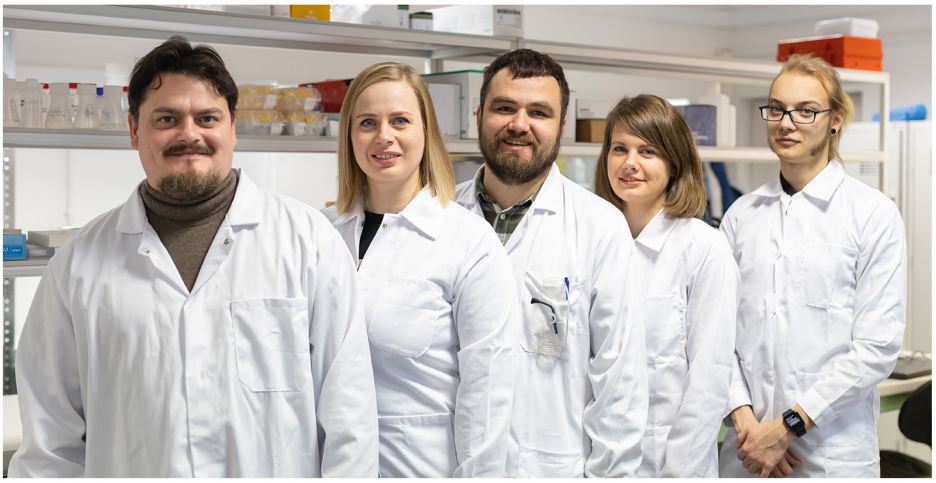
Life Science Products

catalogue 2024/2025

About us

ISO 9001 ISO 13485



KleverLab LLC, a European biotechnological company based in Warsaw, boasts a highly qualified team of professionals with over 15 years of experience in developing and successfully implementing PCR solutions.
We place a strong emphasis on product quality and compliance with all requirements, holding ISO 9001 and 13485 certifications. We serve both B2B and B2C clients, ensuring our expertise and advanced products are accessible to organizations around the world. Our dedicated R&D department is constantly innovating and ready to develop customized solutions to meet your specific needs. The company's mission is to create a wide range of solutions tailored to the needs of our target audience. We are open to such OEM partnerships and providing customized solutions for manufacturers in molecular diagnostics, as well as delivering ready-made products for scientific research.

Our products

Life Science Products

Enzymes
- Taq polymerase and Reverse transcriptase with antibody, aptamer or chemical hot-start
- Lyo-ready or glycerol-free enzymes
- Enzymes with controlled low-level of *E.coli* DNA content
- Thermolabile UDG
- High purity Proteinase K

Mastermixes
- Liquid and lyo-ready forms
- Increased inhibition resistance, high sensitivity
- UDG-based technology for eliminating carry-over contamination
- Suitable for multiplexing

Additional reagents
- High purity dNTPs
- RNAse inhibitors (lyo-ready and lyophilized forms)

Molecular Diagnostics

Human, veterinary and food control PCR kits
- High sensitivity and specificity
- Increased resistance for inhibitors
- Resistance for possible carry-over contamination
- Liquid and lyophilized forms
- Approved for most popular PCR instruments
- Validated according to ISO 13485

KleverTest ASFV PCR kit
- Sensitivity is 1000 genome equivalent copies of ASFV DNA per 1 ml
- Specificity is 100% (approved by CISA-INIA)
- Liquid and lyophilized forms

Kits for nucleic acids isolation
- Magnetic beads and spin columns based technologies
- Suitable for manual and automatic modes
- All types of clinical samples

Contents

2.1 Taq Polymerases

Our portfolio of Taq DNA polymerases is based on **Diamant Taq DNA Polymerase**. This enzyme is a 94 kDa thermostable protein isolated from a recombinant *E. coli* strain carrying the polA gene of *Thermus aquaticus* YT1 polymerase. **Diamant Taq DNA Polymerase** is a universal and easy-to-use DNA polymerase that works rapidly and effectively under various PCR conditions. The enzyme is highly purified by affinity and anion-exchange chromatography.

Our Taq DNA polymerase is produced with different types of hot-start modifications (see Table 1). These reagents possess a controlled low level of *E. coli* DNA content and can be supplied in a glycerol-free buffer for subsequent use in lyo-ready mastermixes and kits (see Table 2).

Table 1. Characteristics of Diamant Taq polymerases

Product name	Product code	Type of hot-start	Temperature of activation, °C	Available concentrations, U/µl*	Benefits	Area of application
Diamant Taq Polymerase	E-TP	–	–	5 – 1000	· Amplification of PCR fragments up to 5 000 bp	· Routine PCR
Diamant TaqA Polymerase	E-TAP	aptamer	37	5 – 100	· Stable at +2 - +8 °C	· qPCR
Diamant TaqD Polymerase	E-TDP	antibody	55	5 – 20	· Suitable for one-step RT-PCR	· qPCR · RT-qPCR
Diamant TaqAD Polymerase	E-TADP	mixed aptamer/ antibody	55	5 – 20	· Suitable for one-step RT-PCR · Suitable for tests with preamplification · Reversible hot-start	· qPCR · RT-qPCR · PCR with preamplification
Diamant TaqF Polymerase	E-TFP	chemical	95	5 – 20	· High inactivation level · High activity at the end of PCR	· qPCR · RT-qPCR

* – Upon request

Table 2. List of products

Product name	Product code	Quantity, U	Concentration, U/µl
Diamant Taq Polymerase	E-TP-FS*	–	5
	E-TP-2.5B**	2 500	5
	E-TP-5B**	5 000	5
	E-TP-25B**	25 000	5
	E-TP-100	100 000	5
	E-TP-100B**	100 000	5
	E-TP-GF-100***	100 000	1000
	E-TP-1000	1 000 000	5
	E-TP-1000B**	1 000 000	5
	E-TP-GF-1000***	1 000 000	1000
Diamant TaqA Polymerase	E-TAP-FS*	–	5
	E-TAP-1B**	1 000	5
	E-TAP-2.5B**	2 500	5
	E-TAP-5B**	5 000	5
	E-TAP-GF-5***	5 000	50
	E-TAP-25B**	25 000	5
	E-TAP-GF-25***	25 000	50
	E-TAP-50	50 000	5
	E-TAP-50B**	50 000	5
	E-TAP-GF-50***	50 000	50
	E-TAP-500	500 000	5
	E-TAP-500B**	500 000	5
	E-TAP-GF-500***	500 000	50
Diamant TaqD Polymerase	E-TDP-FS*	–	5
	E-TDP-1B**	1 000	5
	E-TDP-2.5B**	2 500	5
	E-TDP-5B**	5 000	5
	E-TDP-GF-5***	5 000	20
	E-TDP-25B**	25 000	5
	E-TDP-GF-25***	25 000	20
	E-TDP-50	50 000	5
	E-TDP-50B**	50 000	5
	E-TDP-GF-50***	50 000	20
	E-TDP-500	500 000	5
	E-TDP-500B**	500 000	5
	E-TDP-GF-500***	500 000	20
Diamant TaqAD Polymerase	E-TADP-FS*	–	5
	E-TADP-1B**	1 000	5
	E-TADP-2.5B**	2 500	5
	E-TADP-5B**	5 000	5
	E-TADP-GF-5***	5 000	20
	E-TADP-25B**	25 000	5
	E-TADP-GF-25***	25 000	20
	E-TADP-50	50 000	5
	E-TADP-50B**	50 000	5
	E-TADP-GF-50***	50 000	20
	E-TADP-500	500 000	5
	E-TADP-500B**	500 000	5
	E-TADP-GF-500***	500 000	20
Diamant TaqF Polymerase	E-TFP-FS*	–	5
	E-TFP-1B**	1 000	5
	E-TFP-2.5B**	2 500	5
	E-TFP-5B**	5 000	5
	E-TFP-GF-5***	5 000	20
	E-TFP-25B**	25 000	5
	E-TFP-GF-25***	25 000	20
	E-TFP-50	50 000	5
	E-TFP-50B**	50 000	5
	E-TFP-GF-50***	50 000	20
	E-TFP-500	500 000	5
	E-TFP-500B**	500 000	5
	E-TFP-GF-500***	500 000	20

