

Synthesis Reagents

for automated
oligonucleotide
synthesis



*excellence
made possible*





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oligonucleotide synthesis

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High Quality Reagents

emp BIOTECH has been manufacturing high quality reagents for oligonucleotide synthesis since 2002. Starting with BMT activator, we have slowly expanded our portfolio to include deblocking, oxidizer, capping, solvent mixtures and other specialty reagents. In addition, *emp BIOTECH* provides a full range of EZDry moisture traps, post-synthetic labeling, columns and resins for oligo purification.

QUALITY

ISO 9001:2015 certified and working under compliance with the highest standards in the industry, *emp BIOTECH* offers fully documented reagents ranging in volume from 100 mL to 1400 liters.

emp BIOTECH guarantees:

- Accreditation to a recognized ISO 9001:2015 standard and certified by TÜV Rheinland.
- A quality system that emphasizes process control, traceability and product performance.
- A quality system that is open and auditable and continually updated in response to customer feedback

SERVICE

We work individually with each of our clients to assess and meet their individual quality requirements. We deliver on schedule and in the size and quantity agree upon. Quality assurance, transparent operating procedures, and change control are all part of the way we work. We aim to be a supportive partner for our clients in every way possible.

MADE IN BERLIN

emp BIOTECH has two manufacturing facilities, one in Berlin-Tempelhof and the other in Berlin-Adlershof, a brand new state-of-the-art mixing and filling plant.

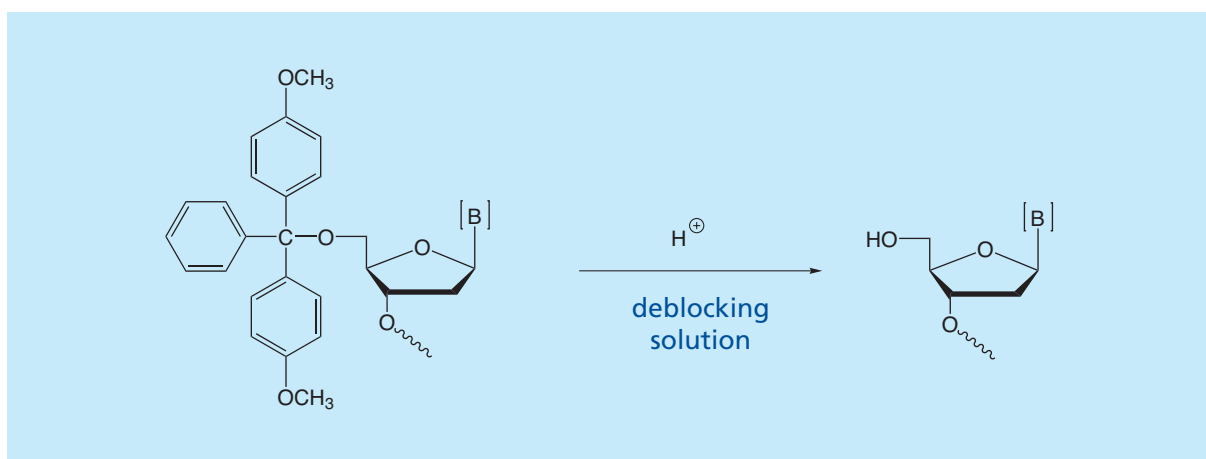
Our facilities include:

- Industrial filling stations
- Small scale production up to 200 L drums (Berlin-Tempelhof)
- Larger scale production up to 1400 L drums (Berlin-Adlershof)



Deblocking / Detritylation

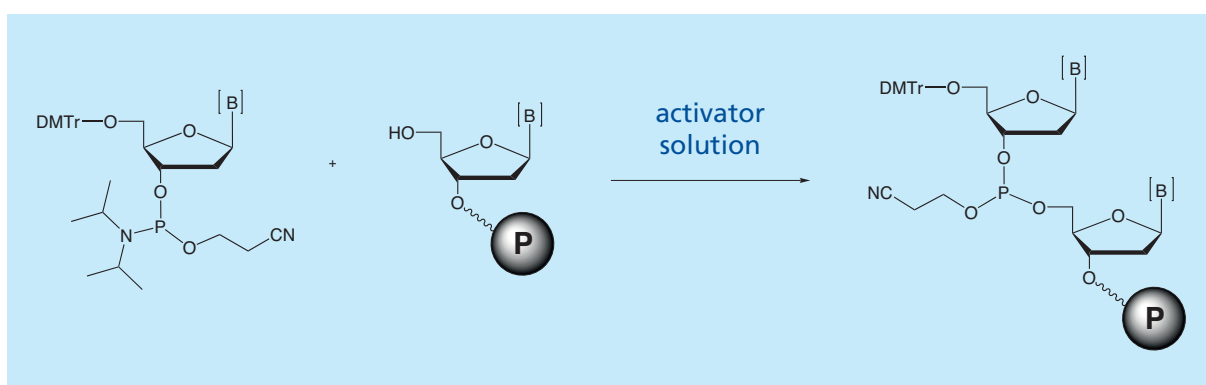
Deblocking solutions, used for the cleavage of the 5'-DMTr group at the last building block of nucleotide chain, can consist either of dichloroacetic or trichloroacetic acid in dichloromethane or toluene. Our Hyacinth Deblocking solution (3 % dichloroacetic acid in toluene at <30 ppm water) is applicable for the syntheses of high quality, large scale oligonucleotides.



Product	Order No.	Unit Size
3 % Dichloroacetic Acid in Methylene Chloride	NC-0401-N002.5-001	2.5 L, GL45 thread
	NC-0401-N004.0-001	4 L, 38-430 thread
Hyacinth Deblocking Reagent 3 % Dichloroacetic Acid in Toluene (water content \leq 30 ppm)	NC-0402-N002.5-001	2.5 L, GL45 thread
	NC-0402-N004.0-001	4 L, GL45 thread
3 % Trichloroacetic Acid in Methylene Chloride	NC-0404-N004.0-001	4 L, 38-430 thread
5 % Dichloroacetic Acid in Toluene (for ÄKTA oligopilot™)	NC-0406 -N002.5-001	2.5 L, GL45 thread
	NC-0406 -N004.0-001	4 L, GL45 thread
10 % Dichloroacetic Acid in Toluene	NC-0409 -N002.5-001	2.5 L, GL45 thread

Activators

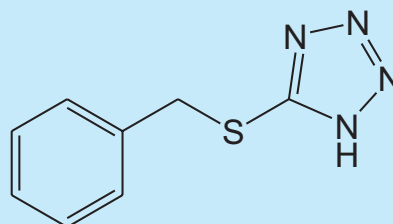
emp BIOTECH manufactures three different activators for use on various DNA and RNA synthesizers. They are available either in dry solid form for dissolution into anhydrous acetonitrile or as a prepared solution of various molarities.



