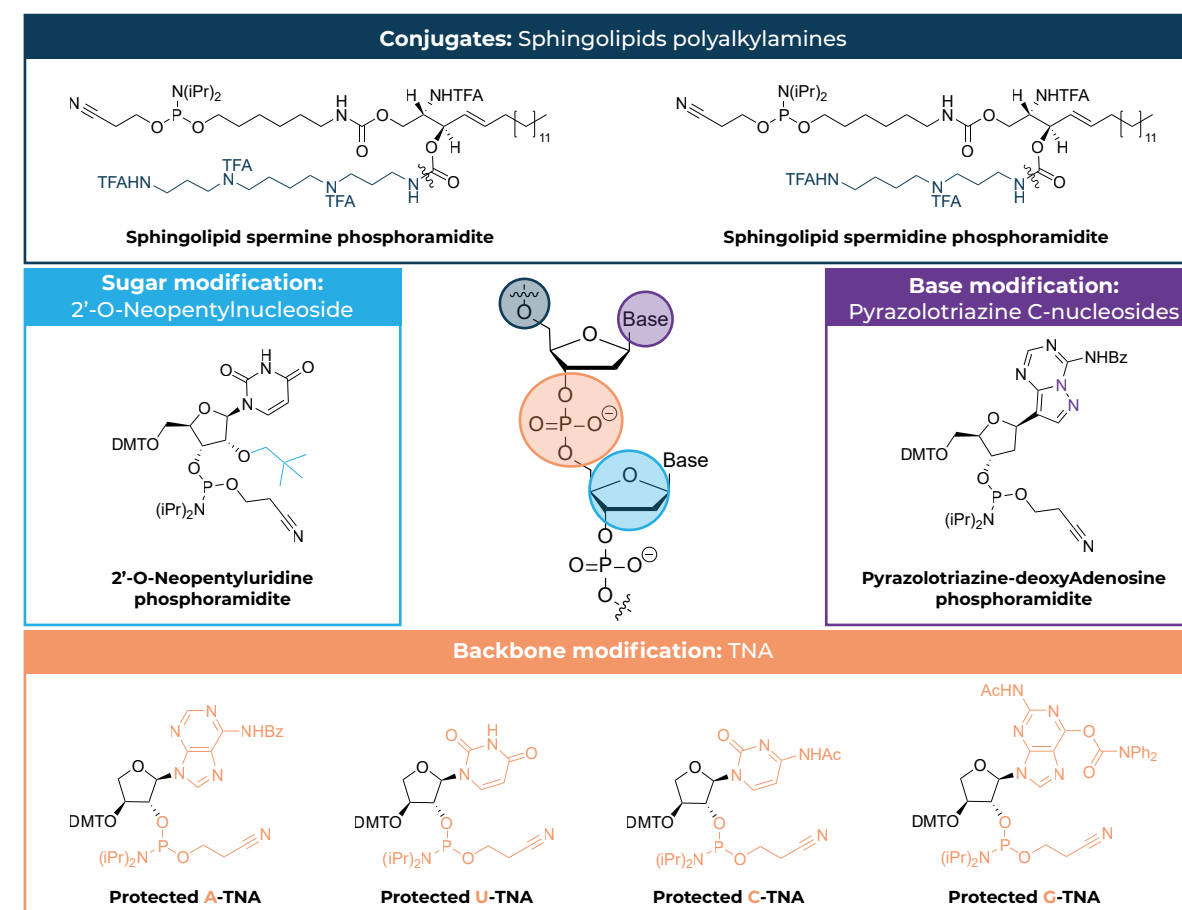
Nucleosyn has also been built around its unique chemistry skills and experience in custom synthesis by using novel chemical synthetic approaches alongside classical methodologies.

Custom synthesis provided by Nucleosyn considers the manufacture of compounds from milli-grams to multi-grams scale synthesis and could be done with patentability and freedom to operate (FTO) analysis of specialized chemicals and/or a chemical process. Each project is treated with utmost confidentiality if requested (confidentiality agreement).

Taking advantage of its highly trained team of chemists, Nucleosyn has earned a reputation for completing even the most challenging synthesis on time and to full requirement. In addition, Nucleosyn had the opportunity to conduct international collaborative research projects dedicated to various modifications of oligonucleotides for the development of new drugs.