*FS – Free sample
**B – Supplied with 10x PCR buffer and 50 mM $Mg(OAc)_2$
***GF – Supplied in glycerol-free buffer

2.2 Antibodies Mixture for Taq DNA Polymerase

The **Antibodies Mixture for Taq DNA Polymerase** is a combination of two monoclonal antibodies that form a stoichiometric complex with Taq DNA polymerase and inactivate the enzyme. Denaturation of the complex and release of polymerase are achieved by heating above 55 °C. Complex of polymerase with antibodies is stable in solution and in lyophilized form.

Benefits:

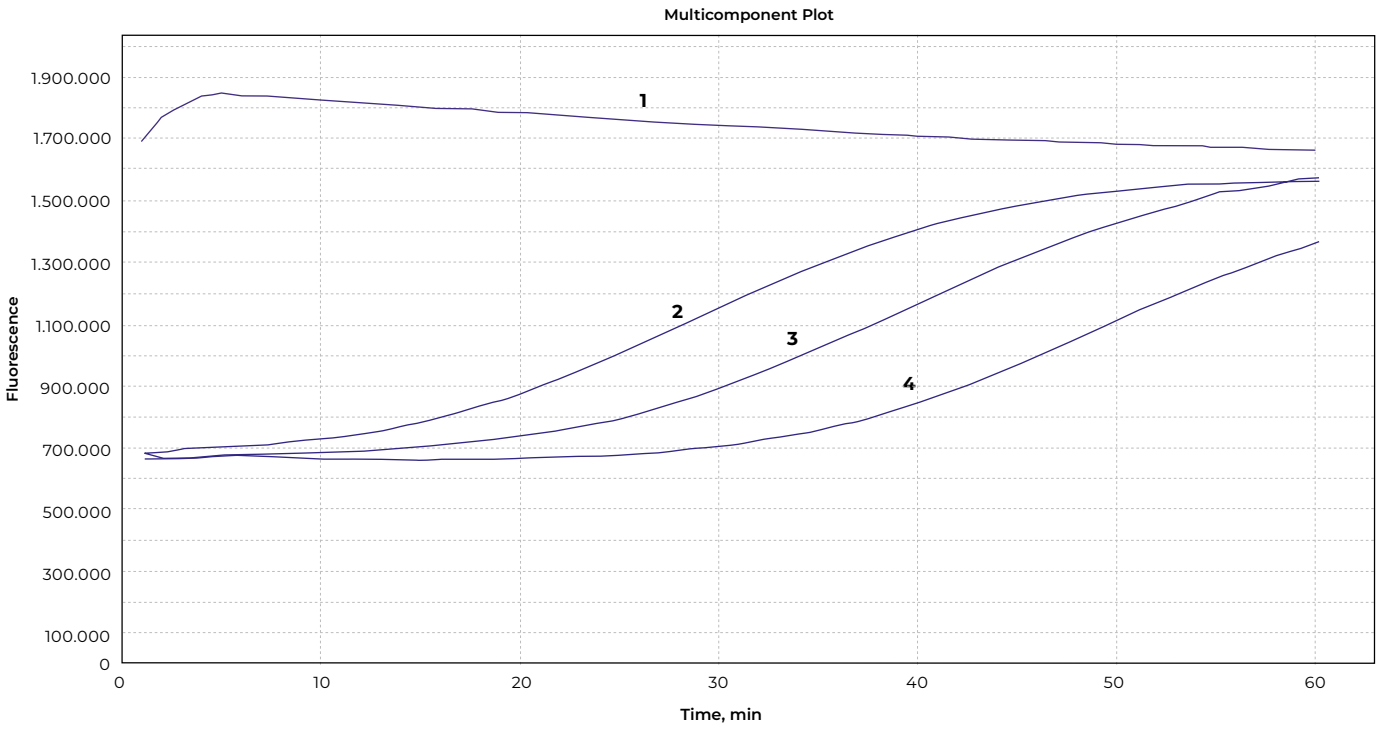
- Inhibit polymerase activity at 55 °C for 30 min

Area of applications:

- Hot-start PCR
- One-step RT-PCR

Efficiency of Antibodies Mixture in Taq polymerase inhibition

Figure 1. Taq polymerase activity recovery from the Taq-antibody complex during incubation at 55 °C



1 – Taq Polymerase 1 unit

2 – 80 ng of antibodies mixture blocks 1 unit of Taq polymerase for 10 min

3 – 100 ng of antibodies mixture blocks 1 unit of Taq polymerase for 15 min

4 – 120 ng of antibodies mixture blocks 1 unit of Taq polymerase for 30 min

Table 1. List of products

Product name	Product code	Size, mg	Size, ml
Antibodies Mixture for Taq DNA Polymerase (5 mg/ml)	R-AB-FS*	–	–
	R-AB-1	1	0.2
	R-AB-10	10	2
	R-AB-100	100	20

*FS – Free sample

2.3 Blitz DNA Polymerase

Blitz DNA Polymerase is a highly thermostable DNA polymerase from the hyperthermophilic archaeum *Pyrococcus furiosus*. The modifications of amino acid structure of the native Pfu results in shorter extension times (20 s/kb), more robust and high yield amplification, and the ability to extend long templates in a fraction of the time, making **Blitz DNA Polymerase** a superior choice for cloning. This enzyme is suitable for all PCR applications requiring greater accuracy or long amplicons.
The enzyme catalyzes the template-dependent polymerization of nucleotides into duplex DNA in the 5'-3' direction and also exhibits 3'-5' exonuclease (proofreading) activity, that enables the polymerase to correct nucleotide incorporation errors. It has no 5' exonuclease activity.
Blitz DNA Polymerase is highly purified through affinity and anion-exchange chromatography (Figure 1) and can be supplied in glycerol-free buffer for subsequent use in lyo-ready mastermixes and kits.