Hyacinth BMT

Hyacinth BMT activator (also known as 5-Benzylmercapto-1H-tetrazole or BTT) demonstrates important advantages in the syntheses of oligonucleotides:

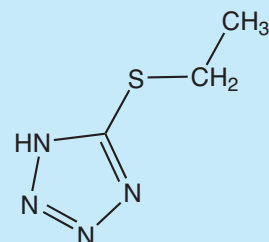
- Coupling efficiencies of 99 % with impeccable quality
- Lower percentage of n-1 sequences
- Dramatic reduction of coupling times to under 3 minutes in RNA syntheses
- Efficient RNA synthesis using 50 % or less TBDMS, TOM[®] or ACE[®] monomer
- Excellent batch to batch consistency for reproducible and stable oligo production



Product	Order No.	Unit Size
BMT Crystal, 5-Benzylmercaptotetrazole CAS# 21871-47-6	NC-0101-E100.0-001	100 g
	NC-0101-F001.0-001	1000 g
0.25 M Hyacinth BMT Solution (BMT in anhydrous Acetonitrile)	NC-0102-M450.0-001	450 mL, 28-400 thread
	NC-0102-N002.5-001	2.5 L, GL45 thread
0.3 M Hyacinth BMT Solution (BMT in anhydrous Acetonitrile)	NC-0103-M450.0-001	450 mL, 28-400 thread
	NC-0103-N001.0-001	1 L, GL45 thread
	NC-0103-N002.5-001	2.5 L, GL45 thread

ETT

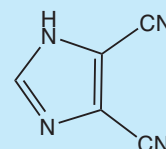
5-Ethylthiotetrazole (ETT) is an efficient activator for use in chemical synthesis of either DNA or RNA. ETT has excellent performance with respect to coupling times, coupling efficiency, consumption of phosphoramidites and reduction of n-1 impurities. ETT can be used for RNA synthesis with TBDMS, O-Methyl, TOM[®] or ACE[®] amidites.



Product	Order No.	Unit Size
ETT Crystal (5-Ethylthiotetrazole) CAS# 89797-68-2	NC-0107-E100.0-001	100 g
	NC-0107-F001.0-001	1000 g
0.25 M 5-Ethylthiotetrazole Solution (ETT in anhydrous Acetonitrile)	NC-0108-M450.0-001	450 mL, 28-400 thread
	NC-0108-N002.5-001	2.5 L, GL45 thread
0.5 M 5-Ethylthiotetrazole Solution (ETT in anhydrous Acetonitrile)	NC-0109-N002.5-001	2.5 L, GL45 thread
0.6 M 5-Ethylthiotetrazole Solution (ETT in anhydrous Acetonitrile)	NC-0110-N002.5-001	2.5 L, GL45 thread

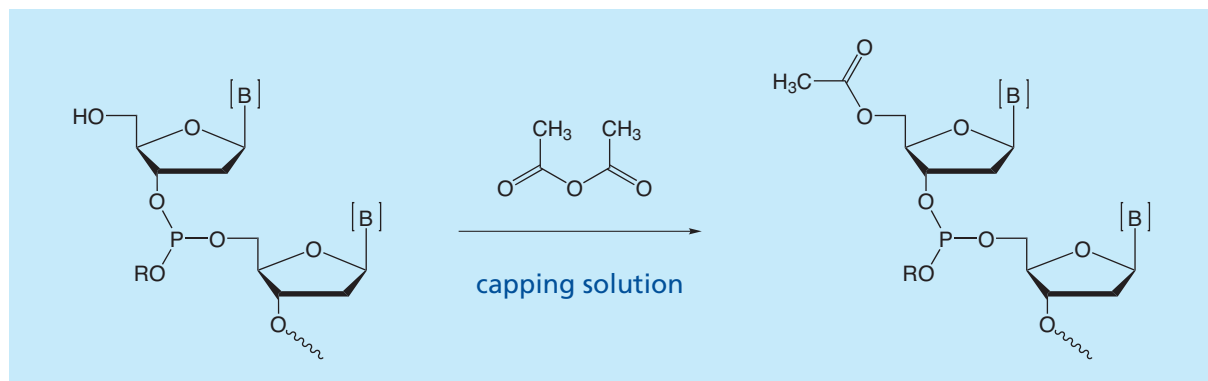
DCI

4,5-Dicyanoimidazole (DCI) is an efficient activator for use in chemical synthesis of DNA.



Product	Order No.	Unit Size
0.25 M DCI Solution (4,5-Dicyanoimidazole in anhydrous Acetonitrile)	NC-0105-M450.0-001	450 mL, 28-400 thread
	NC-0105-N002.5-001	2.5 L, GL45 thread
0.5 M DCI Solution (4,5-Dicyanoimidazole in anhydrous Acetonitrile)	NC-0113-N002.5-001	2.5 L, GL45 thread

Capping Reagents



For each synthesis cycle, up to 1 to 2 % of free 5'-hydroxy groups remain after the phosphoramidite coupling step has been completed. By running a subsequent „Capping“ step using an anhydride, these free hydroxyl groups are converted to acetates and are hindered from further chain elongation and formation of long oligonucleotides with incorrect sequences. For optimal acetylation, a solution of acetic anhydride in Tetrahydrofuran or acetonitrile (Capping A) will be mixed *in situ* during reaction with a catalytic acting solution of N-methylimidazole (Capping B). Additives such as pyridine and lutidine function as mild bases to enhance the efficiency of the capping reaction.