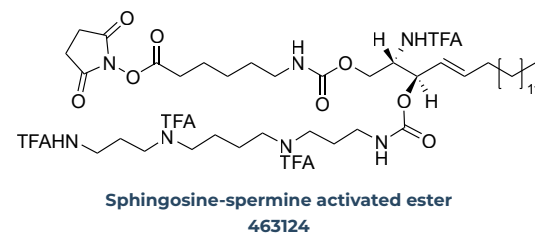
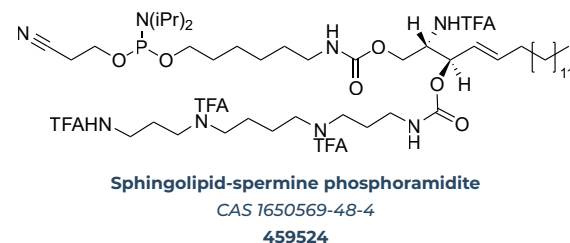
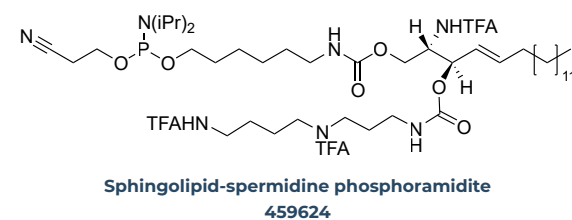
The modification of DNA and RNA is crucial to make drugs out of oligonucleotides. Several strategies have therefore been established to synthesize bespoke oligonucleotides and create increasingly effective therapeutic compounds: sugar modifications, base modifications, backbone modifications, and conjugation of oligonucleotides.

Over the last decade, Nucleosyn investigated and successfully developed various customizations of nucleosides for the synthesis of innovative oligonucleotides according to the four main types of modifications mentioned previously. The new nucleosides, oligonucleotides, and duplexes produced showed suitable properties and promising biological activities.



Conjugates¹

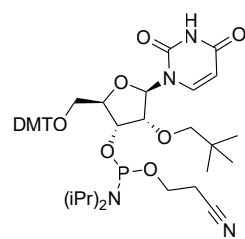
Sphingolipid-polyalkylamine phosphoramidites and their siRNA derivatives were synthesized. The SL-polyalkylamine oligonucleotides developed herein showed remarkable biological properties such as increased cellular uptake, enhanced endosomal release, increased circulation time in plasma, improved biodistribution, reduced toxicity, reduced immunogenicity, reduced off-target effects, and enhanced accumulation in tumor cells compared to the non-modified oligonucleotides.



Product	CAS	Product ref.	Packing sizes	Specification
Sphingolipid-spermine phosphoramidite	1650569-48-4	459524	100 µmol / 250 mg	>95% (LC-UV)
Sphingolipid-spermidine phosphoramidite	-	459624	100 µmol / 250 mg	>95% (LC-UV)
Sphingosine-spermine activated ester	-	463124	100 µmol / 250 mg	>95% (LC-UV)

Sugar modification²

The construction of 2'-O-Neopentyl-modified oligonucleotides was conducted and the neopentyl group could accommodate the minor groove of the DNA/DNA and RNA/DNA (MD simulation). In addition, further investigations (Tm values study & circular dichroism) revealed that the modified oligonucleotides could specifically bind to their DNA or RNA targets by forming similar duplexes compared to the non-modified ones. Promising applications in oligonucleotide therapeutic-based strategies are thus expected.



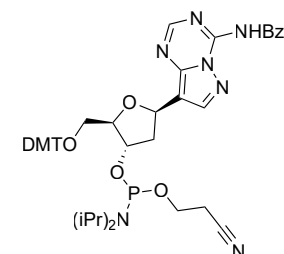
2'-O-Neopentyluridine phosphoramidite
CAS 1422537-64-1
4LSC5156

Product	CAS	Product ref.	Packing sizes	Specification
2'-O-Neopentyluridine phosphoramidite	1422537-64-1	4LSC5156	100 µmol / 250 mg	>95% (LC-UV)