Benefits:

- Increased DNA synthesis rate (up to 3 000 bp/min)
- Long fragments amplification (10 kbp or longer)
- Increased inhibition resistance

Area of applications:

- PCR with increased synthesis accuracy
- Amplification of long DNA fragments
- Direct PCR without samples purifications
- NGS libraries preparation

Analysis of Blitz DNA Polymerase purity

Figure 1. SDS-PAGE of purified Blitz DNA Polymerase. Line 1 shows a distinct monoprotein band at ~100 kDa

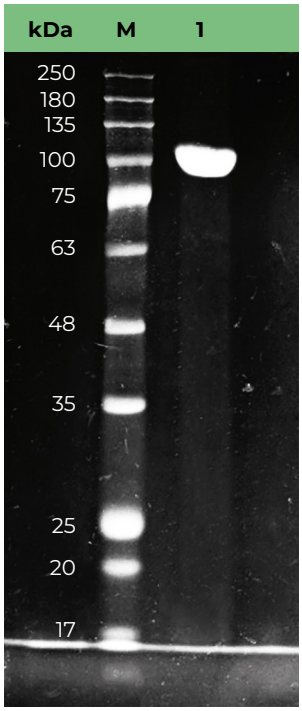


Table 1. List of products

Product name	Product code	Size, U	Concentration, units/µl
Blitz DNA Polymerase	E-BLP-FS*	–	2
	E-BLP-0.5B**	500	
	E-BLP-1B**	1 000	
	E-BLP-2.5B**	2 500	
	E-BLP-5B**	5 000	
	E-BLP-10B**	10 000	
	E-BLP-50B**	50 000	

*FS – Free sample
**B – Supplied with 10X reaction buffer

2.4 Phi29 DNA Polymerase

Recombinant **Phi29 DNA Polymerase** is a classical enzyme dedicated for use in common isothermal DNA amplification applications that are carried out at moderate temperature based on a strand displacement activity. The enzyme is supplied with an optimized high-performance buffer. The user has to add dNTPs, template and primers. The polymerase has strong strand displacement activity and efficient 5'-3' polymerase activity working at about 4-35 °C and synthesizing DNA from minor amounts to enormous yield up to visibly increased the viscosity of the reaction mixture. The enzyme has no 5'-3' exonuclease activity, but has strong 3'-5' exonuclease (proofreading) activity, and may degrade primers, therefore the use of 3' protected exo-resistant primers is recommended. The enzyme can be heat-inactivated, tolerates dUTP and produces blunt-ended DNA.
Phi29 DNA Polymerase is highly purified through affinity and anion-exchange chromatography (Figure 1) and can be supplied in glycerol-free buffer for subsequent use in lyo-ready mastermixes and kits.

Benefits:

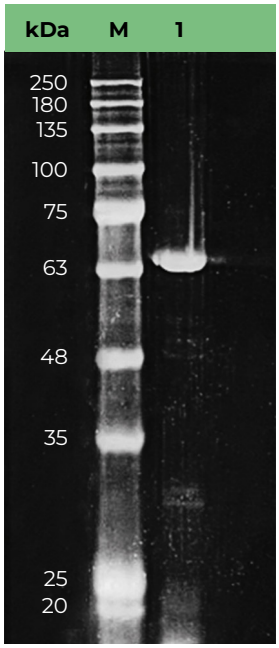
- Isothermal amplification
- Extreme processivity
- High fidelity

Area of applications:

- Isothermal DNA amplification for sequencing or cloning
- Rolling circle amplification (RCA)
- Multiple displacement amplification (MDA)
- Amplification of DNA for SNP and STR detection
- Protein primed or RNA primed DNA amplification

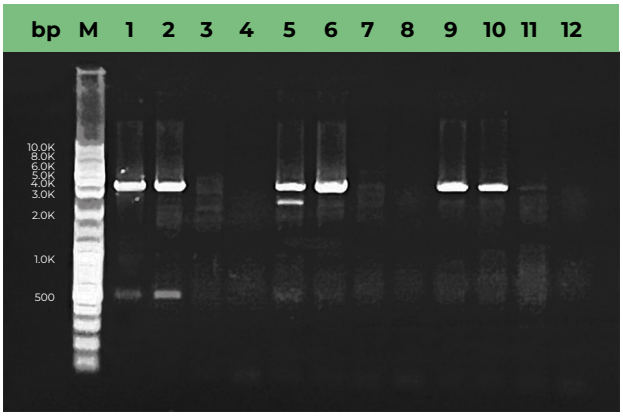
Analysis of Phi29 DNA Polymerase purity

Figure 1. SDS-PAGE of purifi ed Phi29 DNA Polymerase. Line 1 shows a distinct monoprotein band at ~66,8 kDa



Amplification of human GAPDH gene fragment using Phi29 polymerases

Figure 2. Agarose gel electrophoresis of amplicons obtained using human DNA template (10, 0.1 and 0 ng) with Phi29 polymerases



lines 1-4 – commercial enzyme 1
lines 5-8 – commercial enzyme 2
lines 9-12 – KleverLab Phi29 Polymerase

Table 1. List of products

Product name	Product code	Size, U	Concentration, units/µl
Blitz DNA Polymerase	E-PHI-FS*	–	10 (5-50 upon request)
	E-PHI-0.25B**	250	
	E-PHI-1B**	1000	
	E-PHI-5B**	5000	
	E-PHI-25B	25 000	
	E-PHI-25B**	25 000	
	E-PHI-50	50 000	
	E-PHI-50B**	50 000	

*FS – Free sample
**B – Supplied with 10X reaction buffer

2.5 Reverse Transcriptases

RevM Revertase is a genetically modified reverse transcriptase derived from the Moloney murine leukemia virus (MMLV), which synthesizes a complementary DNA strand (cDNA) using a single-stranded RNA template. Due to several mutations, the enzyme exhibits reduced RNase H activity and increased thermostability at temperatures below 65 °C, with an optimal temperature of 55 °C. Compared to wild-type MMLV, our enzyme provides a higher cDNA yield and exhibits greater efficiency with GC-rich RNA templates.
The hot-start version of **RevM Revertase** has reduced activity at temperatures below 37 °C and retains an optimal working temperature of 55 °C. Inactivation occurs after 10 minutes at 80 °C.
All enzymes are highly purified through affinity and anion-exchange chromatography and can be supplied in glycerol-free buffer for subsequent use in lyo-ready mastermixes and kits (see Table 1).

Benefits:

Reverse transcriptases possesses:
- Effectiveness with GC-rich RNA templates
- Optimal working temperature of 55 °C
- High productivity

Additionally, RevM Hot-Start Revertase provides:
- Reduced activity at temperatures below 37 °C

Area of applications:

- First strand cDNA synthesis for RT-PCR and real-time RT-PCR
- cDNA synthesis for cloning
- Generation of labelled cDNA probes for microarrays
- RNA labelling
- RNA analysis by primer extension
- One-step RT-PCR

Table 1. List of products

Product name	Product code	Size, U	Concentration, U/µl
RevM Revertase	E-RT-FS*	–	200
	E-RT-25B**	25 000	200
	E-RT-GF-25***	25 000	200
	E-RT-50B**	50 000	200
	E-RT-GF-50***	50 000	200
	E-RT-500	500 000	200
	E-RT-500B**	500 000	200
	E-RT-GF-500***	500 000	200
RevM Hot-Start Revertase	E-RTH-FS*	–	5
	E-RTH-5B**	5 000	5
	E-RTH-25B**	25 000	5
	E-RTH-50B**	50 000	5
	E-RTH-500	500 000	5
	E-RTH-500B**	500 000	5

*FS – Free sample
**B – Supplied with 10X reverse transcription buffer
***GF – Supplied in glycerol-free buffer

2.6 Uracil-DNA Glycosylases

Uracil-DNA Glycosylases (UDGs) are DNA repair enzymes that excise uracil residues from single- and double-stranded DNA by cleaving the N-glycosylic bond. They can be used in the preparation of PCR, RT-PCR, and LAMP mixtures to prevent carryover contamination.
We produce two types of UDGs. The standard **Uracil-DNA Glycosylase (UDG)** is a 25.5 kDa protein isolated from a recombinant *E. coli* strain carrying the UNG gene of *E. coli* strain K-12. This enzyme is not thermolabile and can be completely inactivated during the first cycle of PCR (see Table 1). The **Thermolabile Uracil-DNA Glycosylase (tUDG)** is a 25.5 kDa protein isolated from a recombinant *E. coli* strain carrying the cloned UDG gene from a psychrophilic marine bacterium. Thermolabile UDG can be inactivated at 55 °C and does not interfere with the amplification of reaction products (see Table 1).
All enzymes are highly purified by affinity and anion-exchange chromatography and can be supplied in a glycerol-free buffer for subsequent use in lyo-ready mastermixes and kits (see Table 2).