Capping A

Product	Order No.	Unit Size
Capping A (Tetrahydrofuran / 2,6-Lutidine / Acetic Anhydride, V / V / V = 80 : 10 : 10)	NC-0701-M450.0-001	450 mL, 28-400 thread
	NC-0701-N002.5-001	2.5 L, GL45 thread
Capping A, 10 % Acetic Anhydride in THF (Tetrahydrofuran / Acetic Anhydride, V / V = 90 : 10)	NC-0702-M450.0-001	450 mL, 28-400 thread
	NC-0702-N002.5-001	2.5 L, GL45 thread
Capping A, 20 % NMI in ACN, for ÄKTA oligopilot™ (Acetonitrile / N-methylimidazole, V / V = 80 : 20)	NC-0705-N001.0-001	1 L, GL45 thread
	NC-0705-N002.5-001	2.5 L, GL45 thread
Capping A, Ultramild (Tetrahydrofuran / Pyridine / Phenoxyacetic Anhydride, (V / V / V = 85 : 10 : 5)	NC-0707-N002.5-001	2.5 L, GL45 thread

Capping A

Product	Order No.	Unit Size
Capping A, 25 % Acetic Anhydride in ACN (Acetonitrile / Acetic Anhydride, V / V = 75 : 25)	NC-0708-M450.0-001	450 mL, 28-400 thread
	NC-0708-N002.5-001	2.5 L, GL45 thread

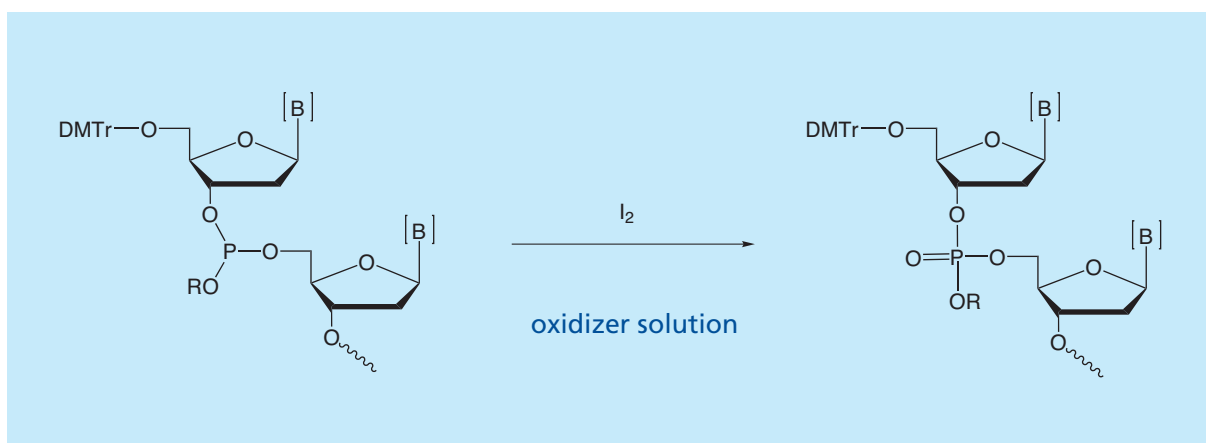
Capping B

Product	Order No.	Unit Size
Capping B, 16 % NMI in THF (Tetrahydrofuran / N-methylimidazole, V / V = 84 : 16)	NC-0801-M450.0-001	450 mL, 28-400 thread
	NC-0801-N002.5-001	2.5 L, GL45 thread
Capping B (THF / N-methylimidazole / Pyridine, V / V / V = 80 : 10 : 10)	NC-0803-N002.5-001	2.5 L, GL45 thread
Capping B1 (40 % acetic anhydride in acetonitrile, for ÄKTA oligopilot™)	NC-0806-M500.0-001	500 mL*, GL45 thread
	NC-0806-N001.2-001	1.25 L**, GL45 thread
	NC-0806-N002.5-001	2.5 L, GL45 thread
Capping B2 (60 % lutidine in acetonitrile, for ÄKTA oligopilot™)	NC-0807-M500.0-001	500 mL*, GL45 thread
	NC-0807-N001.2-001	1.25 L**, GL45 thread
	NC-0807-N002.5-001	2.5 L, GL45 thread
Capping B (Acetonitrile / 2,6-Lutidine / N-methylimidazole, V / V / V = 50 : 30 : 20)	NC-0808-M450.0-001	450 mL, 28-400 thread
	NC-0808-N002.5-001	2.5 L, GL45 thread
Solvent Mix Pyridine in ACN (V / V = 60 : 40)	NC-0612-N002.5-001	2.5 L, GL45 thread

* delivered in 1 L bottle, ** delivered in 2.5 L bottle

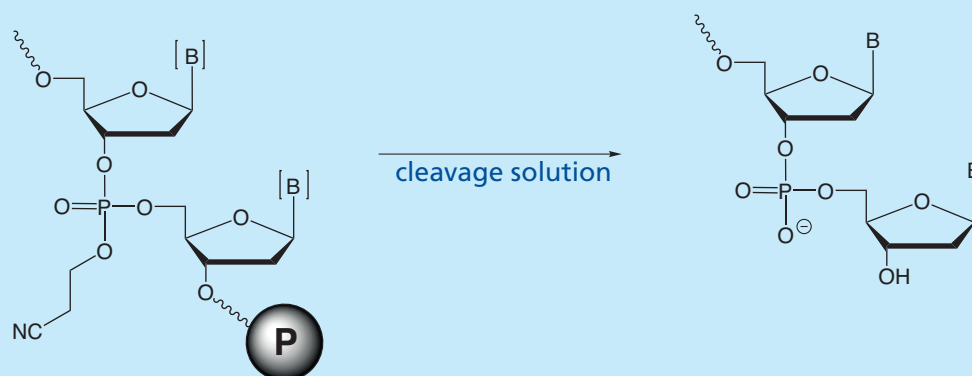
Oxidizer

Oxidizer solutions promote the oxidation of trivalent phosphotriester into pentavalent phosphate triester using iodine as a mild oxidizing agent. They are available in standard 0.02 M and 0.05 M iodine concentrations with different mixtures of Tetrahydrofuran, pyridine and water. Custom mixtures are also available. The Hyacinth Oxidizer solution [0.05 M iodine in pyridine / water (V / V = 90: 10)] is applicable for the syntheses of high quality, large-scale oligonucleotides.



