



kilobaser

KILOBASER EMPOWERS EVERYONE TO CREATE DNA & RNA

Speed up your research with **Kilobaser DNA & RNA synthesizers** and experience efficiency in perfection. Synthesizing DNA and RNA oligos has never been easier. Get your **ready-to-use custom oligos in less than 2 hours.**

THE FASTEST WAY TO DNA & RNA

kilobaser

GREAT PRODUCTS FOR GREAT MINDS

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KILOBASER SYNTHESIZER

Our Technology

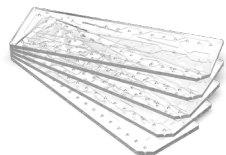
Create essential molecular tools in record time on your own lab bench using Kilobaser DNA & RNA synthesizers.

Kilobaser one & one-XT (27x33x33cm) are the most compact of their kind. Not only do our devices operate in a stand-alone manner, but they can also be integrated seamlessly into a fully automated work process.

Kilobaser's revolutionary technology allows for independent and rapid DNA & RNA synthesis without knowledge of oligonucleotide synthesis chemistry.

Our key innovation is the combined use of a cartridge with a microfluidic chip. The cartridge contains all the reagents required for the synthesis, while the chip carries the reaction column in which the synthesis takes place.

Microfluidic chips carry the micro-column and form the base of the synthesis system.



Each **cartridge** provides all reagents for multiple syntheses, depending on strand length.



Get all specifications here:
<http://oligo.link/specifications>



KILOBASER one & KILOBASER one-XT

Specifications

	Kilobaser one	Kilobaser one-XT
Automated Synthesis	✓	✓
DNA Oligo	✓	✓
DNA Probe	✗	✓
Modified DNA	✗	✓
Modified RNA	✗	✓
Basic Support*	✓	✓
Extended Support*	✗	✓
Scientific Support*	✗	✓

***Basic Support:** As soon as the Kilobaser arrives at your site, we assist you through connection and installation in the course of an online set-up call. We are happy to support you in your initial DNA synthesis to prepare the Kilobaser for your custom oligo syntheses.

***Extended Support:** We provide a detailed introduction to all the possible modifications and explain how to create your desired modified oligonucleotides using the Kilobaser cartridge-and-chip system. This includes a step-by-step introduction to our OliPure HIC Purification Kit and manual cleaning in case the cartridge type is changed.

***Scientific Support:** We are happy to help you evaluate your syntheses and experiments with oligonucleotides synthesized with the Kilobaser and troubleshoot together, discussing further steps. We also offer to analyze your synthesized oligonucleotides in our laboratory to assure their quality.



Which device should you choose?

Kilobaser one offers the best price-performance ratio for just DNA oligo synthesis and is thus ideal in case you mainly need primers or other unmodified DNA oligonucleotides.

Kilobaser one-XT - the ultimate synthesis tool that works seamlessly with all our existing cartridges and chips! Whether you need to synthesize primers, probes or other modified oligos, the Kilobaser one-XT has you fully supported.

READY-TO-USE OLIGOS SIMPLE AND FAST

Workflow

**Science is hard enough already,
let us make it a little easier for you!**

1

Enter sequence

Type in or transfer the sequence via USB or PC

2

Insert chip

Error-free handling due to user-centered design

3

Press start

Get your ready-to-use DNA/RNA within two hours

i

The product is automatically dried in a PCR type vial for storage and further processing.



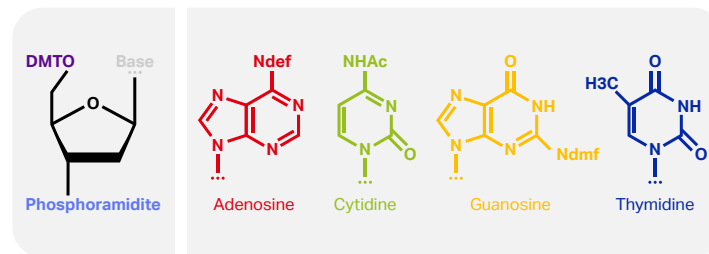
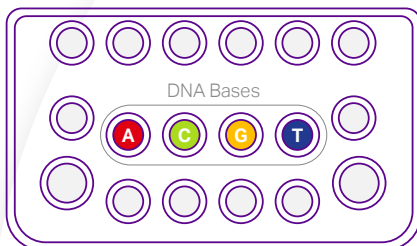
STANDARD DNA REAGENT CARTRIDGE

Technical Specifications

Volume	150nt
Nucleotides	Deoxyribonucleotides
Bases Quantity	75 x A, C, G, T
5'-Modification	No
Usage	DNA oligo synthesis
Shelf Life	1 year
Shelf Life after Activation	2 weeks
Short-Term Storage	2 months at room temperature
Long-Term Storage	2-8°C
Scope of Delivery	1 reagent cartridge
Required	Kilobaser one or Kilobaser one-XT

What's inside?

The cartridge contains all the reagents required for chemical DNA synthesis. This includes the bases A, C, G and T, which are positioned in the center of the cartridge with colored caps. The presence of an excess amount of bases ensures the availability of all four phosphoramidites until the final synthesis.



Phosphoramidite for building DNA oligos

Chemistry

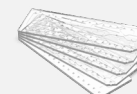
To synthesize the DNA strand, phosphoramidites with the respective bases are used as building blocks. These blocks contain a base, a DMT group, and a phosphoramidite bound to a ribose sugar ring.

How does it work?

DNA synthesis is performed from 3' to 5' by coupling one phosphoramidite after another to the microcolumn. For each coupling step, first the DMT group is cleaved, providing a free 5'-hydroxy group to react with the 3'-phosphoramidite. The resulting phosphate is then oxidized to phosphate. In the final step of the synthesis, the oligonucleotide is cleaved from the column and the protective groups are removed to yield functional DNA.



+ Chip Combination



Standard Chip (p.28)

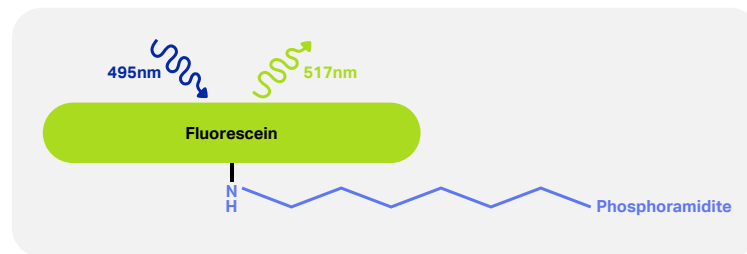
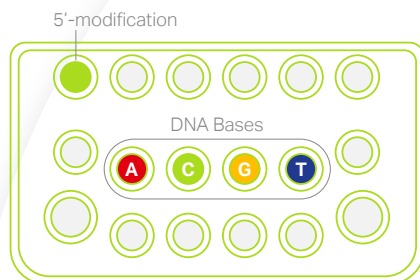
6-FAM DNA REAGENT CARTRIDGE

Technical Specifications

Volume	100nt
Nucleotides	Deoxyribonucleotides
Bases Quantity	75 x A, C, G, T
5'-Modification	6-FAM dye
Usage	Un-/single-/dual-labeled DNA synthesis
Shelf Life	1 year
Shelf Life after Activation	1 week
Short-Term Storage	2 months at 2-8°C
Long-Term Storage	-20°C
Scope of Delivery	1 reagent cartridge
Required	Kilobaser one-XT

What's inside?