Benefits:

UDG possesses:
- Prevents false-positive results
- Inactivated during the first PCR cycle
- Maximal activity at 37 °C

Additionally tUDG provides:
- Inactivated at 55 °C
- Optimal activity at RT

Area of applications:
- Routine PCR
- Multiplex PCR
- Low copy PCR
- PCR with dual-labelled probes
- PCR with intercalating dyes

Effectiveness of tUDG in PCR for Prevention of Carry-over Contamination

Figure 1. PCR of β-Globin uracil-containing amplicons (500,000 copies per reaction). The reaction mixture was pre-incubated with thermolabile UDG for 5 minutes at 25 °C

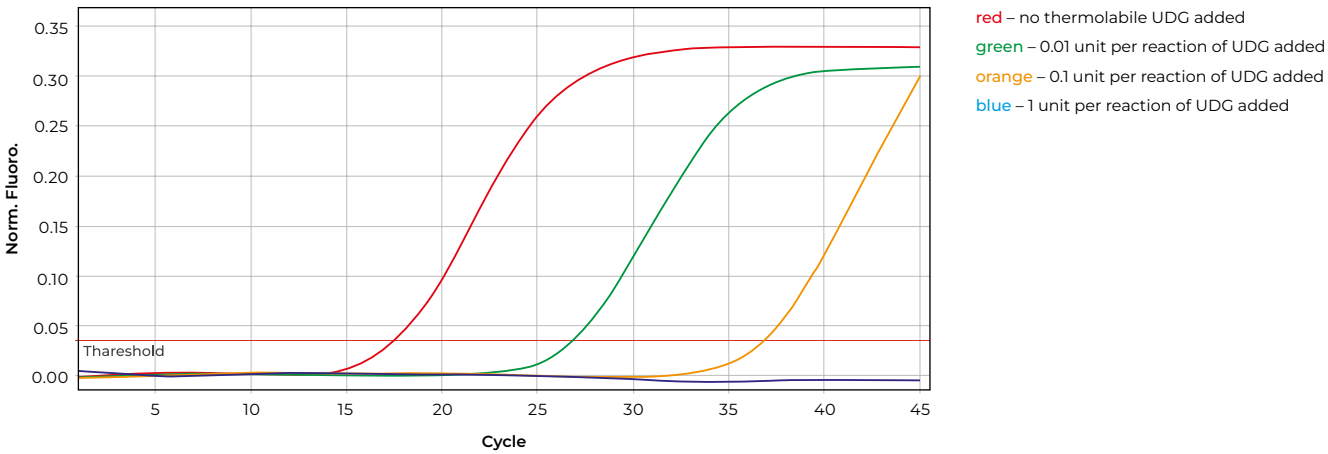


Table 1. Characteristics of Uracil-DNA Glycosylases

Product name	Product code	Optimal working condition	Denaturation condition
Thermolabile Uracil-DNA Glycosylase	E-TUDG	5 minutes at 25 °C	2 minutes at 55 °C
Uracil-DNA Glycosylase	E-UDG	37 °C	95 °C (first cycle of PCR)

Table 2. List of products

Product name	Product code	Size, U	Concentration, U/µl
Thermolabile Uracil-DNA Glycosylase	E-TUDG-FS*	–	5
	E-TUDG-0.5	500	5
	E-TUDG-2.5	2 500	5
	E-TUDG-5	5 000	5
	E-TUDG-GF-5**	5 000	500
	E-TUDG-25	25 000	5
	E-TUDG-GF-25**	25 000	500
	E-TUDG-50	50 000	5
	E-TUDG-GF-50**	50 000	500
Uracil-DNA Glycosylase	E-UDG-FS*	–	5
	E-UDG-1	1000	5
	E-UDG-5	5000	5
	E-UDG-GF-5**	5000	500
	E-UDG-25	25 000	5
	E-UDG-GF-25**	25 000	500
	E-UDG-50	50 000	5
	E-UDG-GF-50**	50 000	500

*FS – Free sample
**GF – Supplied in glycerol-free buffer

2.7 Proteinase K

Proteinase K is a 28.9 kDa serine protease produced by a recombinant strain of *Pichia pastoris* carrying the proteinase K gene from the fungus *Tritirachium album*. The enzyme has broad substrate specificity for a wide range of proteins, hydrolyzing polypeptide chains mainly at sites containing nonpolar amino acids. This reagent can be used for the hydrolysis of proteins during the isolation and purification of nucleic acids.
KleverLab supplies high-purity **Proteinase K** in the form of lyophilized powder (≥ 40 units/mg) or as a ready-to-use solution (20 mg/ml). The enzyme possesses high purity and a reduced amount of host DNA, ensuring no cross-reactivity contamination in NGS or molecular diagnostic applications. **Proteinase K** is stable over a wide pH range and at elevated temperatures (up to 56 °C).

Benefits:

- High purity
- Broad substrate specificity
- High activity under denaturing conditions and in elevated temperatures
- Stable over a wide pH range

Area of applications:

- NA isolation and purification
- NGS and molecular diagnostic applications

Table 1. List of products

Product name	Product code	Size
Proteinase K, powder	E-PK-FS*	–
	E-PK-0.25	0.25 g
	E-PK-0.5	0.5 g
	E-PK-1	1 g
	E-PK-10	10 g
	E-PK-25	25 g
Proteinase K (20 mg/ml)	E-PKS-FS*	–
	E-PKS-1	1 ml
	E-PKS-5	5x1 ml
	E-PKS-25	5x5 ml
	E-PKS-50	50 ml
	E-PKS-100	100 ml

*FS – Free sample

3.1 qPCR Mastermixes

KleverLabs qPCR Mastermixes are universal ready-to-use reagents for quantitative or qualitative PCR with real-time detection of results. The mastermixes contain all the necessary components for PCR, including hot-start thermostable DNA polymerase, dNTPs, magnesium salt, and optimized buffer. Special additives provide increased resistance to inhibitors. Mastermixes can optionally contain ROX reference dye (final concentration is 0.5 µM [High ROX] or 0.03 µM [Low ROX], depending on the qPCR instrument). These mastermixes provide reproducible results with high sensitivity (detecting single copies of DNA).

5X Fast Probe qPCR Mastermix
a ready-to-use mastermix for qPCR with dual-labeled probes.