Product	Order No.	Unit Size
Hyacinth Oxidizer 0.05 M Iodine in Pyridine / Water (V / V = 90: 10)	NC-0502-M450.0-001	450 mL, 28-400 thread
	NC-0502-N001.0-001	1 L, GL45 thread
	NC-0502-N002.5-001	2.5 L, GL45 thread
0.02 M Iodine in THF / Pyridine / Water (V / V / V = 66:22:12)	NC-0503-N002.5-001	2.5 L, GL45 thread
0.02 M Iodine in THF / Pyridine / Water (V / V / V = 90.6:0.4:9)	NC-0504-M450.0-001	450 mL, 28-400 thread
	NC-0504-N002.5-001	2.5 L, GL45 thread
0.02 M Iodine in THF / Pyridine / Water (V / V / V = 89.6:0.4:10)	NC-0506-N002.5-001	2.5 L, GL45 thread
0.02 M Iodine in THF / Pyridine / Water (V / V / V = 70:20:10)	NC-0507-N002.5-001	2.5 L, GL45 thread

Cleavage & Deprotection



Cleavage of the oligonucleotide from its solid support and subsequent removal of all protecting groups from the nucleobases and phosphates close the cycle of automated oligonucleotide synthesis and bring it to completion. For this purpose, three different Cleavage solutions from **emp BIOTECH** are available. The correct choice will depend on your requirements for standard, fast or mild cleavage conditions.

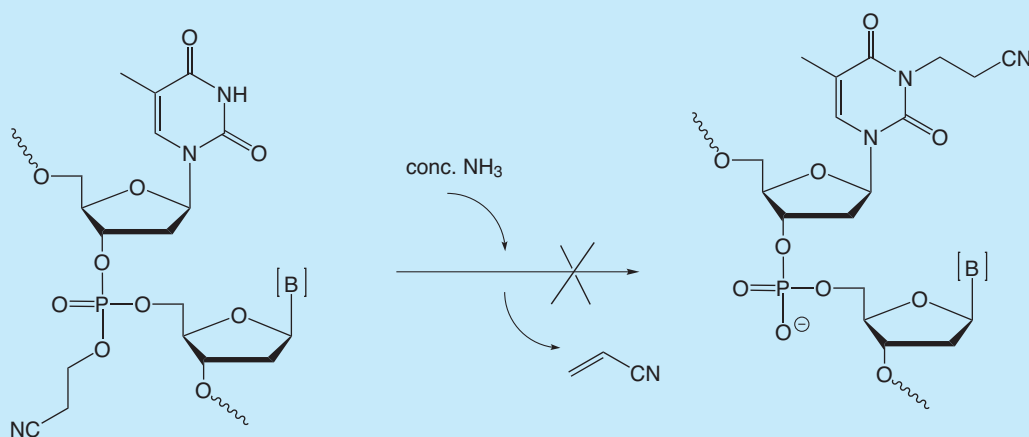
Standard: Usage of one volume of conc. ammonium hydroxide ($\geq 28\%$) under sealed conditions appropriate for removal of the protecting groups of the nucleobases

Fast: Usage of one volume of AMA under sealed conditions at $65\text{ }^{\circ}\text{C}$ for 10 min

Mild: Usage of the required volume of Deprotection, Ultramild under sealed conditions for 8 h at room temperature

Product	Order No.	Unit Size
Ammonium Hydroxyde, concentrated (30-33 %)	NC-0901-BULK	customised, MOQ applies
AMA (conc. Ammonia / 40 % Aqueous Methylamine, V / V = 50 : 50)	NC-0902-M450-001	450 mL, 28-400 thread
	NC-0902-N002.5-001	2.5 L, GL45 thread
Deprotection, Ultramild (Ammonium Hydroxide / Ethanol, V / V = 75 : 25)	NC-0904-BULK	customised, MOQ applies

CE- β -Elimination



Alkylation of the N3-position of thymidine by acrylonitrile, which is liberated during β -elimination of the cyanoethyl group from the phosphates, is a well-known side reaction during simultaneous cleavage of the protecting groups and the oligonucleotide from the support.

This side reaction can be avoided by use of diethylamine in acetonitrile for the β -elimination. The oligonucleotide is subsequently cleaved from the support using any standard cleavage conditions.

Product	Order No.	Unit Size
20 % Diethylamine in Acetonitrile	NC-0302-N001.0-001	1 L, GL45 thread
	NC-0302-N002.5-001	2.5 L, GL45 thread

Sulphurizing Reagents



The phosphite triester formed in the coupling step can be converted to the corresponding phosphorothioate triester by treatment with 0.2 M solution of phenylacetyl disulfide (PADS) in acetonitrile and 3-picoline (V / V = 1 : 1). Typically, a 1.5-column volume of PADS solution is used, and sulphurization is complete within 3 minutes, at which time excess reagent is recovered from the reaction vessel by washing with acetonitrile. An alternative sulfur-transfer reagent is 3-amino-1,2,4-dithiazole-5-thione (ADTT, also known as Xanthane Hydride) which is suitable for solid-phase synthesis.

Product	Order No.	Unit Size
Phenylacetyl Disulfide (PADS), CAS# 15088-78-5	NC-0304-E005.0-001	5 g
	NC-0304-E025.0-001	25 g
	NC-0304-E500.0-001	500 g
ADTT (5-Amino-3H-1,2,4-dithiazole-3-thione, Xanthane Hydride), CAS# 6846-35-1	NC-0305-E100.0-001	100 g
	NC-0305-E500.0-001	500 g

Solvents & Solvent Mixtures

Product	Order No.	Unit Size
Acetonitrile (Water content \leq 20 ppm)	NC-0602-N002.5-001	2.5 L, GL45 thread
	NC-0602-N004.0-G45	4 L, GL45 thread
	NC-0602-N004.0-U38	4 L, US38 thread
Pyridine (Water content \leq 30 ppm)	NC-0604-N002.5-001	2.5 L, GL45 thread
Acetonitrile (Water content \leq 10 ppm)	NC-0609-M100.0-001	100 mL, 20 mm crimp/septum
	NC-0609-N002.5-001	2.5 L, GL45 thread
	NC-0609-N004.0-G45	4 L, GL45 thread
	NC-0609-N004.0-U38	4 L, US38 thread
Solvent Mix Pyridine in ACN (V / V = 60: 40)	NC-0612-N002.5-001	2.5 L, GL45 thread

Request for
other pack sizes
or compositions

call us at
+49 30 94892201
for orders or
requests

Sustainable Packaging



As a global manufacturer of high quality reagents, we apply our demanding quality and safety standards not only to our reagents themselves, but also to the containers we supply them in. That's why we continuously improve packaging and tailor-made solvent withdrawal systems that meet the requirements of our customers.