The cartridge contains all the reagents required for chemical DNA synthesis. This includes the bases A, C, G and T, which are positioned in the center of the cartridge with colored caps. Additionally, 6-FAM is available for the 5'-modification and is positioned in the top left corner.



Phosphoramidite for building fluorescein labeled oligonucleotides

Chemistry

The 6-carboxyfluorescein (6-FAM) DNA phosphoramidite contains a 6-FAM on a chain consisting of 6 carbon atoms and is coupled to the last base of the DNA strand, resulting in a 6-FAM at the 5'-end.

Advantages

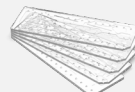
6-FAM has an emission wavelength of 517nm, which a wide variety of detection devices can measure. Due to the additional C6 linker, the fluorophore affects neither the DNA strand nor the duplexes it forms.

Potential applications

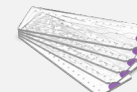
6-FAM labeled oligos can be widely used as single-labeled probes and as dual-labeled probes with an additional quencher. Find out more about single-labeled oligos on page 30 and dual-labeled oligos on page 32.



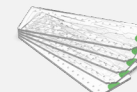
+ Chip Combination



Standard Chip (p.28)



BHQ-1 Quencher Chip (p.32)



6-FAM Label Chip (p.30)

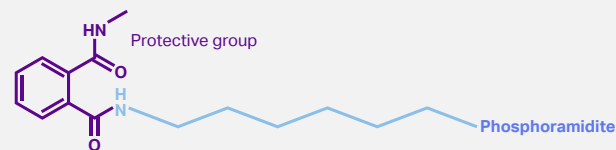
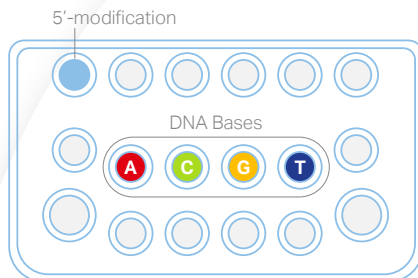
AMINO MODIFIER C6 REAGENT CARTRIDGE

Technical Specifications

Volume	100nt
Nucleotides	Deoxyribonucleotides
Bases Quantity	75 x A, C, G, T
5'-Modification	Amino Modifier C6
Usage	Un-/single-labeled DNA synthesis
Shelf Life	1 year
Shelf Life after Activation	1 week
Short-Term Storage	2 months at 2-8°C
Long-Term Storage	-20°C
Scope of Delivery	1 reagent cartridge
Required	Kilobaser one-XT

What's inside?

The cartridge contains all the reagents required for chemical DNA synthesis. This includes the bases A, C, G and T, which are positioned in the center of the cartridge with colored caps. Additionally, amino modifier C6 is available for the 5'-modification and is positioned in the left corner.



Phosphoramidite for building amino-modified oligonucleotides

Chemistry

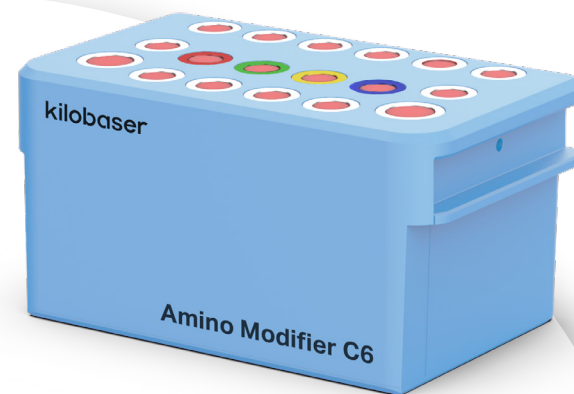
The 5'-amino modifier C6 phosphoramidite contains a protected primary amine on a chain of 6 carbon atoms. After coupling to the last base of the oligonucleotide, all protective groups are cleaved off in the final step of the synthesis, resulting in a primary amine at the 5'-terminus of the DNA strand.

Advantages

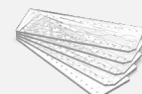
The main advantage of the amine is its reactivity to numerous functional groups. Due to the C6 linker, the interaction of the amine with other groups affects neither the DNA strand nor the duplexes it forms.

Potential applications

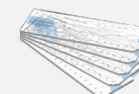
Because of the large number of different immobilization reagents available, various surfaces can be functionalized with amino-modified oligos. Find out more on page 34.



+ Chip Combination



Standard Chip (p.28)



Amino Modifier C6 Chip (p.34)

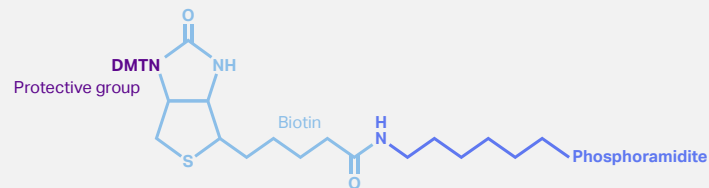
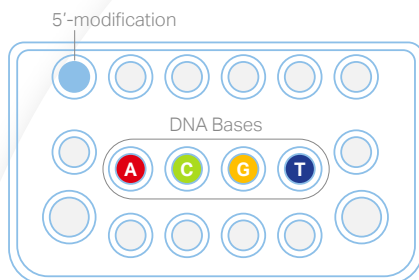
BIOTIN REAGENT CARTRIDGE

Technical Specifications

Volume	100nt
Nucleotides	Deoxyribonucleotides
Bases Quantity	75 x A, C, G, T
5'-Modification	Biotin
Usage	Un-/single-labeled DNA synthesis
Shelf Life	1 year
Shelf Life after Activation	1 week
Short-Term Storage	2 months at 2-8°C
Long-Term Storage	-20°C
Scope of Delivery	1 reagent cartridge
Required	Kilobaser one-XT

What's inside?

The cartridge contains all the reagents required for chemical DNA synthesis. This includes the bases A, C, G and T, which are positioned in the center of the cartridge with colored caps. Additionally, biotin is available for the 5'-modification and is positioned in the top left corner.



Phosphoramidite for building biotin-labeled oligonucleotides

Chemistry

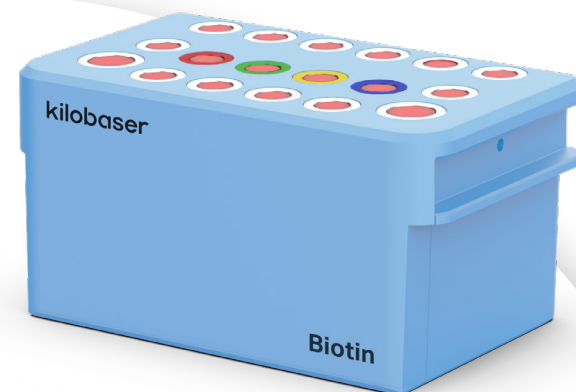
The 5'-biotin phosphoramidite contains one biotin group on a chain of 6 carbon atoms. The biotin is protected by a DMT group, which is cleaved off in the final step of the synthesis.