5X Fast Probe qPCR U Mastermix
a ready-to-use mastermix for qPCR with dual-labeled probes. Contains UDG and dUTP to prevent carryover contamination.

2X Fast Dye qPCR Mastermix
a ready-to-use mastermix for qPCR with an intercalating dye.

2X Fast Dye qPCR U Mastermix
a ready-to-use mastermix for qPCR with an intercalating dye. Contains UDG and dUTP to prevent carryover contamination.

Benefits:

- High sensitivity (single copies of DNA)
- Increased inhibition resistance
- Prevention of false-positive results

Area of applications:

- Multiplex PCR
- Routine PCR
- Low copy PCR
- PCR with dual-labeled probes
- PCR with intercalating dye

Table 1. List of products

Product name	Product code	Size, rxn/20 µl
5X Fast Probe qPCR Mastermix	M5-FP-FS*	–
	M5-FP-0.25	250
	M5-FP-0.5	500
	M5-FP-1	1 000
	M5-FP-5	5 000
	M5-FP-10	10 000
	M5-FP-50	50 000
5X Fast Probe qPCR U Mastermix	M5-FPU-FS*	–
	M5-FPU-0.25	250
	M5-FPU-0.5	500
	M5-FPU-1	1 000
	M5-FPU-5	5 000
	M5-FPU-10	10 000
	M5-FPU-50	50 000
2X Fast Dye qPCR Mastermix	M2-FD-FS*	–
	M2-FD-0.25	250
	M2-FD-0.5	500
	M2-FD-1	1 000
	M2-FD-5	5 000
	M2-FD-10	10 000
	M2-FD-50	50 000
2X Fast Dye qPCR U Mastermix	M2-FDU-FS*	–
	M2-FDU-0.25	250
	M2-FDU-0.5	500
	M2-FDU-1	1 000
	M2-FDU-5	5 000
	M2-FDU-10	10 000
	M2-FDU-50	50 000

*FS – Free sample

3.2 RT-PCR Mastermixes

KleverLabs RT-PCR mastermixes are ready-to-use universal reagents for the synthesis of cDNA from an RNA template, followed by polymerase chain reaction with real-time product detection using dual-labeled probes. The synthesis of cDNA and the qPCR assay are performed in a single tube. These mastermixes provide reproducible results with high sensitivity, capable of detecting single copies of RNA in RT-PCR assays.

5X One-Step RT-PCR Mastermix contains all the necessary components for RT-PCR, including "warm-start" reverse transcriptase, hot-start thermostable DNA polymerase, dNTPs, and optimized buffer.

5X One-Step Plus RT-PCR Mastermix additionally contains an RNase inhibitor to prevent RNA degradation and tUDG to prevent carry-over contamination. It also possesses increased resistance to inhibitors and can be used for viral detection (e.g., SARS-CoV-2) without RNA isolation.

Benefits:

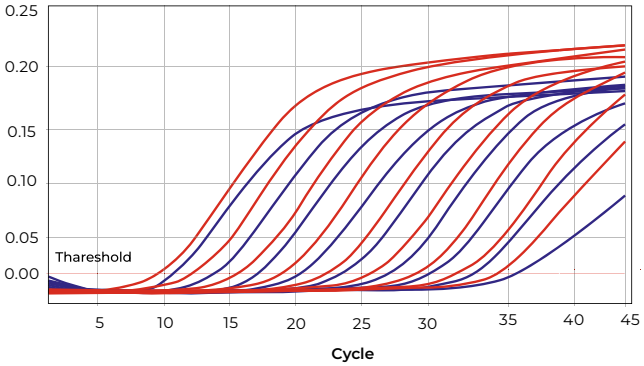
RT-PCR Mastermixes possesses:
- High sensitivity (single copies of RNA)
- Synthesis of cDNA and PCR is carried out in one tube

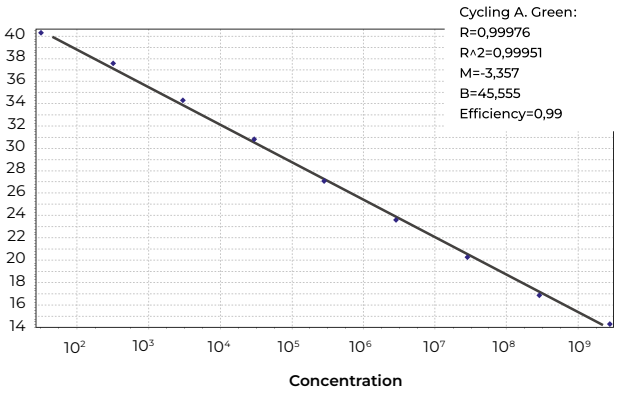
5X One-Step Plus RT-PCR Mastermix additionally provides:
- Increased inhibition resistance
- Protection against carry-over contamination
- Protection of RNA from degradation

Area of applications:
- Multiplex RT-PCR
- Routine RT-PCR
- Low copy RT-PCR
- RT-PCR with dual-labelled probes

Effectiveness of 5X One-Step Plus RT-PCR Mastermix

Figures 1, 2. Detection of synthetic GAPDH transcript (10^3-10^{11} copies/ml) by 5X One-Step Plus RT-PCR Mastermix (red) compared to commercial reagent (blue)





red – 5X One-Step Plus RT-PCR Mastermix

blue – Commercial reagent

Table 1. List of products

Product name	Product code	Size, rxn/20 µl
5X One-Step RT-PCR Mastermix	M5-OS-FS*	–
	M5-OS-0.1	100
	M5-OS-0.25	250
	M5-OS-0.5	500
	M5-OS-1	1 000
	M5-OS-5	5 000
	M5-OS-10	10 000
5X One-Step Plus RT-PCR Mastermix	M5-OSP-FS*	–
	M5-OSP-0.1	100
	M5-OSP-0.25	250
	M5-OSP-0.5	500
	M5-OSP-1	1 000
	M5-OSP-5	5 000
	M5-OSP-10	10 000

*FS – Free sample

3.3 cDNA Synthesis Kits

RevM First Strand cDNA Synthesis Kit is a complete kit of reagents for efficient synthesis of first strand cDNA from mRNA or total RNA templates. Kit based on RevM Revertase - genetically modified reverse transcriptase from Moloney murine leukemia virus (MMLV). The enzyme possesses RNA- and DNA-dependent polymerase activity but lacks RNase H activity. Temperature optimum for RevM enzyme activity is 55 °C (the enzyme remains active at temperatures up to 65 °C). The enzyme is able to synthesize first strand cDNA up to 10 kb and incorporate modified bases.

RevM First Strand cDNA Synthesis Kit contains a recombinant RNase inhibitor, which inhibits ribonuclease activity and protects RNA integrity from degradation. The kit is also supplied with both oligo(dT)18 and random hexamer primers. Gene-specific primers may also be used with this kit.