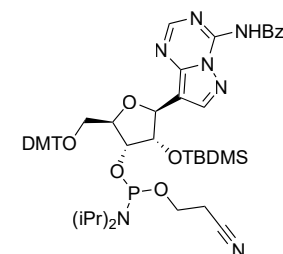
Base modification³

Custom pyrazolotriazine phosphoramidites have been prepared for the construction of novel oligonucleotides. Importantly, the oligonucleotides containing the Pyrazolotriazine-deoxyAdenosine exhibited a remarkable resistance to acid-catalyzed hydrolysis

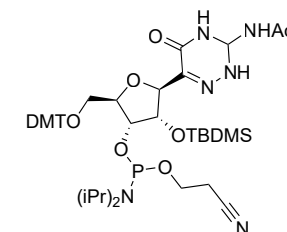
and the custom base recognized its T target with selectivity and stability comparable to the standard deoxyAdenosine. Other suitable biological properties were highlighted as well: still active (on-target), stable in serum, and non-immunogenic.



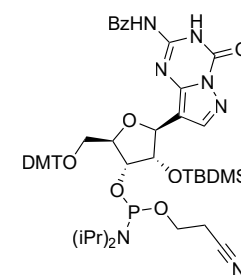
Pyrazolotriazine-deoxyAdenosine phosphoramidite
CAS 1501941-82-7
46122483



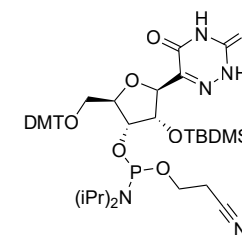
Protected Pyrazolotriazine-Adenosine phosphoramidite
CAS 1501942-19-3
461224



Protected Pyrazolotriazine-Cytidine phosphoramidite
463524



Protected Pyrazolotriazine-Guanosine phosphoramidite
463424



Protected Pyrazolotriazine-Uridine phosphoramidite
463624

Product	CAS	Product ref.	Packing sizes	Specification
Pyrazolotriazine-deoxyAdenosine phosphoramidite	1501941-82-7	46122483	100 µmol / 250 mg	>95% (LC-UV)
Protected Pyrazolotriazine-Adenosine phosphoramidite	1501942-19-3	461224	100 µmol / 250 mg	>95% (LC-UV)
Protected Pyrazolotriazine-Cytidine phosphoramidite	-	463524	100 µmol / 250 mg	>95% (LC-UV)
Protected Pyrazolotriazine-Guanosine phosphoramidite	-	463424	100 µmol / 250 mg	>95% (LC-UV)
Protected Pyrazolotriazine-Uridine phosphoramidite	-	463624	100 µmol / 250 mg	>95% (LC-UV)

¹ WO2015015496A1, 2015.

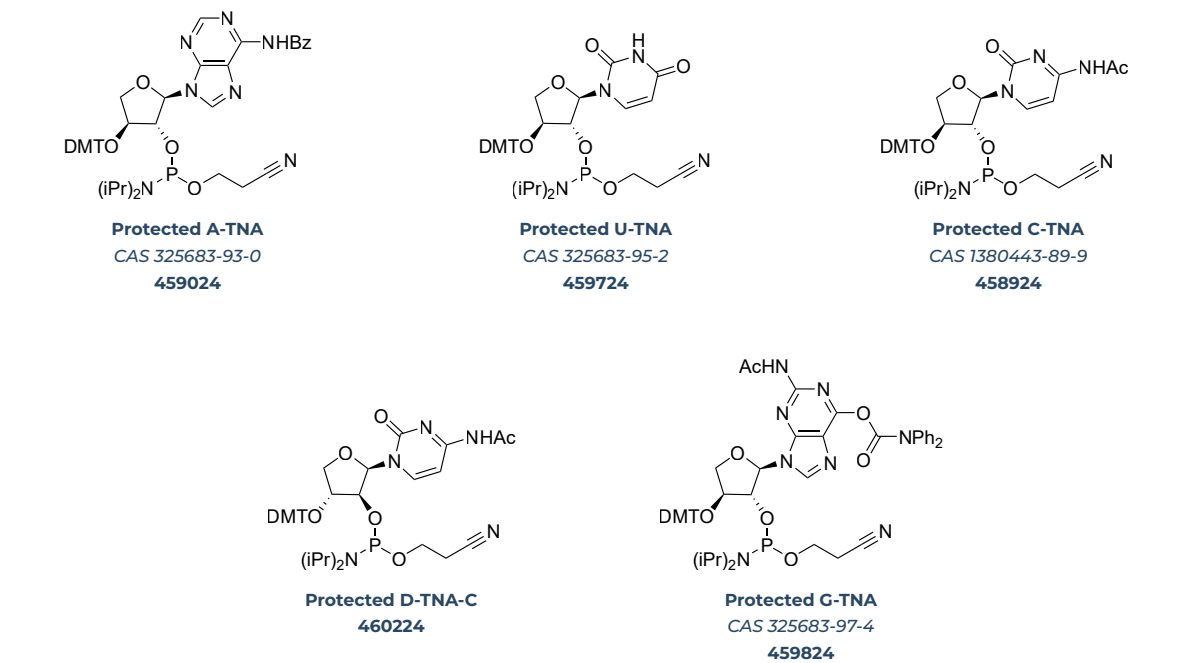
² G. Mathis, S. Bourg, S. Aci-Seche, J. C. Truffert and U. Asseline, *Org. Biomol. Chem.*, **2013**, 11, 1345-1357.