Advantages

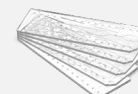
The advantage of biotin is its strong binding affinity to streptavidin or avidin. Due to the C6 linker, the binding of biotin affects neither the DNA strand nor the duplexes it forms.

Potential applications

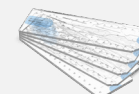
Biotinylated oligos are ideal to functionalize other surfaces with the features of DNA oligonucleotides, such as hybridization with a complimentary strand. Find out more on page 36.



+ Chip Combination



Standard Chip (p.28)



Biotin Label Chip (p.36)

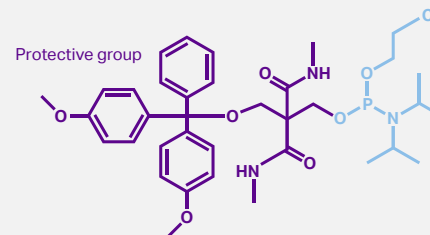
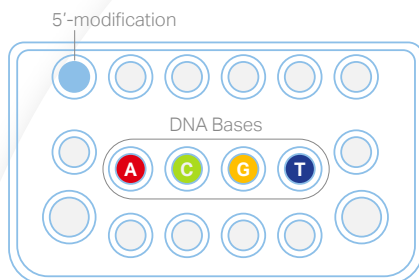
PHOSPHORYLATION REAGENT CARTRIDGE

Technical Specifications

Volume	100nt
Nucleotides	Deoxyribonucleotides
Bases Quantity	75 x A, C, G, T
5'-Modification	Phosphate
Usage	Un-/single-labeled DNA synthesis
Shelf Life	1 year
Shelf Life after Activation	1 week
Short-Term Storage	2 months at 2-8°C
Long-Term Storage	-20°C
Scope of Delivery	1 reagent cartridge
Required	Kilobaser one-XT

What's inside?

The cartridge contains all the reagents required for chemical DNA synthesis. This includes the bases A, C, G and T, which are positioned in the center of the cartridge with colored caps. Additionally, a phosphorylation reagent is available for the 5'-modification and is positioned in the top left corner.



Phosphoramidite for building 5'-phosphorylated oligonucleotides

Chemistry

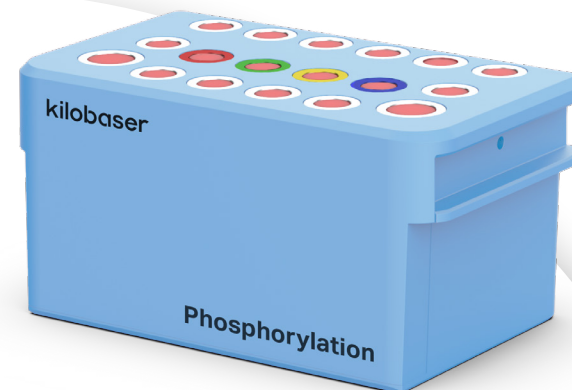
The phosphate group for the phosphorylation comes from the phosphoramidite itself, which consists of the phosphate and protective groups. The protective groups are cleaved off in the final step of the synthesis, resulting in a free phosphate group at the 5'-terminus of the DNA strand.

Advantages

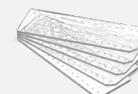
Using this phosphoramidite directly in the DNA synthesis, the phosphorylation delivers higher yields than using kinases.

Potential applications

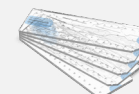
Phosphorylation converts the synthetic DNA strands to natural ones as they miss a phosphate at the 5'-end. This phosphate is essential for several innovative applications. Find out more on page 38.



+ Chip Combination



Standard Chip (p.28)



Phosphorylation Chip (p.38)

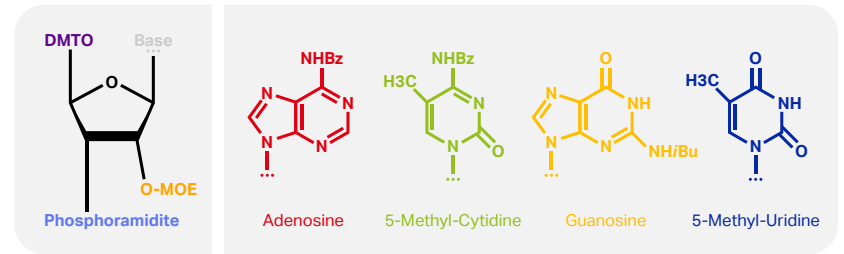
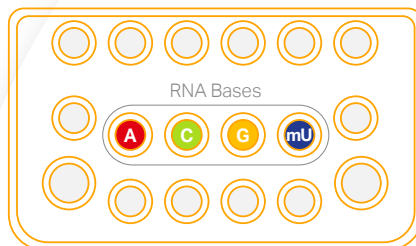
2'-MOE RNA REAGENT CARTRIDGE

Technical Specifications

Volume	150nt
Nucleotides	2'-O-methoxyethyl ribonucleotides
Bases Quantity	75 x A, C, G, mU
5'-Modification	No
Usage	Fully modified RNA synthesis
Shelf Life	1 year
Shelf Life after Activation	1 week
Short-Term Storage	2 months at 2-8°C
Long-Term Storage	-20°C
Scope of Delivery	1 reagent cartridge
Required	Kilobaser one-XT

What's inside?

The cartridge contains all the reagents required for chemical RNA synthesis. This includes the bases A, C, G and U, which are positioned in the center of the cartridge with colored caps. The presence of an excess amount of bases ensures the availability of all four phosphoramidites until the final synthesis.



Phosphoramidite for building 2'-MOE RNA oligonucleotides

Chemistry

In 2'-O-methoxyethyl (2'-MOE) RNA phosphoramidites, the proton on the 2'-ribose position is substituted with a methoxyethyl group. This substitution stabilizes an A-shaped helix during hybridization due to its electronegativity, making a 2'-MOE RNA/RNA duplex significantly more stable.

Advantages

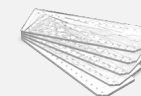
In comparison to natural RNA, RNA strands synthesized using 2'-MOE phosphoramidites exhibit improved duplex stability and significantly increased nuclease resistance.

Potential applications

Combining the properties of nuclease resistance and its ability to bind more efficiently to the target sequence, the 2'-MOE modification is a highly advantageous approach for the development of RNA-affecting therapeutics.