Benefits:

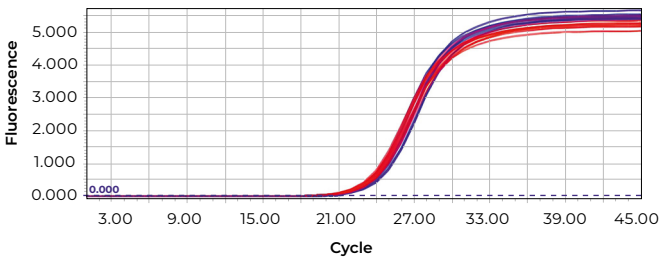
- High yields of full-length first strand cDNA up to 10 kb
- Optimal reaction temperature is 55 °C
- Supplied with the RNase Inhibitor
- Supplied with Oligo(dT)18 and random hexamer primers

Area of applications:

- First strand cDNA synthesis for RT-PCR and real-time RT-PCR
- Full length cDNA libraries construction
- Antisense RNA synthesis

Oligo dT synthesis / UBC marker gene expression in Arabidopsis seeds

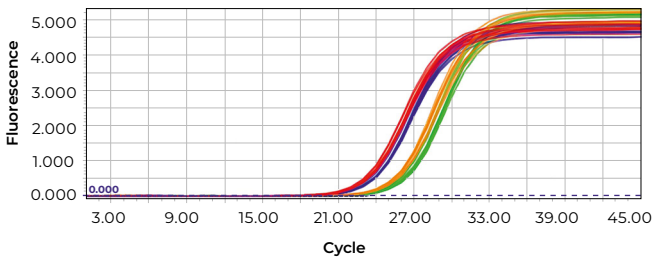
Figure 1. RevM First Strand cDNA Synthesis Kit - red (UBC), commercial kit - blue (UBC)



red – Ct mean=22.13+-0.26
blue – Ct mean=22.18+-0.44

Gene specific synthesis / UBC marker gene and Gene of Interest (GI) expression in Arabidopsis seeds

Figure 2. RevM First Strand cDNA Synthesis Kit - red (UBC) and orange (GI), commercial kit - blue (UBC) and green (GI)



red – Ct mean=21,93+-0.11
green – Ct mean=24,86+-0.27
orange – Ct mean=24,26+-0.11
blue – Ct mean=22,47+-0,19

Table 1. List of products

Product name	Product code	Size, reactions
RevM First Strand cDNA Synthesis Kit	RK-RFS-FS*	–
	RK-RFS-50	50
	RK-RFS-100	100
	RK-RFS-500	500
	RK-RFS-1000	1 000

*FS – Free sample

3.4 Mastermixes for NGS

2X Blitz Mastermix is a ready-to-use mixture for polymerase chain reaction (PCR) with increased accuracy of DNA synthesis.The mastermix contains all the necessary components for PCR, including: thermostable DNA polymerase, dNTP and optimized buffer. The DNA polymerase included in the Blitz mastermix is a chimeric thermostable protein consisting of Pfu polymerase and SSO7d DNA-binding domain. The DNA-binding domain stabilizes the complex of DNA polymerase with the template, it leads to an increase in the processivity, synthesis rate, accuracy and stability of the enzyme in a high ionic strength of the solution. The mastermix has an increased rate of DNA synthesis (up to 3 000 bp/min) and is capable of amplifying DNA fragments longer than 10 000 bp (Figure 1).

Benefits:

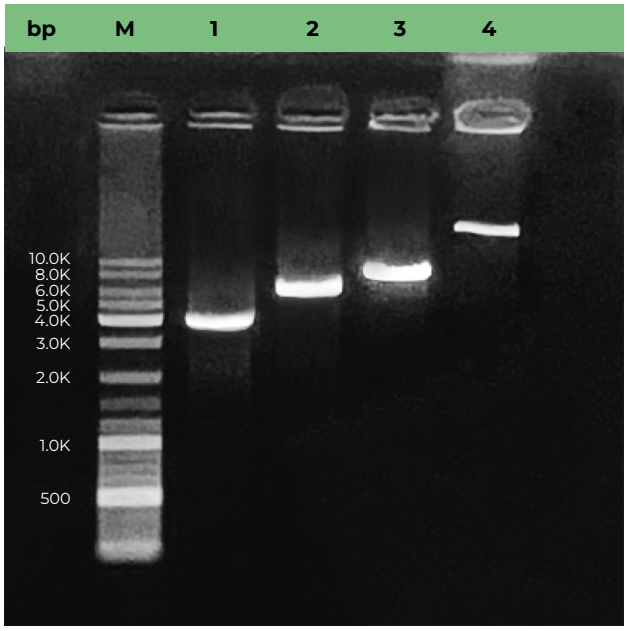
- Increased DNA synthesis rate (up to 3 000 bp/min)
- Long fragments amplification (10 kbp or longer)
- Increased inhibition resistance

Area of applications:

- PCR with increased synthesis accuracy
- Amplification of long DNA fragments
- Direct PCR without samples purifications
- NGS libraries preparation

Effectiveness of 2X Blitz Mastermixes

*Figure 1. Amplification of β-globin gene fragments of various lengths from human genomic DNA using **2X Blitz Mastermixes***



line 1 – an amplicon of 3.8 kbp
line 2 – an amplicon of 5.8 kbp
line 3 – an amplicon of 7.5 kbp
line 4 – an amplicon of 10 kbp

Table 1. List of products

Product name	Product code	Size, reactions
2X Blitz Mastermix	M2-BL-FS*	–
	M2-BL-0.1	100
	M2-BL-0.2	200
	M2-BL-0.4	400
	M2-BL-0.8	800
	M2-BL-2	2 000
	M2-BL-4	4 000

*FS – Free sample

RUO

4.1 NA Isolation Kits

Line of KleverLab products for nucleic acid isolation and purification include kits based on magnetic beads and spin columns technologies. It allows to purify DNA/RNA both in manual mode (use magnetic rack or centrifuge for single tubes 1.5-2.0 ml) and in automatic mode using most popular robotic stations (KingFisher Flex instruments, Allsheng Auto-Pure instruments, etc.). DNA/RNA isolation kits are designed to perform assays of 100 samples with a volume of 100 µl. NA recovery is dependent upon sample type and is typically greater than 75%. Isolated DNA/RNA is suitable for further molecular biological studies, including qPCR and RT-PCR.

PuriMag P Total DNA/RNA Isolation Kit based on magnetic beads and was designed for the extraction of total DNA/RNA from blood plasma and serum which contains low titer of pathogenic microorganisms.

PuriMag S Total DNA/RNA Isolation Kit based on magnetic beads and intended for isolation of total DNA/RNA from smears and swabs of the urogenital, respiratory and digestive tracts.

PuriSpin S Total DNA/RNA Isolation Kit based on spin columns and intended for isolation of total DNA/RNA from smears and swabs of the urogenital, respiratory and digestive tracts.