³ a) WO2013179292A1, 2013. b) M. Lefoix, G. Mathis, T. Kleinmann, J. C. Truffert and U. Asseline, *J. Org. Chem.*, **2014**, 79, 3221-3227. c) US20150166990, 2015.

Backbone modification⁴

A convergent access to protected Threose Nucleic Acids (TNA), including A-TNA, U-TNA, C-TNA, and G-TNA was developed. D-TNA-C was also synthesized as a novel building block for DNA/RNA research. Compared to natural DNA and RNA, TNA has a shorter internucleotide 3',2'-phosphodiester linkage, thus

offering new properties in base-paring and duplex stability. Noteworthy, the nuclease resistance of siRNA in the case of TNA-containing duplexes was superior to those involving 2'-F and 2'-OMe ribose. No inhibition of the RNA interference process occurred with the custom duplexes.



Product	CAS	Product ref.	Packing sizes	Specification
Protected A-TNA	325683-93-0	459024	100 µmol / 250 mg	>95% (LC-UV)
Protected U-TNA	325683-95-2	459724	100 µmol / 250 mg	>95% (LC-UV)
Protected C-TNA	1380443-89-9	458924	100 µmol / 250 mg	>95% (LC-UV)
Protected D-TNA-C	-	460224	100 µmol / 250 mg	>95% (LC-UV)
Protected G-TNA	325683-97-4	459824	100 µmol / 250 mg	>95% (LC-UV)

Nucleosyn acquired solid expertise alongside wide knowledge thanks to various research collaborative projects for the customization of nucleosides dedicated to the construction of innovative oligonucleotides.

These studies were successfully achieved and include the development of modified sugars, modified bases, modified backbones, and conjugation of oligonucleotides.

⁴ S. Matsuda, S. Bala, et al., *J. Am. Chem. Soc.*, **2023**, 145, 19691-19706.



Ancillary reagents

The Biosolve Group may supply DNA synthesis solvents and liquid reagents which can be used on various synthesizers.

Liquid and solid reagents are **available in multiple concentrations or packaging sizes with high-purity grades for a wide range of synthesizers** including ABI, Beckman, Expedite, AKTA OligoPilot™ oligonucleotide synthesizer, MerMade, K&A, and Polygene instruments.

Our extensive line of ancillaries contains high-quality solvents, as well as:

- Activators (BTT, DCI, ETT, Tetrazole)
- Capping reagents (Cap A, Cap A mild, Cap B, Cap B mild, Cap B1, Cap B2)
- Deblocking reagents (DCA, TCA)
- Oxidizers, and Sulfurizing reagents (DDTT)

to meet all needs from milligram-scale research work to industrial and therapeutics production.