+ Chip Combination



Standard Chip (p.28)

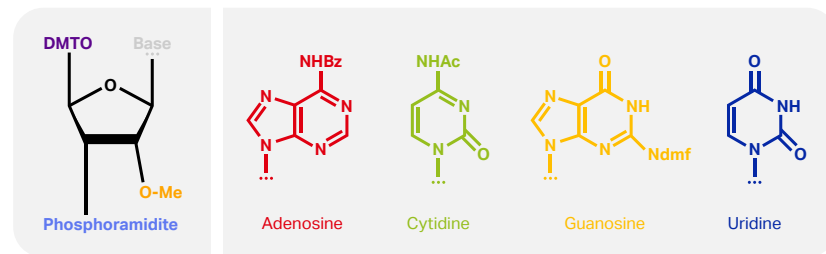
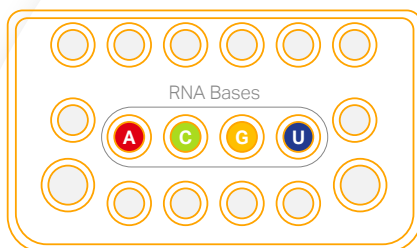
2'-OMe RNA REAGENT CARTRIDGE

Technical Specifications

Volume	150nt
Nucleotides	2'-O-methyl ribonucleotides
Bases Quantity	75 x A, C, G, U
5'-Modification	No
Usage	Fully modified RNA synthesis
Shelf Life	1 year
Shelf Life after Activation	1 week
Short-Term Storage	2 months at 2-8°C
Long-Term Storage	-20°C
Scope of Delivery	1 reagent cartridge
Required	Kilobaser one-XT

What's inside?

The cartridge contains all the reagents required for chemical RNA synthesis. This includes the bases A, C, G and U, which are positioned in the center of the cartridge with colored caps. The presence of an excess amount of bases ensures the availability of all four phosphoramidites until the final synthesis.



Phosphoramidite for building 2'-OMe RNA oligonucleotides

Chemistry

In 2'-O-methyl (2'-OMe) RNA phosphoramidites the proton on the 2'-ribose position is substituted with a methyl group. This substitution stabilizes an A-shaped helix during hybridization due to its electronegativity, making a 2'-OMe RNA/RNA duplex significantly more stable.

Advantages

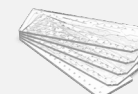
RNA strands synthesized using 2'-OMe phosphoramidites exhibit improved duplex stability and significantly increased nuclease resistance.

Potential applications

Combining the properties of nuclease resistance and their ability to bind more efficiently to the target sequence, the 2'-OMe modification is a highly advantageous approach for the development of RNA-affecting therapeutics.



+ Chip Combination



Standard Chip (p.28)

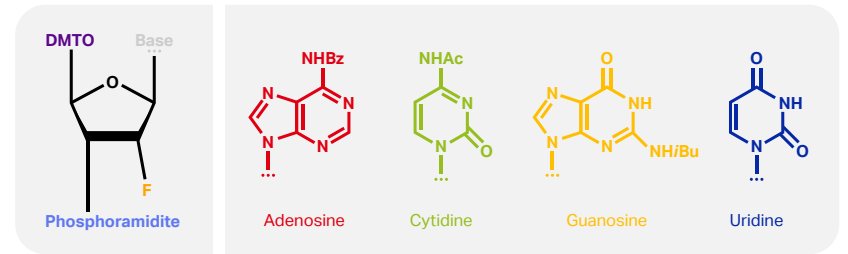
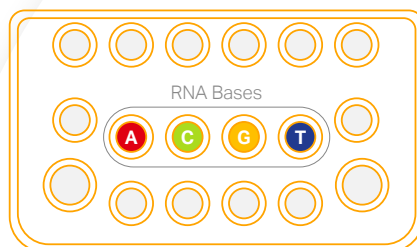
2'-F RNA REAGENT CARTRIDGE

Technical Specifications

Volume	150nt
Nucleotides	2'-fluoro ribonucleotides
Bases Quantity	75 x A, C, G, U
5'-Modification	No
Usage	Fully modified RNA synthesis
Shelf Life	1 year
Shelf Life after Activation	1 week
Short-Term Storage	2 months at 2-8°C
Long-Term Storage	-20°C
Scope of Delivery	1 reagent cartridge
Required	Kilobaser one-XT

What's inside?

The cartridge contains all the reagents required for chemical RNA synthesis. This includes the bases A, C, G and U, which are positioned in the center of the cartridge with colored caps. The presence of an excess amount of bases ensures the availability of all four phosphoramidites until the final synthesis.



Phosphoramidite for building 2'-fluoro RNA oligonucleotides

Chemistry

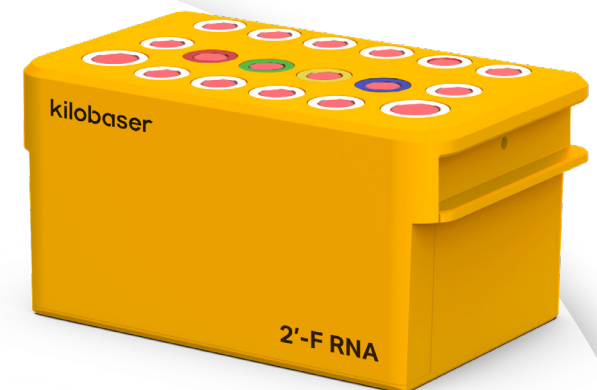
2'-fluoro (2'-F) RNA phosphoramidites contain a fluorine at the 2'-ribose position instead of a 2'-hydroxyl group. Because of their similar sizes, the substitution with fluorine does not affect the strand conformation, but it stabilizes an A-shaped helix during hybridization due to its electronegativity, making a 2'-F RNA/RNA duplex significantly more stable.

Advantages

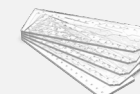
RNA strands synthesized using 2'-F phosphoramidites exhibit improved duplex stability and significantly increased nuclease resistance.

Potential applications

Combining the properties of nuclease resistance and their ability to bind more efficiently to the target sequence, the 2'-F modification is a highly advantageous approach for the development of RNA-affecting therapeutics.



+ Chip Combination



Standard Chip (p.28)

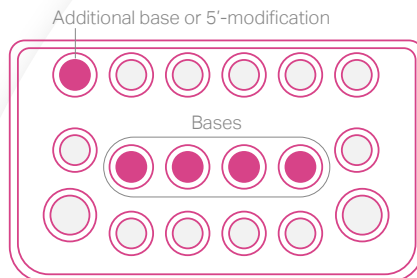
CUSTOMIZED REAGENT CARTRIDGE

Technical Specifications

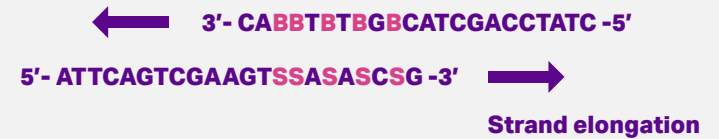
Volume	100 - 150nt
Nucleotides	As requested
Bases Quantity	75 x A, C, G, T/U
5'-Modification	As requested
Usage	Custom modified DNA/RNA
Shelf Life	Depends
Shelf Life after Activation	Depends
Short-Term Storage	Depends
Long-Term Storage	Depends
Scope of Delivery	As requested
Required	Kilobaser one-XT

What's inside?