Benefits:

- NA extraction purity A_{260}/A_{280} ~ 1.7-2.2*
- NA recovery > 75%*
- Validated according to ISO 13485

**depending on the sample*

Compatible instruments:

- KingFisher Flex instruments
- AllSheng Auto-Pure 96 or analogous
- Tecan Freedom EVO series or analogous

Storage condition:

- ≤+25 °C - 1 year

The effectiveness of Cytomegalovirus DNA isolation from plasma by PuriMag P Total DNA/RNA Isolation Kit

Figure 1. Results of amplification of Cytomegaloviruses DNA isolated from reference CMV Verification Panel (Exact Diagnostic, USA). Initial virus concentration in plasma is 4x10² – 4x10⁶ IU/ml

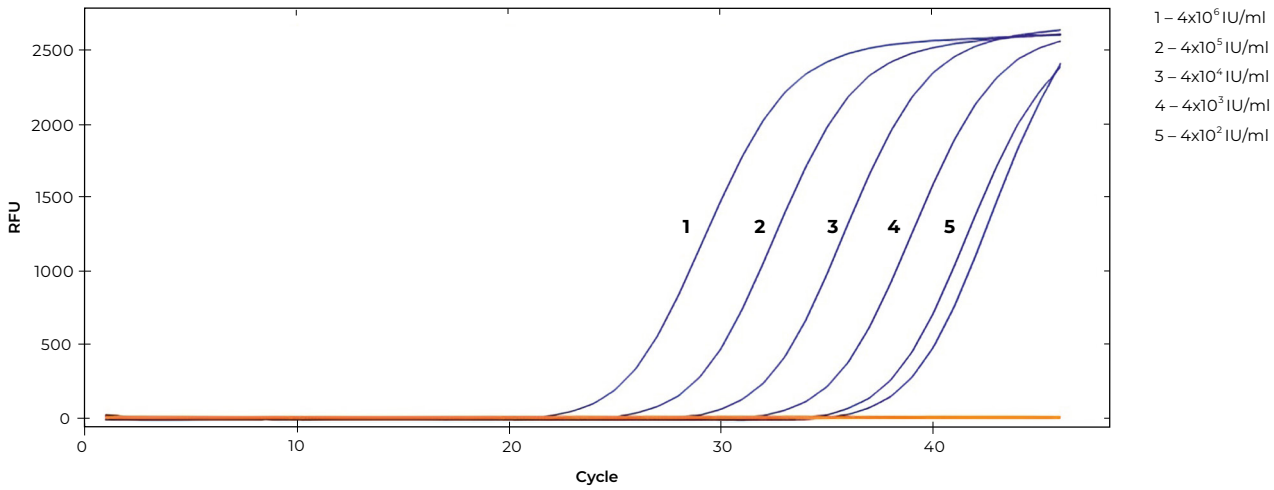


Table 1. List of products

Product code	Product name	Technology	Type of isolated DNA/RNA	Number of samples	Type of samples
RKI-PMP-100	PuriMag P Total DNA/ RNA Isolation Kit	Magnetic beads	Total DNA/RNA	100	Blood plasma, serum etc.
RKI-PMS-100	PuriMag S Total DNA/ RNA Isolation Kit	Magnetic beads	Total DNA/RNA	100	Swabs, scrapes, smears etc.
RKI-PSS-100	PuriSpin S Total DNA/ RNA Isolation Kit	Spin columns	Total DNA/RNA	100	Swabs, scrapes, smears etc.

4.2 Magnetic Beads ExraMag (25 mg/ml)

Magnetic Beads ExraMag (25 mg/ml) are silica-coated superparamagnetic particles designed for high-throughput and rapid extraction and purification of nucleic acids. Average particle size is about 1 µm. ExtraMag beads provide high NA purity and NA extraction capacity. Beads possess high sedimentation stability and short time of magnetic separation (Table 1). ExtraMag can be used in manual and automatic modes and compatible with most popular automatic stations.

Benefits:

- High NA purity and capacity
- Good sedimentation stability
- Short time of magnetic separation
- Easy to resuspend
- Compatible with automatic stations

Area of applications

- Genomic DNA extraction
- Viral NA extraction
- Plasmid DNA purification
- Purification of PCR products

Compatible instruments:

- KingFisher Flex instruments
- AllSheng Auto-Pure 96 or analogous
- Tecan Freedom EVO series

or analogous

Table 1. Technical characteristics

Characteristics	Values
Concentration	25 mg/ml (up to 200 mg/ml upon request)
Composition	γ–Fe_2O_3–SiO_2
Surface functional groups	Si–OH
Bead type	Controlled agglomerates of nanospheres
Average particle size	1 µm
Surface area (BET)	~150 m^2/g
Sedimentation Stability	3–5 min*
Time of full magnetic separation	< 1 min*
Magnetization type	Superparamagnetic
Magnetization value	~45 emu/g
NA extraction purity	A_{260}/A_{280} = 2.1–2.2**
NA extraction capacity	6–12 µg per 1 mg of sorbent***
Storage and transportation conditions	· RT (<+ 25°C) – 1 year · Not allowed to freeze

*Depends on the isolation conditions
**Estimated by analysis of genomic DNA isolated from saliva sample with PuriMag S Total DNA/RNA Isolation kit
***Genomic DNA per 200 µl of whole blood

Table 2. List of products

Product name	Product code	Size, ml
Magnetic Beads ExraMag (25 mg/ml)	R-MB25-FS*	–
	R-MB25-5	5
	R-MB25-50	50
	R-MB25-500	500
	R-MB25-1000	1 000

*FS – Free sample

4.3 RNase inhibitors

Ribonuclease (RNase) inhibitors are recombinant proteins used to inhibit RNase activity and can be applied in enzymatic manipulations of RNA to prevent degradation by RNases.
The KleverLab portfolio of RNase inhibitors includes two proteins of human and murine origin.

RiboBlock M RNase Inhibitor is a 50 kDa recombinant protein of murine origin produced in *Escherichia coli*.

RiboBlock H RNase Inhibitor is a 50 kDa recombinant protein of human origin. Due to genetic modifications, RiboBlock H RNase Inhibitor does not contain the pair of cysteines found in the native human version, which is highly sensitive to oxidation. As a result, RiboBlock H RNase Inhibitor has significantly improved resistance to oxidation and increased stability during storage (Figure 1).

Both RiboBlock H and M inhibitors specifically inhibit RNases A, B, and C by binding noncovalently in a 1:1 ratio with high affinity (Figure 2). In addition, no inhibition of polymerase activity is observed when RNase inhibitors are used with Taq DNA Polymerase and Reverse Transcriptase.
Since ribonucleases typically retain activity under denaturing conditions, care must be taken to avoid denaturing RNase inhibitor molecules that have complexed with ribonuclease. To prevent the release of active ribonuclease, temperatures greater than 55 °C and high concentrations of denaturing agents should be avoided.
All RNase inhibitors are highly purified by affinity and anion-exchange chromatography and can be supplied in glycerol-free buffer for subsequent use in lyo-ready mastermixes and kits (Table 1)

Benefits:

RNAse inhibitors possesses:
- Inhibit ribonuclease activity of eukaryotic enzymes (RNase A, RNase B, RNase C)
- Active over a wide pH range (pH 5-9)
- Stable in the presence of a wide range of PCR additives

Additionally, Riboblock H provides:
- Improved resistance to oxidation
- Ideal for reactions where low DTT concentrations are required (e.g., qPCR, RT-PCR)
- Increased stability

Area of applications:
- RNA isolation
- RT-PCR
- Synthesis of cDNA
- *In vitro* transcription and translation

RiboBlock H RNase Inhibitor stability under storage

Figure 1. RiboBlock H RNase Inhibitor retains its activity after storage at 37 °C for 30 days and at 4 °C for 70 days

