# Synthesis of oligonucleotides

In GENERI BIOTECH, we synthesize oligonucleotides using polystyrene columns (Highly cross-linked polystyrene bead support). Compared to the commonly used CPG support, oligonucleotides synthesized in this way have a very low proportion of short truncated chains ("shortmers").

Our regular manufacturing process always consists of a standard purification process (i.e. desalting, removal of chemical impurities). Oligonucleotides of common lengths (up to 40 bases) are of such high quality that they do not require further purification when intended for standard applications in molecular biology.

## Available scales of synthesis

20 nmol, 40 nmol, 200 nmol, 1 µmol and 10 µmol.
The price of oligonucleotides is the price of one nucleotide multiplied by the number of nucleotides in the chain.

## Length of chain

Prevalent range of lengths is 2 –99 bases. Synthesis of longer chains should be consulted prior to ordering.

## Degeneration

Oligonucleotides can contain degeneration at any position in a chain. There are two basic possibilities how to achieve a degenerate site: by a mix of nucleotides or by implementing inosine. Implementing inosine at the 3´ or 5´end: see list of modifications.

| Cat.No. | Product | Unit |
|---|---|---|
| 1100 | Inosin | pc. |

## Purification

If a higher purity of final product is still required, we provide 2 types of purification:

- **OPC purification (Oligonucleotide Purification Cartridge** - in addition to chemical impurities (surplus of salts, protecting moieties), shorter truncated chains are removed from the resulting product. The purification of this type is sufficient for most applications generally used.
- **HPLC purification** - oligonucleotide is efficiently separated from impurities and sequences of false lengths. HPLC purification results in an oligonucleotide of high purity convenient even for demanding applications.

| Cat.No. | Product | Unit |
|---|---|---|
| 1400 | OPC purification | chain |
| 1401 | HPLC purification | chain |

*If a purification is ordered, an additional fee is charged for each purified oligonucleotide.*

## Quality control

The quality of oligonucleotides is controlled using weight analysis with MALDI-TOF technique or a combination of MALDI-TOF and HPLC chromatography.
When a customer orders HPLC quality control, every product so controlled is accompanied by an appropriate certificate of quality control.

| Cat.No. | Product | Unit |
|---|---|---|
| 1402 | HPLC quality control | chain |

*If HPLC quality control is ordered, an additional fee is charged for each controlled oligonucleotide.*

## Product stability

We recommend that you store dried oligonucleotides at a temperature of 4°C or lower. After oligonucleotides are dissolved we recommend storage at -20°C, preferably in aliquots.

Fluorescently labeled oligonucleotides and probes should not be exposed to direct light.

We guarantee full function of oligonucleotides for two years after date of synthesis provided that they were stored according to recommendations.

## Final product

The quantity of oligonucleotides is determined through UV spectrophotometry and expressed in nanomoles, optical units and micrograms. Oligonucleotides are usually delivered in a dried state. However, some of them can be delivered in a solution for technological reasons.

## Stock products

In addition to custom synthesis, we hold some frequently used oligonucleotides in stock:

| Cat.No. | Product | Unit |
|---|---|---|
| 1070 | in-stock oligo: random hexamers, 20 nmol | pc. |
| 1071 | in-stock oligo: random hexamers (protected), 20 nmol | pc. |