The cartridge contains all the reagents required for chemical DNA and RNA synthesis, respectively. It will be filled with customized reagents, including the bases in the center of the cartridge as well as a further modification typically positioned in the top left corner.



Strand elongation



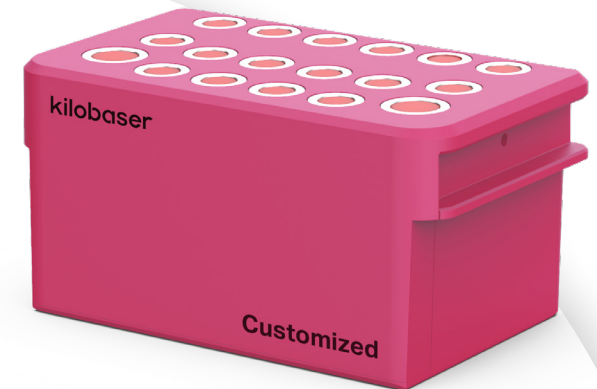
Example: A different base pair was added into the sequence for hybridization

Possible modifications

There are different ways to customize the cartridge according to your needs:

- Replacing the bases
- Adding an additional reagent
 - Adding a 5th base for internal modification
 - Adding a 5'-modification
- Replacing the oxidizing agent to obtain thiolated DNA or RNA oligonucleotides

This cartridge is compatible with various chip types for further modifications. Custom cartridges are freshly prepared for each order and sent out with the corresponding chips. For inquiries about using your own reagents with Kilobaser, please contact us directly for further details.



+ Chip Combination



Depends

STANDARD MICROFLUIDIC CHIP

Technical Specifications

Properties	Single-use; microcolumn incl.
Chip Type	Microfluidic
End Product	Unlabeled DNA oligo
Material	Polymer
Shelf Life	1 year
Short-Term Storage	Dry; room temperature
Long-Term Storage	Dry; room temperature
Scope of Delivery	1 microfluidic chip
Required	Any cartridge; Kilobaser one or Kilobaser one-XT

Heart of the synthesis: the chip

The microfluidic chip provides the reaction chamber as well as channels to transport the reagents. To regulate the reagent flow, gas pressure is applied to the chip membrane. The membrane covers the entire chip and must not be removed.

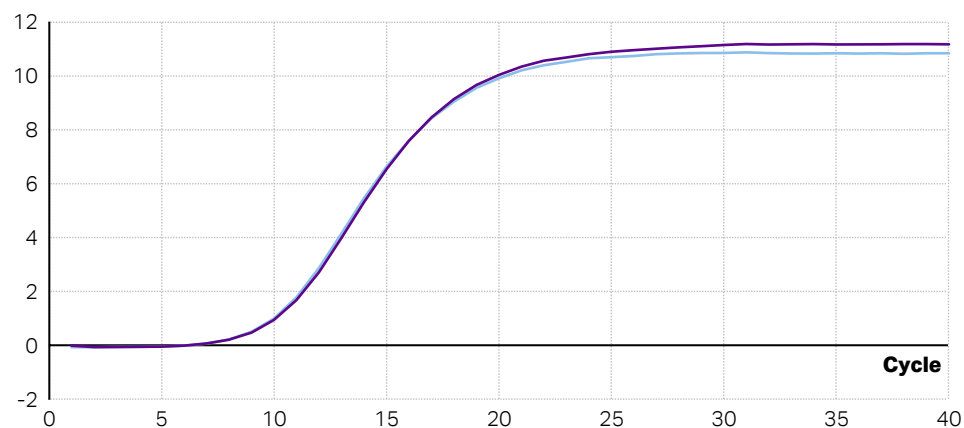
A fresh chip each time

The chip is built for single use to ensure the yield and to avoid cross-contamination with former syntheses.

What can you do with it?

The standard chip is used to yield oligonucleotides without any terminal modifications and can be combined with any cartridge, as it is suitable for both DNA and RNA synthesis.

RFU x 10⁵



● Kilobaser primers ● Service provider primers

Amplification curves of SYBR green qPCR performed with Kilobaser primers (purple) and service provider primers (blue) show nearly identical progress and signal intensity.

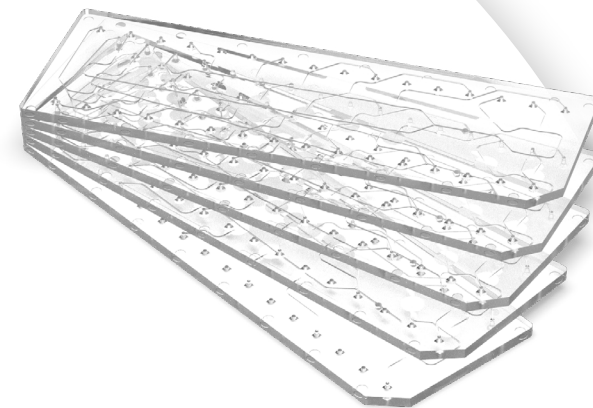
What's in it for you?

A typical application of the standard chip is the synthesis of PCR primers (=unmodified DNA strands). The resulting primers can be applied directly after synthesis **without** any additional **purification**. However, if the desired application requires DNA or RNA of increased purity, we highly recommend the Kilobaser OliPure HIC Purification Kit (p.40).

What is the quality of the synthesized oligonucleotides?

In a direct qPCR comparison, as shown in the plot above, typically no differences can be detected to primers ordered from a service provider.

Custom sample oligos of a desired sequence can be ordered from our webshop to verify the quality of the oligonucleotides we provide.



6-FAM LABEL MICROFLUIDIC CHIP

Technical Specifications

Properties	Single-use; microcolumn incl.
Chip Type	Microfluidic
End Product	5'-6-FAM labeled DNA oligo
Material	Polymer
Shelf Life	1 year
Short-Term Storage	Dry; room temperature
Long-Term Storage	Dry; room temperature
Scope of Delivery	1 microfluidic chip
Required	6-FAM cartridge; Kilobaser one-XT

Heart of the synthesis: the chip

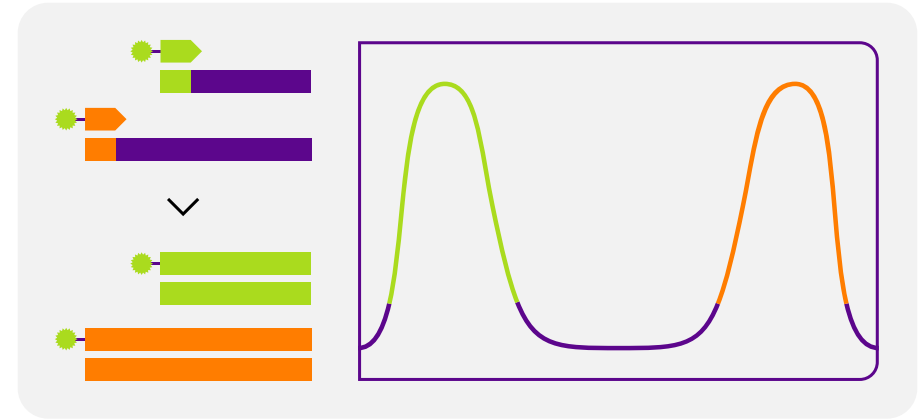
The microfluidic chip provides the reaction chamber as well as channels to transport the reagents. To regulate the reagent flow, gas pressure is applied to the chip membrane. The membrane covers the entire chip and must not be removed.