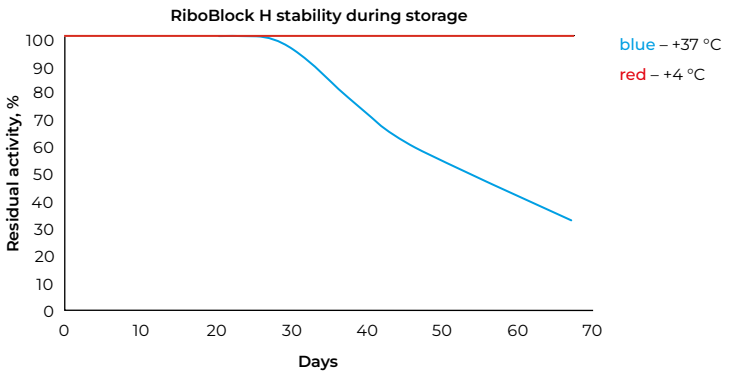


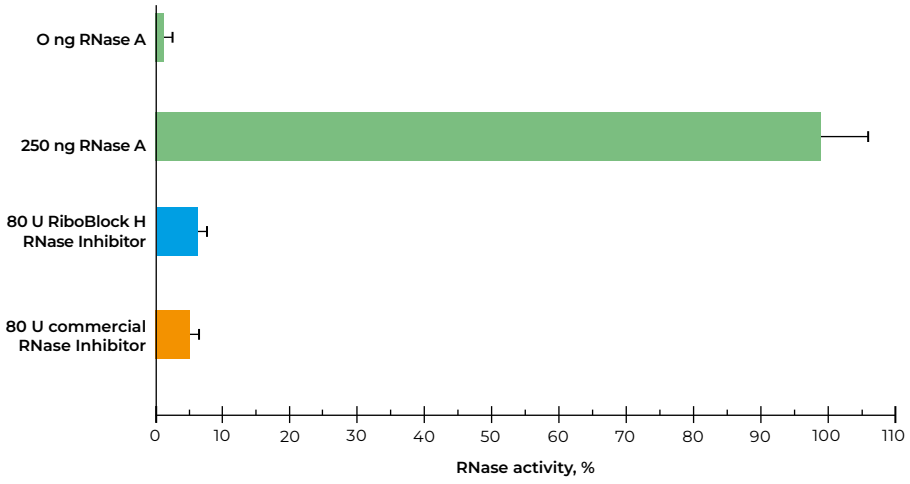
Table 1. List of products

Product name	Product code	Size, U	Concentration, U/µl
RiboBlock H RNase Inhibitor	R-RBH-FS*	–	40
	R-RBH-10	10 000	40
	R-RBH-20	20 000	40
	R-RBH-40	40 000	40
	R-RBH-GF-40**	40 000	400
	R-RBH-400	400 000	40
	R-RBH-GF-400**	400 000	400
RiboBlock M RNase Inhibitor	R-RBM-FS*	–	40
	R-RBM-10	10 000	40
	R-RBM-20	20 000	40
	R-RBM-40	40 000	40
	R-RBM-GF-40**	40 000	400
	R-RBM-400	400 000	40
	R-RBM-GF-400**	400 000	400

*FS – Free sample
**GF – Supplied in glycerol-free buffer

Effectiveness of RiboBlock H RNase Inhibitor

Figure 2. Results of assay based on inhibition of 250 ng RNase A in reaction with 1 mM 2'-3'cycloCMP. Product of Rnase A activity (3'CMP) detected spectrophotometrically at 284 nm



4.4 Carrier RNA (PolyA)

Poly(A) is a homogeneous powder of polyriboadenylate sodium salt, obtained through the enzymatic polycondensation of adenosine-5'-diphosphate. It is useful as a protective agent during RNA isolation and purification.

Benefits:

- Purity > 98%

Area of applications:

- RNA isolation

Table 1. List of products

Product name	Product code	Size, g
Carrier RNA (PolyA)	R-PA-FS*	–
	R-PA-0.1	0.1
	R-PA-0.5	0.5
	R-PA-1	1
	R-PA-10	10

*FS – Free sample

5.1 dNTP Mixes and Sets

KleverLab dNTPs are highly purified 2'-deoxynucleoside-5'-triphosphates supplied in aqueous solutions as sodium salts. The reagent has a purity of ≥ 99% (HPLC) and does not contain DNases or RNases. These dNTPs are suitable for a wide range of molecular biology applications, including polymerase chain reaction (PCR), reverse transcription, RT-PCR, preparation of DNA libraries (including libraries for NGS sequencing), and any other applications requiring DNA synthesis.

dNTP Set, 100 mM Solutions
Separate vials of dATP, dCTP, dGTP, and dTTP at 100 mM concentration each.

dUTP, 100 mM Solution
A solution of dUTP at 100 mM concentration.

dNTP Mix (25 mM each)
A mix containing dATP, dCTP, dGTP, and dTTP at 25 mM concentration each.

dNTP Mix (10 mM each)
A mix containing dATP, dCTP, dGTP, and dTTP at 10 mM concentration each.

dNTP/dUTP Mix
A mix containing dATP (10 mM), dCTP (10 mM), dGTP (10 mM), dTTP (2 mM), and dUTP (8 mM).

Benefits:

- Purity > 99%
- DNases and RNases free

Area of applications:

- All types of PCR

Product name	Product code	Size, ml
dNTP set, 100 mM solution	R-SET-FS*	–
	R-SET-0.25	4x0.25
	R-SET-1	4x1
	R-SET-5	4x(5x1)
	R-SET-10	4x10
	R-SET-25	4x25
dUTP, 100 mM solution	R-UTP-FS*	–
	R-UTP-1	1
	R-UTP-5	5x1
	R-UTP-10	10
	R-UTP-25	25
dNTP Mix (25 mM each)	R-M25-FS*	–
	R-M25-1	1
	R-M25-5	5x1
	R-M25-10	10
	R-M25-25	25
dNTP Mix (10 mM each)	R-M10-FS*	–
	R-M10-1	1
	R-M10-5	5x1
	R-M10-10	10
	R-M10-25	25
dNTP/dUTP Mix	R-MU10-FS*	–
	R-MU10-1	1
	R-MU10-5	5x1
	R-MU10-10	10
	R-MU10-25	25

*FS – Free sample

Ordering

How to place an order?

- You can place an order using our website **www.kleverlab.eu**
- To place an order, you can also write to our email **info@kleverlab.eu**
- If you have additional questions about ordering products, you can dial our phone number **+48 573 966 831**

Required information

The application must include the following information about the buyer

- Customer full name
- Billing address
- Shipping address
- Phone number
- For VAT payers in EU: VAT number
- Product name or catalog SKU, quantity

Shipment

All shipments will be arranged by DHL Express for international shipping and UPS for Poland. Orders are confirmed generally within 1 business day after receipt. In most cases orders are shipped within 1 to 3 business days.

Payment options

KleverLab accepts payments by:

- Direct bank transfer (proforma/invoice)
- Card payment (available payment cards Visa, Visa Electron, Mastercard, MasterCard Electronic, Maestro), based on invoice or for orders placed through our e-shop www.kleverlab.eu/products
- PayPal

Customized solutions

Our catalogs includes standard products. We are flexible and committed to meeting your needs, and may be able to offer OEM products, bulk products, customized packings and formulations. If you have specific requirements and can't find the best solution in our catalog, please contact us.

Free samples

KleverLab provides free samples of our most product range, which allows our customers to thoroughly test our products.

*This information is provided for preliminary review, and the most up-to-date terms of cooperation can be found on the page on the website www.kleverlab.eu/faq, as well as contacting us by email info@kleverlab.eu or by phone +48 573 966 831.

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