Our state-of-the-art solvent management solutions help to improve your materials management, to minimize the environmental impact of packaging waste and health risks for your employees, and to implement more cost-effective disposal processes.

Today **emp BIOTECH** has two manufacturing facilities, one in Berlin-Tempelhof for small scale production up to 200 L drums and the other in Berlin-Adlershof for larger scale production up to 1400 L drums.

returnable
packaging



Packaging Specifications

Glass bottles



450 mL

28-400 thread

1 L

GL45 thread

2.5 L

GL45 thread

4 L

GL45 thread

4 L

38-430 thread

Description	Size
Amber glass bottle with 20 mm crimp/septum	100 mL
Amber glass bottle with 28-400 thread	450 mL
Amber glass bottle with GL45 thread	1 L
Amber glass bottle with GL45 thread	2.5 L
Amber glass bottle with GL45 thread	4 L
Amber glass bottle with 38-430 thread (US38)	4 L

Packaging Specifications

Stainless steel drums

- 1.4404 (AISI 316L) for corrosive and non-corrosive reagents with UN 1A1W/X2.0/900 certification
- Standard connection: G2 Tri-Sure Closure with PTFE seal.
- Operating pressure: up to 2.0 bar

returnable packaging



20 L



30 L



50 L



100 L



200 L



400 L

Order No.	Description	Volume
NC-1202-Z001.0-001	1.4404 stainless steel drum, G2 2" Tri-Sure closure, PTFE seal	20 L
NC-1203-Z001.0-001	1.4404 stainless steel drum, G2 2" Tri-Sure closure, PTFE seal	30 L
NC-1204-Z001.0-001	1.4404 stainless steel drum, G2 2" Tri-Sure closure, PTFE seal	50 L
NC-1205-Z001.0-001	1.4404 stainless steel drum, G2 2" Tri-Sure closure, PTFE seal	100 L
NC-1206-Z001.0-001	1.4404 stainless steel drum, G2 2" Tri-Sure closure, PTFE seal	200 L
NC-1207-Z001.0-001	1.4404 stainless steel drum with nitrogen connector type M and liquid connector type K, dip pipe included	400 L

Drum accessory

Order No.	Description
NC-1101-Z001.0-001	Drum Dispensing Head Unit (DDHU) with 2 PTFE O-rings
NC-1102-Z001.0-001	Extraction Tube for 30L-drums, fits with DDHU, 1.4404 steel, inner diameter: 2", outer diameter: RD52 x 1/6, with cap and PTFE seals
NC-1103-Z001.0-001	Extraction Tube for 50L-drums, fits with DDHU, 1.4404 steel, inner diameter: 2", outer diameter: RD52 x 1/6, with cap and PTFE seals
NC-1104-Z001.0-001	Extraction Tube for 200L-drums, fits with DDHU, 1.4404 steel, inner diameter: 2", outer diameter: RD52 x 1/6, with cap and PTFE seals
NC-1105-Z001.0-001	Inlet/Outlet Drum Dispensing System for 30L-drums; 1.4404 steel, with nitrogen connector type M and liquid connector type K, with PTFE seals
NC-1106-Z001.0-001	Inlet/Outlet Drum Dispensing System for 50L-drums; 1.4404 steel, with nitrogen connector type M and liquid connector type K, with PTFE seals
NC-1107-Z001.0-001	Inlet/Outlet Drum Dispensing System for 200L-drums; 1.4404 steel, with nitrogen connector type M and liquid connector type K, with PTFE seals

We will deliver any requested packing size and customized packaging to suit your specific requirements.



Molecular Sieves & Moisture Traps

- for maintaining water-free conditions in anhydrous solvents and reagents
- for removal of water from solvents

EZ Dry Moisture Traps are used for efficient removal of water from solvents and reagents. The traps will maintain anhydrous conditions of 30 ppm or less while resisting increases in water content due to routine or repeated opening of reagent containers.

EZ Dry Moisture Traps ensure your phosphoramidite and activator solutions remain dry and water-free from the first day to the last day of use. Each EZ DRY batch is tested according to strict quality assurance specifications. This enables optimal coupling conditions and high quality nucleic acids.

EZ Dry Moisture Traps are vacuum sealed, fully activated, and ready-to-use. The pouch material is inert to acetonitrile, pyridine and toluene. Eight standard sizes are available.

Molecular Sieves

Product	Order No.	Unit Size
Trockite Molecular Sieves, spheres, 2.0 – 3.5 mm, 3Å pore size, dust reduced	HR-0101-E500.0-001	500 g
	HR-0101-F001.0-001	1 kg
Trockite Molecular Sieves, spheres, 2.0 – 3.5 mm, 3Å pore size	HR-0102-E500.0-001	500 g
	HR-0102-F001.0-001	1 kg