A fresh chip each time

The chip is built for single use to ensure the yield and to avoid cross-contamination with former syntheses.

What can you do with it?

The 6-FAM label chip is used in combination with the 6-FAM cartridge (p.12) to yield oligonucleotides with the 6-FAM at the 5'-end.



Single-labeled PCR primer for fragment analysis

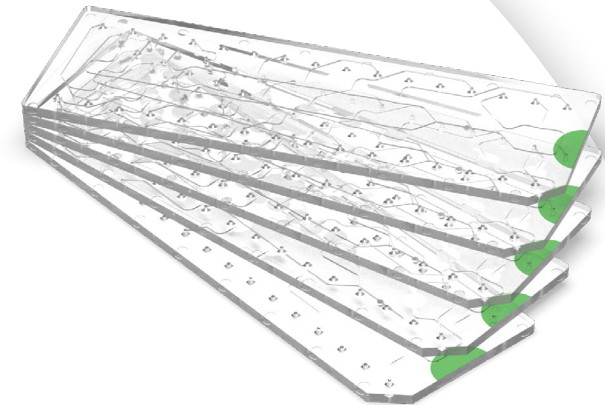
What's in it for you?

A typical application of the 6-FAM label chip is the synthesis of fluorescent PCR primers. These primers can be used for PCR, resulting in PCR amplicons that are labeled with fluorophore. This labeling allows the detection of the PCR amplicons during capillary electrophoresis, as seen in the figure above.

The 6-FAM labeled primers can be applied directly after synthesis without any additional purification. However, if the desired application requires oligonucleotides of increased purity, use the Kilobaser OliPure HIC Purification Kit (p.40).

What is the quality of the synthesized oligonucleotides?

Custom sample oligos of a desired sequence can be ordered from our webshop to verify the quality of the oligonucleotides we provide.



BHQ-1 QUENCHER MICROFLUIDIC CHIP

Technical Specifications

Properties	Single-use; microcolumn incl.
Chip Type	Microfluidic
End Product	5'-6-FAM / 3'-BHQ-1 labeled DNA oligo
Material	Polymer
Shelf Life	6 months
Short-Term Storage	Dry; 2-8°C; dark
Long-Term Storage	Dry; 2-8°C; dark
Scope of Delivery	1 microfluidic chip; OliPure HIC Purification Kit
Required	6-FAM cartridge; Kilobaser one-XT

Heart of the synthesis: the chip

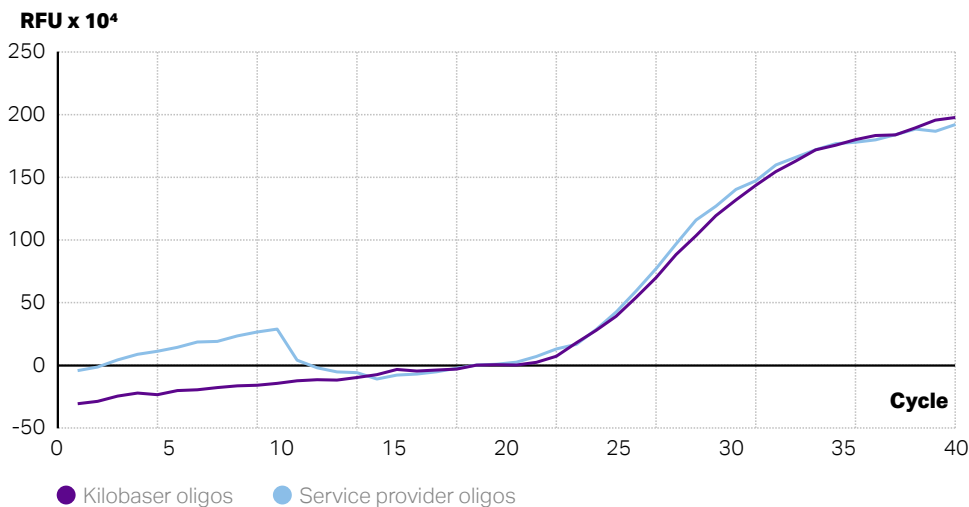
The microfluidic chip provides the reaction chamber as well as channels to transport the reagents. To regulate the reagent flow, gas pressure is applied to the chip membrane. The membrane covers the entire chip and must not be removed.

A fresh chip each time

The chip is built for single use to ensure the yield and to avoid cross-contamination with former syntheses.

What can you do with it?

The BHQ-1 quencher chip is used in combination with the 6-FAM cartridge (p.12) to synthesize dual-labeled oligonucleotides with the quencher at the 3'-end and the 6-FAM at the 5'-end.



Amplification curves of qPCR performed with Kilobaser primer/probe sets (purple) and service provider primer/probe sets (blue) show nearly identical progress and signal intensity.

What's in it for you?

The BHQ-1 quencher chip enables synthesis of dual-labeled oligos, such as TaqMan® probes for qPCR. As non-coupled 6-FAM can interfere with qPCR signal levels, we recommend to purify the probes with the Kilobaser OliPure HIC Purification Kit (p.40).

What is the quality of the synthesized oligonucleotides?

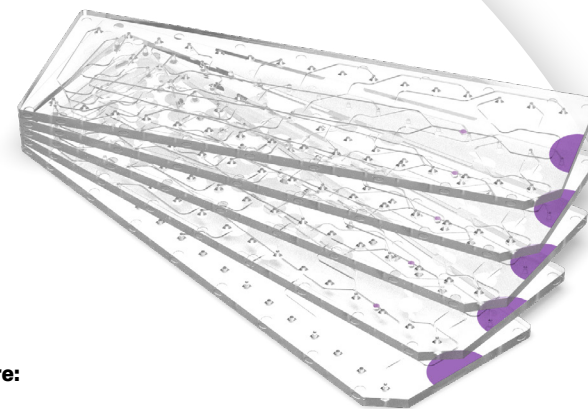
In a typical qPCR reaction, as shown in the figure above, no differences to primers and probes ordered from a service provider can be detected.

Custom sample oligos of a desired sequence can be ordered from our webshop to verify the quality of the oligonucleotides we provide.