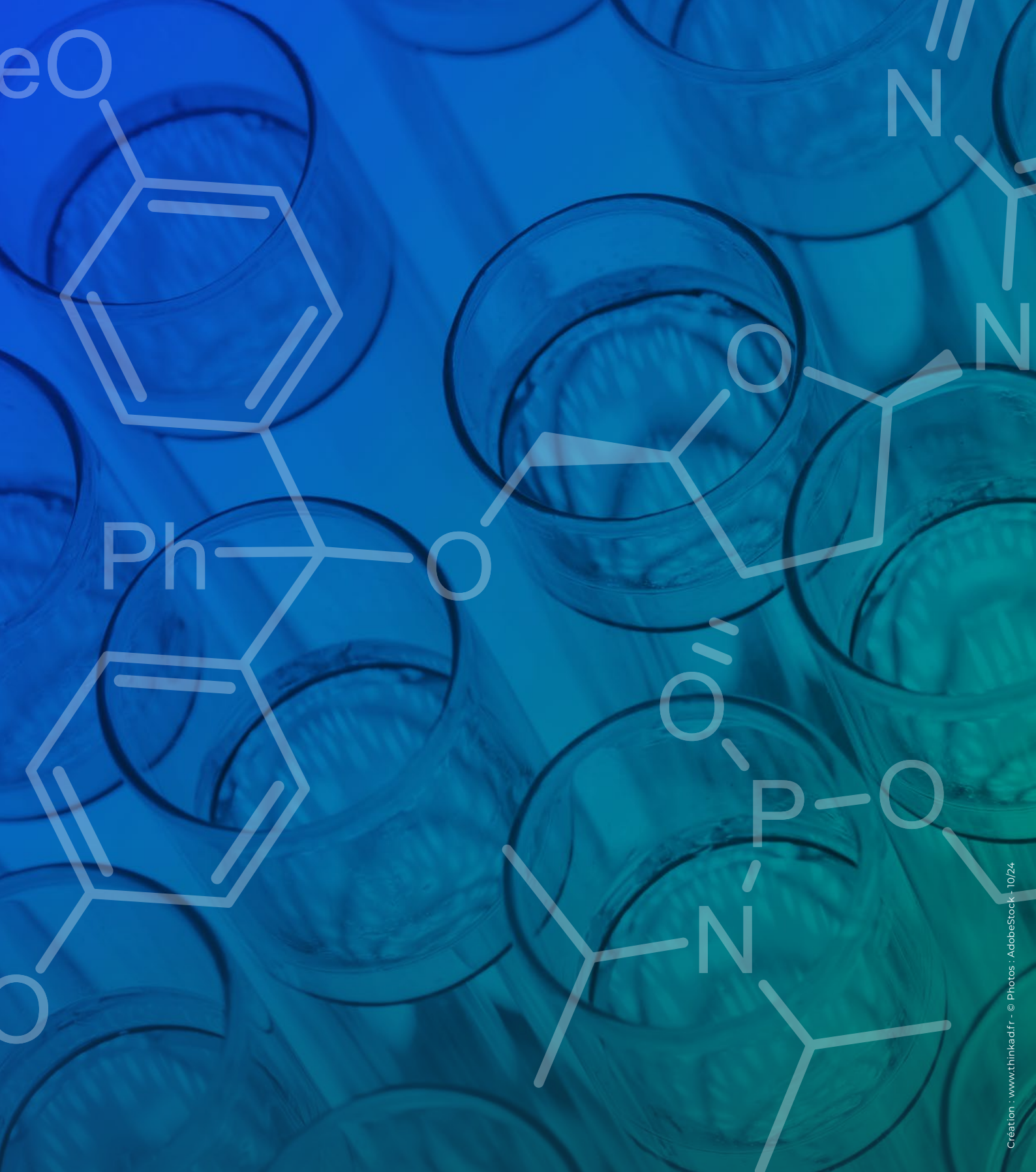
Solvents such as Acetonitrile range from 100 mL glass bottles to 1400 L drums, or isotankers. In addition, any packaging sizes can be provided to satisfy specific requests.

Quality is the continuous concern of the group. Micro-filtrations through 0.2 µm membranes are systematically performed to avoid particulate contamination.

With decades of expertise, customer partnerships, detailed and transparent operating procedures, and strict quality control, the Biosolve Group acquired a strong worldwide reputation and became a leading supplier in Europe.

For any questions,
please contact the following addresses:
info@biosolve-chimie.com
or info@biosolve-chemicals.com





A Biosolve
group company

Contact us

Nucleosyn
Orléans Pépinières
111, Bd Duhamel du Monceau
45166 Olivet Cedex - France
(+33)2 38 49 45 73 - team@nucleosyn.com

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