EZ Dry Moisture Traps

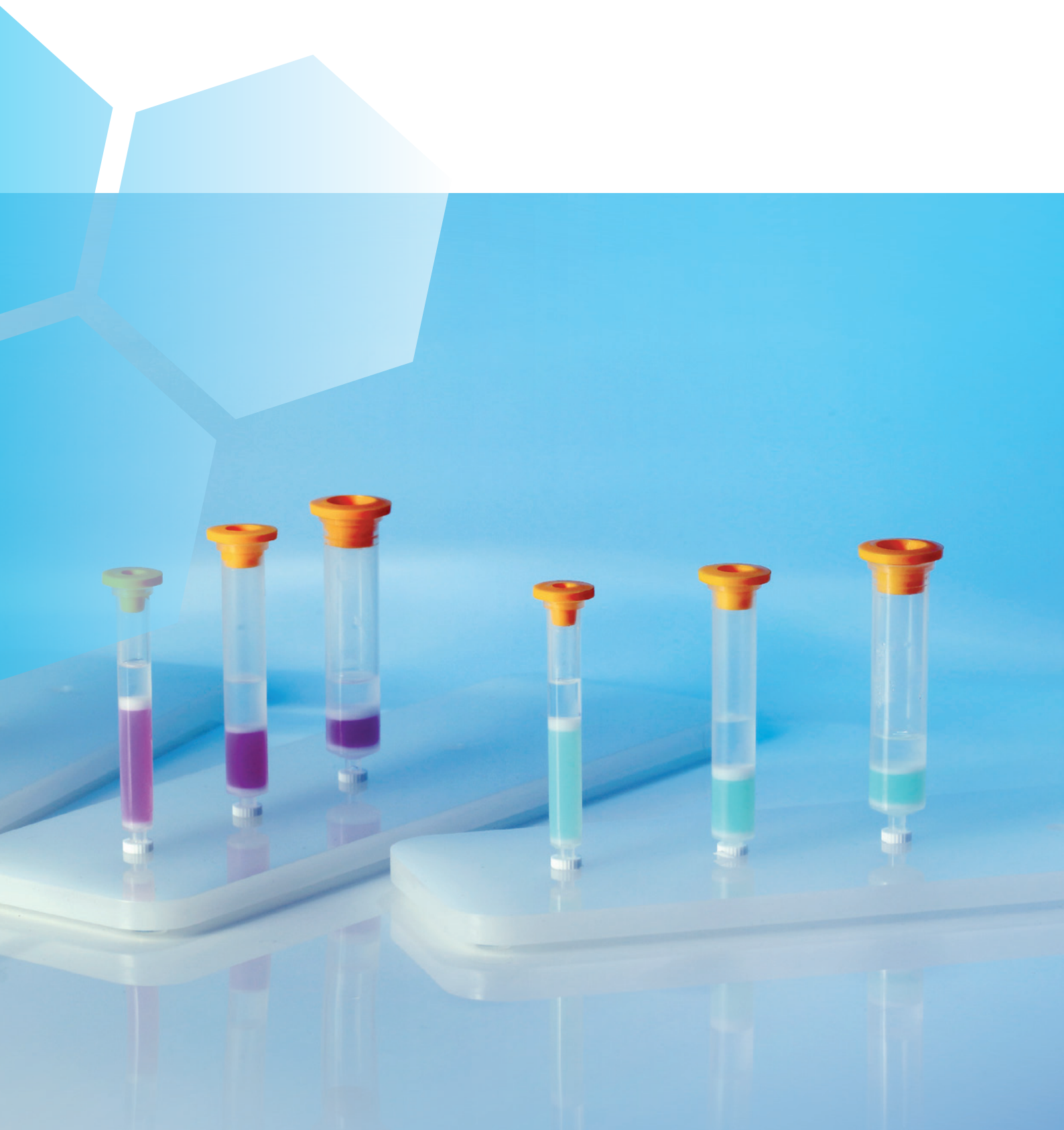
activated molecular sieve sachets for maintaining low water content

Product	Order No.	Unit Size
EZ Dry 0.5 g Moisture Trap, activated molecular sieve sachets For maintaining low water content, suitable for volumes up to 100 mL. Fits bottlenecks with diameter > 12 mm.	HR-0103-Z001.0-001	1 trap
	HR-0103-Z005.0-001	5 traps
	HR-0103-Z010.0-001	10 traps
EZ Dry 1 g Moisture Trap, activated molecular sieve sachets For maintaining low water content, suitable for volumes up to 250 mL. Fits bottlenecks with diameter > 15 mm	HR-0111-Z001.0-001	1 trap
	HR-0111-Z005.0-001	5 traps
	HR-0111-Z010.0-001	10 traps
EZ Dry 2g Moisture Trap, activated molecular sieve sachets For maintaining low water content, suitable for volumes up to 500 mL. Fits bottlenecks with diameter > 17 mm	HR-0109-Z001.0-001	1 trap
	HR-0109-Z005.0-001	5 traps
	HR-0109-Z010.0-001	10 traps
EZ Dry 5 g Moisture Trap, activated molecular sieve sachets For maintaining low water content, suitable for volumes up to 1 L. Fits bottlenecks with diameter > 17 mm.	HR-0104-Z001.0-001	1 trap
	HR-0104-Z005.0-001	5 traps
	HR-0104-Z010.0-001	10 traps
EZ Dry 10 g Moisture Trap, activated molecular sieve sachets For maintaining low water content, suitable for volumes up to 2.5 L. Fits bottlenecks with diameter > 28 mm.	HR-0105-Z001.0-001	1 trap
	HR-0105-Z005.0-001	5 traps
	HR-0105-Z010.0-001	10 traps
EZ Dry 25 g Moisture Trap, activated molecular sieve sachets For maintaining low water content, suitable for volumes up to 4 L. Fits bottlenecks with diameter > 24 mm.	HR-0106-Z001.0-001	1 trap
EZ Dry 50 g Moisture Trap, activated molecular sieve sachets For maintaining low water content, suitable for volumes up to 10 L. Fits bottlenecks with diameter > 56 mm.	HR-0110-Z001.0-001	1 trap
EZ Dry 100 g Moisture Trap, activated molecular sieve sachets For maintaining low water content, suitable for volumes up to 20 L. Fits bottlenecks with diameter > 56 mm.	HR-0107-Z001.0-001	1 trap