Visit our application note here:

<http://oligo.link/application-bhq1>



AMINO MODIFIER C6 MICROFLUIDIC CHIP

Technical Specifications

Properties	Single-use; microcolumn incl.
Chip Type	Microfluidic
End Product	5'-amino C6 labeled DNA oligo
Material	Polymer
Shelf Life	1 year
Short-Term Storage	Dry; room temperature
Long-Term Storage	Dry; room temperature
Scope of Delivery	1 microfluidic chip
Required	Amino Modifier C6 cartridge; Kilobaser one-XT

Heart of the synthesis: the chip

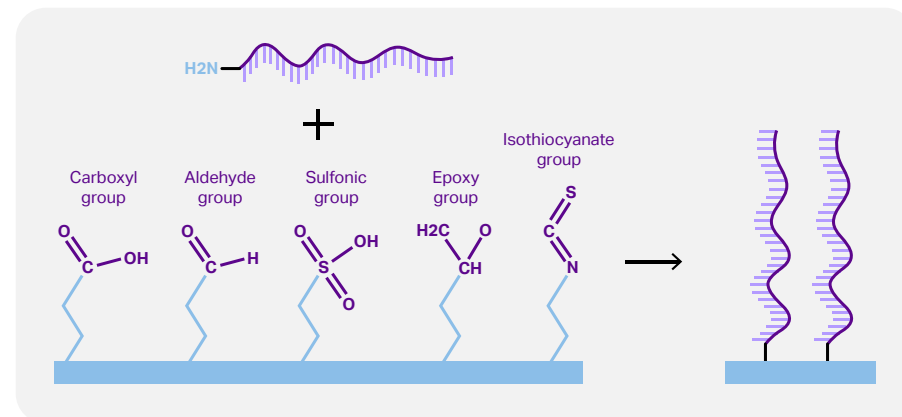
The microfluidic chip provides the reaction chamber as well as channels to transport the reagents. To regulate the reagent flow, gas pressure is applied to the chip membrane. The membrane covers the entire chip and must not be removed.

Use a fresh chip each time!

The chip is built for single use to ensure the yield and to avoid cross-contamination with former syntheses.

What can you do with it?

The Amino Modifier C6 chip is used in combination with the Amino Modifier C6 cartridge (p.14) to synthesize amino-modified DNA oligonucleotides.



Covalent immobilization of amino-modified DNA via different functionalized groups

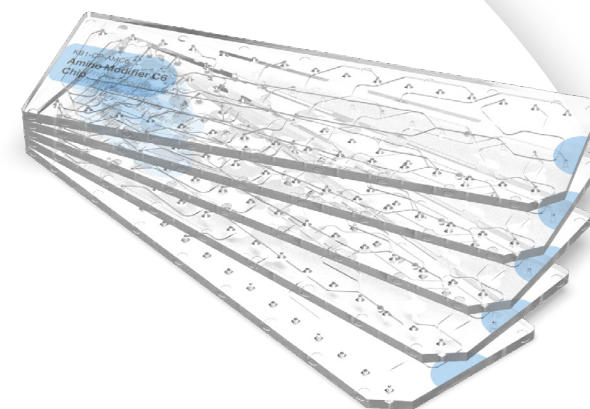
What's in it for you?

The amino-group can react with a wide range of functional groups such as carboxyl, aldehyde, sulfonic, epoxy and isothiocyanate. Such groups can be prepared on surfaces allowing covalent immobilization of amino-modified oligonucleotides as shown in the figure above.

5'-amino C6 labeled DNA oligonucleotides can be applied directly after synthesis. Nonetheless, additional purification with the Kilobaser OliPure HIC Purification Kit (p.40) may improve the results of the experiments.

What is the quality of the synthesized oligonucleotides?

Custom sample oligos of a desired sequence can be ordered from our webshop to verify the quality of the oligonucleotides we provide.



BIOTIN LABEL MICROFLUIDIC CHIP

Technical Specifications

Properties	Single-use; microcolumn incl.
Chip Type	Microfluidic
End Product	5'-biotin labeled DNA oligo
Material	Polymer
Shelf Life	1 year
Short-Term Storage	Dry; room temperature
Long-Term Storage	Dry; room temperature
Scope of Delivery	1 microfluidic chip
Required	Biotin cartridge; Kilobaser one-XT

Heart of the synthesis: the chip

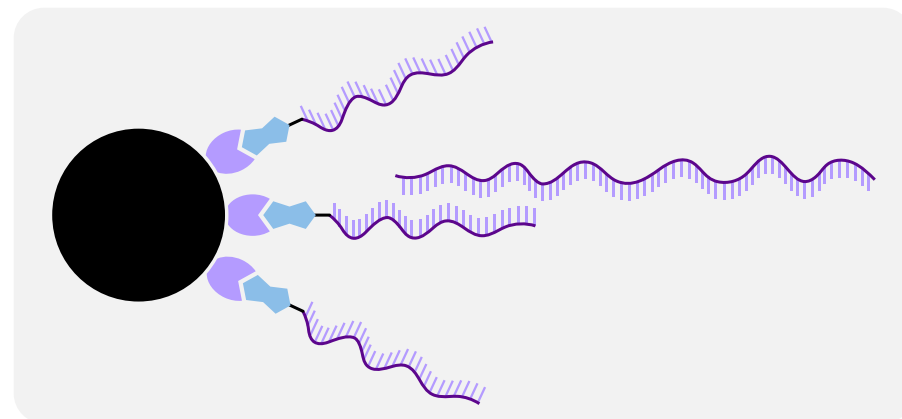
The microfluidic chip provides the reaction chamber as well as channels to transport the reagents. To regulate the reagent flow, gas pressure is applied to the chip membrane. The membrane covers the entire chip and must not be removed.

Use a fresh chip each time!

The chip is built for single use to ensure the yield and to avoid cross-contamination with former syntheses.

What can you do with it?

The Biotin label chip is used in combination with the Biotin cartridge (p.16) to synthesize 5'-biotinylated DNA oligonucleotides.



Biotin-labeled DNA on magnetic beads bind target DNA strands

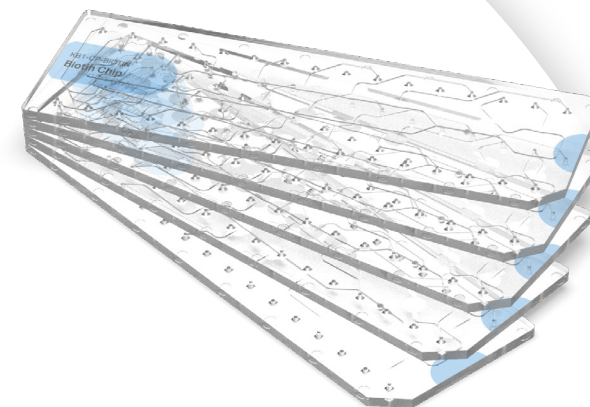
What's in it for you?

Biotin binds highly specific to streptavidin or avidin, which can be prepared on the surface of e.g. multi-well plates or magnetic beads, allowing the immobilization of biotinylated oligonucleotides. The immobilized oligonucleotides can still hybridize with complementary strands, as shown in the figure above. This hybridization can be used for DNA screening and purification.

5'-biotin labeled DNA oligonucleotides can be applied directly after synthesis. However, an additional purification with Kilobaser OliPure HIC Purification Kit (p.40) might improve the results of the experiments.

What is the quality of the synthesized oligonucleotides?

Custom sample oligos of a desired sequence can be ordered from our webshop to verify the quality of the oligonucleotides we provide.



