PCR solutions



catalogue 2026/2027

About Us

ISO 9001 ISO 13485







KleverLab LLC, a European biotechnological company based in Warsaw, boasts a highly qualified team of professionals with over 20 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 OEM partnerships and providing customized solutions for manufacturers in molecular diagnostics, as well as delivering ready-made products for scientific research.

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2.1 Taq DNA 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 polymerases are 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 lyophilization-ready mastermixes and kits (see Table 2).

Benefits:

- Amplification of PCR fragments up to 5 000 bp / Stable at +2 – +8 °C / Suitable for one-step RT-PCR

Area of applications:

- Routine PCR
- qPCR
- RT-qPCR
- PCR with preamplification

Table 1. Characteristics of Diamant Taq DNA Polymerases

Product name	Code	Hot-start type	Activation temp, °C	Conc., U/µl*	Area of application
Diamant Taq DNA Polymerase	E-TP	–	–	5 – 1 000	Routine PCR
Diamant TaqA DNA Polymerase	E-TAP	Aptamer	37	5 – 50	qPCR
Diamant TaqD DNA Polymerase	E-TDP	Antibody	55	5 – 20	qPCR, RT-qPCR
Diamant TaqAD DNA Polymerase	E-TADP	Mixed aptamer/ antibody	55	5 – 20	qPCR, RT-qPCR, PCR with preamplification
Diamant TaqF DNA Polymerase	E-TFP	Chemical	95	5 – 20	qPCR, RT-qPCR
Diamant TaqAF DNA Polymerase	E-TAFP	Mixed chemical/ aptamer	95	5 – 20	qPCR, RT-qPCR

* – Upon request

Efficiency of Hot-Start Function in Different Inactivation Types of Taq DNA Polymerases

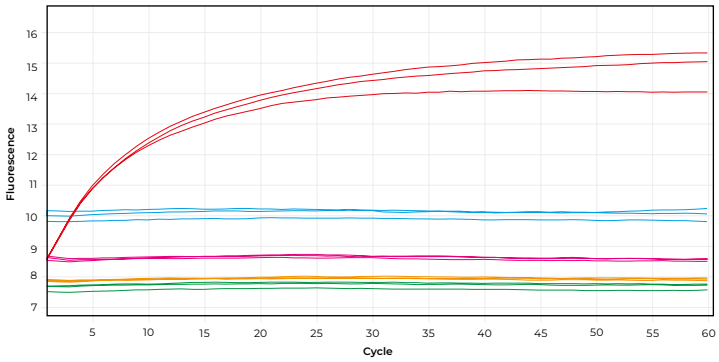


Figure 1. TaqA DNA polymerase (blue lines), TaqD polymerase (pink lines) and TaqF polymerase (orange lines) shown no activity at 37 °C compared to not inactivated Taq polymerase (red lines). Negative control – green lines. Activity of polymerases was measured by PCR with fluorescent stem-loop probe

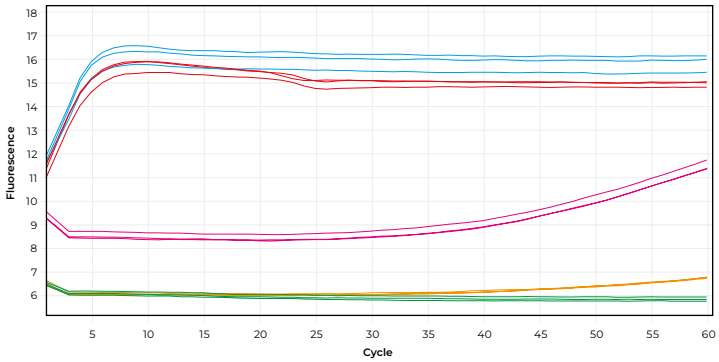


Figure 2. At 55 °C TaqA DNA polymerase (blue lines) is active, TaqD polymerase (pink lines) becomes active only after ~ 40 min of heating and TaqF polymerase (orange lines) shown no activity. Negative control – green lines, not inactivated Taq pol – red. Activity of polymerases was measured by PCR with fluorescent stem-loop probe