EZ Dry Prime Moisture Traps

activated Zeolite sachets for rapid reduction of water content in solvents

Product	Order No.	Unit Size
EZ Dry Prime 0.5 g Moisture Trap, activated Zeolite sachets For drying volumes of up to 100 mL. Fits bottlenecks with diameter > 12 mm.	HR-0113-Z001.0-001	1 trap
	HR-0113-Z005.0-001	5 traps
	HR-0113-Z010.0-001	10 traps
EZ Dry Prime 1 g Moisture Trap, activated Zeolite sachets For drying volumes of up to 250 mL. Fits bottlenecks with diameter > 15 mm.	HR-0114-Z001.0-001	1 trap
	HR-0114-Z005.0-001	5 traps
	HR-0114-Z010.0-001	10 traps
EZ Dry Prime 2 g Moisture Trap, activated Zeolite sachets For drying volumes of up to 500 mL. Fits bottlenecks with diameter > 17 mm.	HR-0115-Z001.0-001	1 trap
	HR-0115-Z005.0-001	5 traps
	HR-0115-Z010.0-001	10 traps
EZ Dry Prime 5 g Moisture Trap, activated Zeolite sachets For drying volumes of up to 1 L. Fits bottlenecks with diameter > 17 mm.	HR-0116-Z001.0-001	1 trap
	HR-0116-Z005.0-001	5 traps
	HR-0116-Z010.0-001	10 traps
EZ Dry Prime 10 g Moisture Trap, activated Zeolite sachets For drying volumes of up to 2.5 L. Fits bottlenecks with diameter > 28 mm.	HR-0117-Z001.0-001	1 trap
	HR-0117-Z005.0-001	5 traps
	HR-0117-Z010.0-001	10 traps
EZ Dry Prime 25 g Moisture Trap, activated Zeolite sachets For drying volumes of up to 4 L. Fits bottlenecks with diameter > 24 mm.	HR-0118-Z001.0-001	1 trap
EZ Dry Prime 50 g Moisture Trap, activated Zeolite sachets For drying volumes of up to 10 L. Fits bottlenecks with diameter > 56 mm.	HR-0119-Z001.0-001	1 trap
EZ Dry Prime 100 g Moisture Trap, activated Zeolite sachets For drying volumes of up to 20 L. Fits bottlenecks with diameter > 56 mm.	HR-0120-Z001.0-001	1 trap

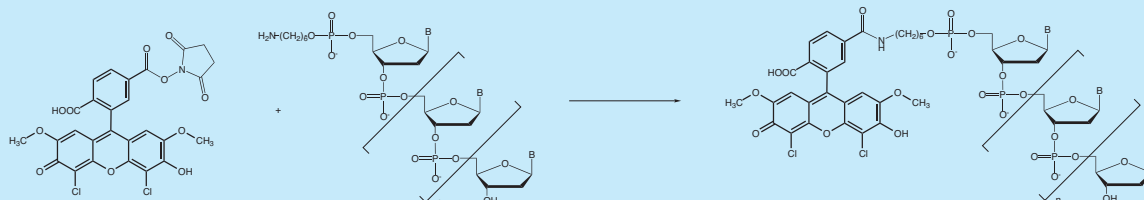


Amidite Fluorophores and Labels

Product	Order No.	Unit Size
5-Carboxytetramethylrhodamine DMTr-CE-phosphoramidite (5-TAMRA-DMTr-phosphoramidite)	PF-0102-C100.0-001	100 μ mol
	PF-0102-D250.0-001	250 mg
6-Carboxytetramethyl-rhodamine DMTr-CE-phosphoramidite (6-TAMRA-DMTr-phosphoramidite)	PF-0103-C100.0-001	100 μ mol
	PF-0103-D250.0-001	250 mg
6-Carboxyfluorescein-dipivaloyl CE-phosphoramidite (6-FAM-phosphoramidite)	PF-0104-C100.0-001	100 μ mol
	PF-0104-D250.0-001	250 mg
	PF-0104-E001.0-001	1 g

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Fluorophore Activated Esters

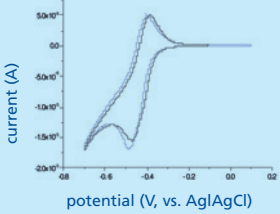
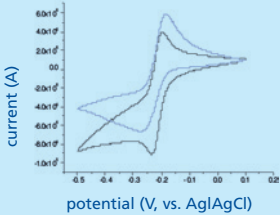
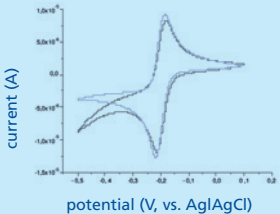
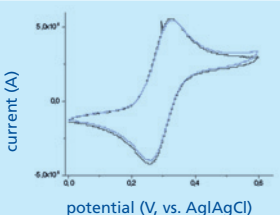
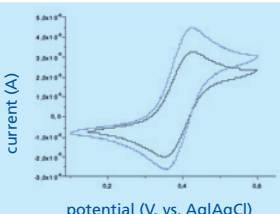


Amino-functionalized oligonucleotides react with succinimidyl ester activated dyes to form conjugates having stable amide bonds.

TECHNICAL NOTE: Before starting the coupling reaction, the oligonucleotide must be lyophilized once with 0.1 M sodium bicarbonate in order to remove residue ammonia ions!

Product	Order No.	Unit Size
MANT-NHS ester Exc.: 325 nm Em.: 412 nm	AF-0401-D005.0-001	5 mg
5-FAM-NHS ester Exc.: 496 nm Em.: 519 nm	AF-0105-D005.0-001	5 mg
	AF-0105-D020.0-001	20 mg
	AF-0105-D100.0-001	100 mg
6-FAM-NHS ester Exc.: 497 nm Em.: 519 nm	AF-0106-D005.0-001	5 mg
	AF-0106-D020.0-001	20 mg
5-TAMRA-NHS ester Exc.: 550 nm Em.: 575 nm	AF-0107-D005.0-001	5 mg
	AF-0107-D020.0-001	20 mg
6-TAMRA-NHS ester Exc.: 549 nm Em.: 572 nm	AF-0108-D005.0-001	5 mg
	AF-0108-D020.0-001	20 mg
6-ROX-NHS ester Exc.: 587 nm Em.: 599 nm	AF-0110-D005.0-001	5 mg
	AF-0110-D020.0-001	20 mg