PHOSPHORYLATION MICROFLUIDIC CHIP

Technical Specifications

Properties	Single-use; microcolumn incl.
Chip Type	Microfluidic
End Product	5'-phosphorylated DNA oligo
Material	Polymer
Shelf Life	1 year
Short-Term Storage	Dry; room temperature
Long-Term Storage	Dry; room temperature
Scope of Delivery	1 microfluidic chip
Required	Phosphorylation cartridge; Kilobaser one-XT

Heart of the synthesis: the chip

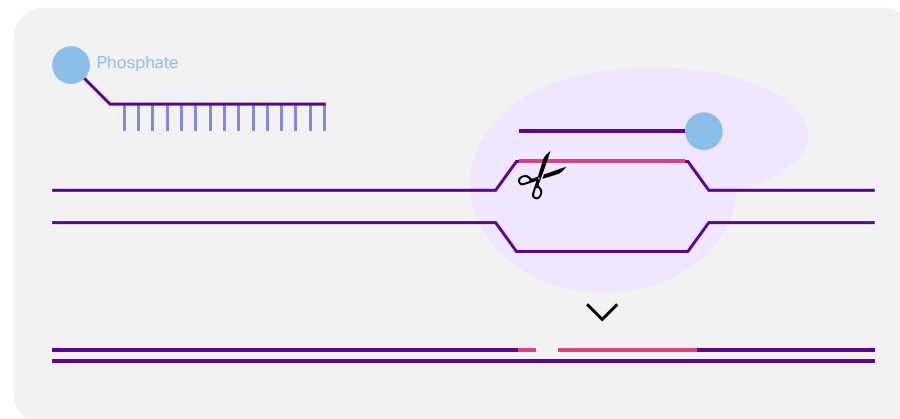
The microfluidic chip provides the reaction chamber as well as channels to transport the reagents. To regulate the reagent flow, gas pressure is applied to the chip membrane. The membrane covers the entire chip and must not be removed.

Use a fresh chip each time!

The chip is built for single use to ensure the yield and to avoid cross-contamination with former syntheses.

What can you do with it?

The Phosphorylation chip is used in combination with the Phosphorylation cartridge (p.18) to synthesize 5'-phosphorylated DNA oligonucleotides.



Phosphorylated oligonucleotide guides endonuclease

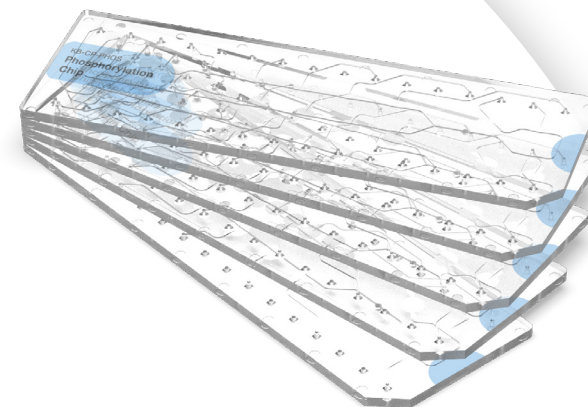
What's in it for you?

In ligation reactions, the ligase enzyme can only connect two strands efficiently if the phosphate group is present. 5'-phosphorylated oligos are directly suitable for ligation. Another application are prokaryotic argonaute endonucleases. Phosphorylated oligos are applied as guides to cut DNA strands at a desired site, as shown in the figure above. Oligos made with this chip type are ideally suited for cutting and ligation in vector editing.

The resulting oligos can be applied directly after synthesis without any additional purification. If the desired application does require DNA or RNA of increased purity, Kilobaser OliPure HIC Purification Kit (p.40) allows for quick and convenient purification.

What is the quality of the synthesized oligonucleotides?

Custom sample oligos of a desired sequence can be ordered from our website to verify the quality of the oligonucleotides we provide.



OliPure HIC PURIFICATION KIT

Technical Specifications

Properties	HIC column based oligonucleotide purification
Throughput	20µL – 120µL sample volume
Min Oligo Length	12nt
Max Oligo Concentration	250ng/µL
Recovery Rate	75% (±5%)
Shelf Life	1 year
Storage	2-8°C
Application	Purification of oligonucleotides after synthesis or post-synthesis modifications
Scope of Delivery	10 x Spin-down Tubes with HIC column; 1 x Instruction
Required	Microcentrifuge (fixed-angle or swing-out bucket rotors)

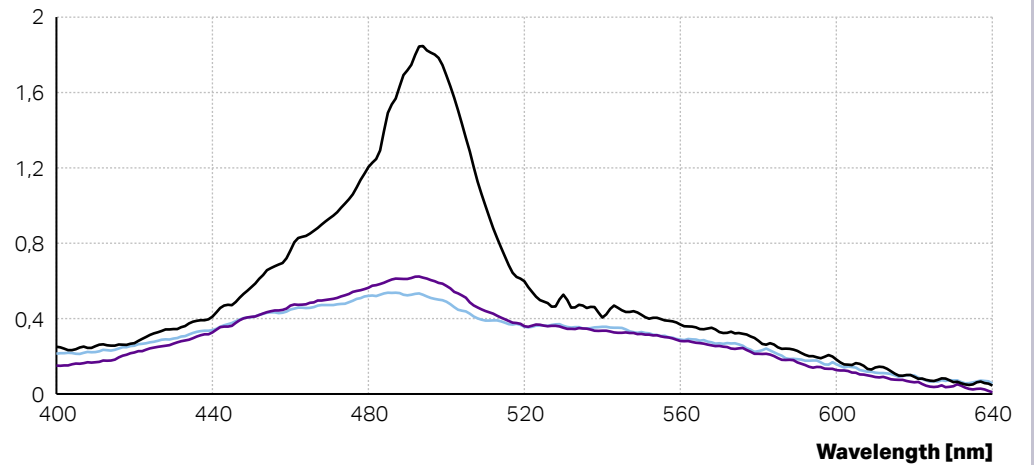
What do you get?

The OliPure HIC Purification Kit is a hydrophobic interaction chromatography (HIC) purification column that utilizes the properties of phenyl agarose to bind impurities (e.g.: salt, unbound dyes). Oligonucleotides pass directly through the column in a single spin-down.

What can you do with it?

The OliPure HIC Purification Kit is optimized for the purification of oligonucleotides synthesized with a Kilobaser device. It works for both DNA and RNA oligonucleotides and thus with all our cartridges. If you plan to use the purification kit for other samples, contact us for support.

Absorption [OD]



● Unpurified Kilobaser probe ● Purified Kilobaser probe ● Service provider probe

Absorbance spectra of three double-labeled (6-FAM+BHQ-1) DNA probes at the same concentration, but purified in different ways: probe synthesized with Kilobaser one-XT unpurified (black) and purified with Kilobaser OliPure HIC Purification Kit (purple) and a HPLC purified probe from a service provider (blue). The unpurified probe shows the highest signal at 495nm, indicating unbound dye from oligonucleotide synthesis. Purification of the probe using the OliPure HIC Purification Kit reduces unbound 6-FAM to the same low levels seen in HPLC-purified probes.





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**UNLOCKING THE POWER
OF DNA & RNA SYNTHESIS FOR ALL**