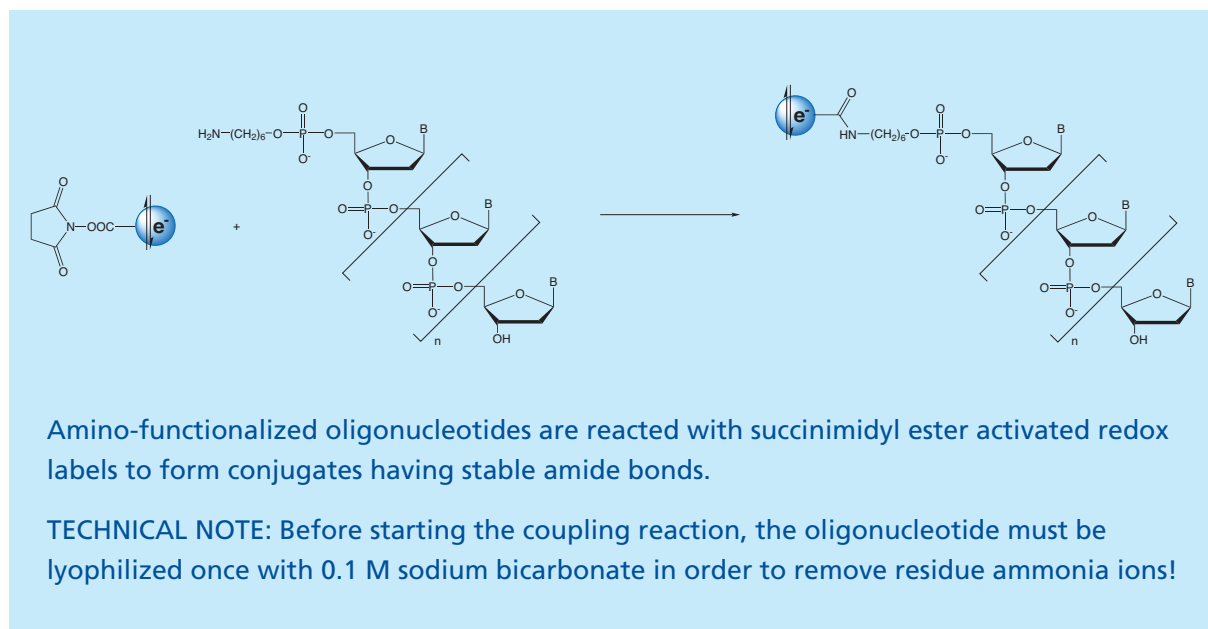
Biosensoric

Product Code	Class of Redox Label	Electrode*	Potential Ef (V) vs. Ag/AgCl (1M KCl)	Peak Separation ΔE_p (mV) [U = 0.1 V/s]	Stability of Electrochemistry [20 Cycles]	Cyclic Voltamogram Au Electrode (black) Au-dsDNA-Electrode (blue)
AF-0201	Phenothiazine	Au	-0.216	31	stable	
		Au-dsDNA	-0.222	81	stable	
AF-0202	Phenothiazine	Au	-0.198	29	stable	
		Au-dsDNA	-0.201	31	stable	
AF-0402	Metal Complex	Au	+0.292	55	stable	
		Au-dsDNA	+0.292	58	stable	
AF-0403	Metal Complex	Au	+0.390	59	stable	
		Au-dsDNA	+0.390	57	stable	
AF-0405	Quinone	Au	-0.425	68	stable	
		Au-dsDNA	-0.428	79	stable	

* Au electrode – gold wire; Au-dsDNA electrode – gold wire modified with dsDNA (18 base pairs)

For electrochemical applications, **emp BIOTECH** now offers a wide variety of ElectroActive biosensors for labeling of biomolecules, specifically nucleic acids, to form labeled probes equipped with redox-active reporter groups.

Biosensoric



Product	Order No.	Unit Size
Dicarboxymethylene Blue NHS ester (DCMB-SE)	AF-0201-D005.0-001	5 mg
Monocarboxymethylene Blue NHS ester (MCMB-SE)	AF-0202-D005.0-001	5 mg
Ferrocene carboxylic acid NHS ester (Ferrocene-SE)	AF-0402-D005.0-001	5 mg
Ferrocene-amidopentyl carboxylic acid NHS ester (Ferrocene-C6-SE)	AF-0403-D005.0-001	5 mg
Anthraquinone-2-amidopentyl carboxylic acid NHS ester (AQI-C6-SE)	AF-0405-D005.0-001	5 mg

Additional novel ElectroActive biosensors are currently under development.

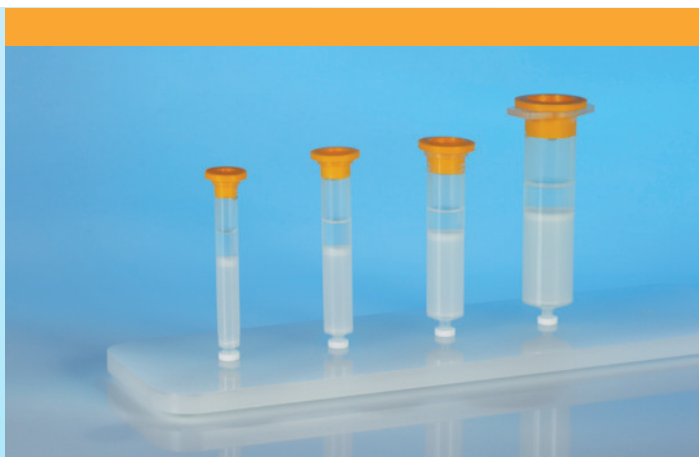
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CentriPure Gel Filtration Columns are specifically designed for rapid and efficient removal of small molecules (dyes, salts, biotin, haptens, etc.) from larger proteins, nucleic acids, or nanoparticles, which are simultaneously purified and desalted in a single step.

CentriPure columns are precision filled with **Zetadex Medium**, which has been optimized for gravity flow chromatography. **CentriPure** columns can be pre-washed with pure water for desalting or pre-equilibrated with a buffer of choice for a customized buffer exchange. The gravity column provides a significantly faster and far more efficient alternative to lengthy dialysis.

For the various products in the fields of chromatography please request our **Zetadex catalog** and our **Protein Purification catalog**.

Zetadex is a beaded composite material developed by **emp BIOTECH** comprised of ultrapure cross-linked dextran. It exhibits high selectivity, superb resolution, low non-specific adsorption and robust chemical stability.

Molecules purified with **Zetadex Desalting Resin** are separated according to size. Molecules and particles larger than the pores are excluded from entering the beads, remain in the void volume, pass rapidly through the column, and elute free from low molecular weight contaminants into pure water or a buffer of choice.

Terms and Conditions



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emp BIOTECH GmbH
Robert-Rössle-Str. 10
13125 Berlin · Germany
Tel. +49 (0)30 94 89 22 01

info@empbiotech.com
www.empbiotech.com

emp BIOTECH LLC
1001 Route 9 North, Suite 201
Howell, NJ 07731 · USA
Tel. +1 732-409-2600

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