Efficiency of Two Types of Hot-Start (Irreversible and Reversible) in TaqAD Polymerase

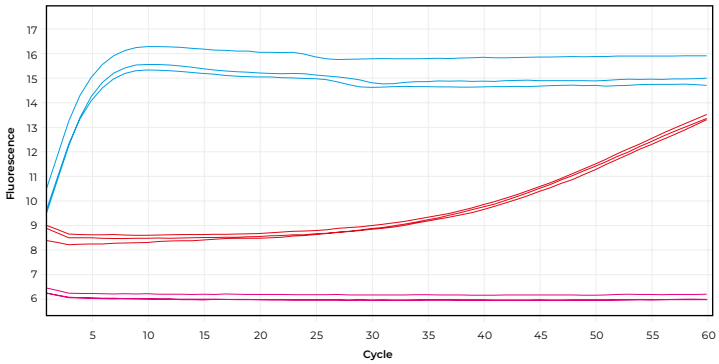


Figure 3. At 55 °C TaqAD polymerase (red lines) becomes active after ~ 40 min of heating. For comparison not inactivated Taq polymerase activity is shown (blue lines). Negative control – pink lines. Activity of polymerases was measured by PCR with fluorescent stem-loop probe

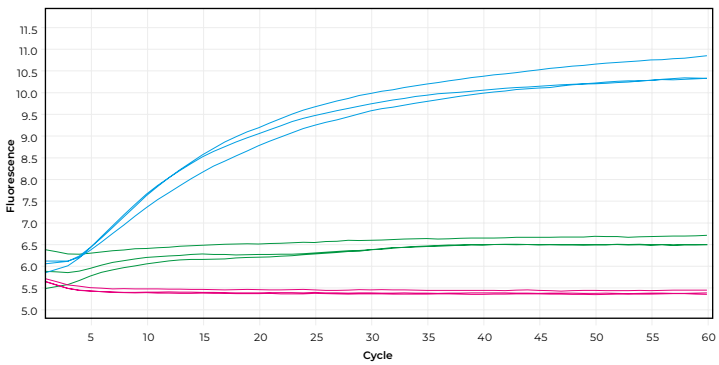


Figure 4. After heating at 80 °C for 3 min and subsequent cooling to 4 °C TaqAD polymerase (green lines) shown no activity under storage at 30 °C due to reversible hot-start. For comparison not inactivated Taq polymerase activity is shown (blue lines). Negative control – pink lines. Activity of polymerases was measured by PCR with fluorescent stem-loop probe

Table 2. List of products – Diamant Taq DNA Polymerase

Product name	Product code	Quantity, U	Concentration, U/µl
Diamant Taq DNA 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	1 000
	E-TP-500	500 000	5
	E-TP-500B	500 000	5
	E-TP-1000	1 000 000	5
	E-TP-1000B	1 000 000	5
	E-TP-GF-1000	1 000 000	1 000
Diamant TaqA DNA 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 DNA 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

Product name	Product code	Quantity, U	Concentration, U/µl
Diamant TaqAD DNA 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 DNA 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
Diamant TaqAF DNA Polymerase	E-TAFP-FS	–	5
	E-TAFP-1B	1 000	5
	E-TAFP-2.5B	2 500	5
	E-TAFP-5B	5 000	5
	E-TAFP-GF-5	5 000	20
	E-TAFP-25B	25 000	5
	E-TAFP-GF-25	25 000	20
	E-TAFP-50	50 000	5
	E-TAFP-50B	50 000	5
	E-TAFP-GF-50	50 000	20
	E-TAFP-500	500 000	5
	E-TAFP-500B	500 000	5
	E-TAFP-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:

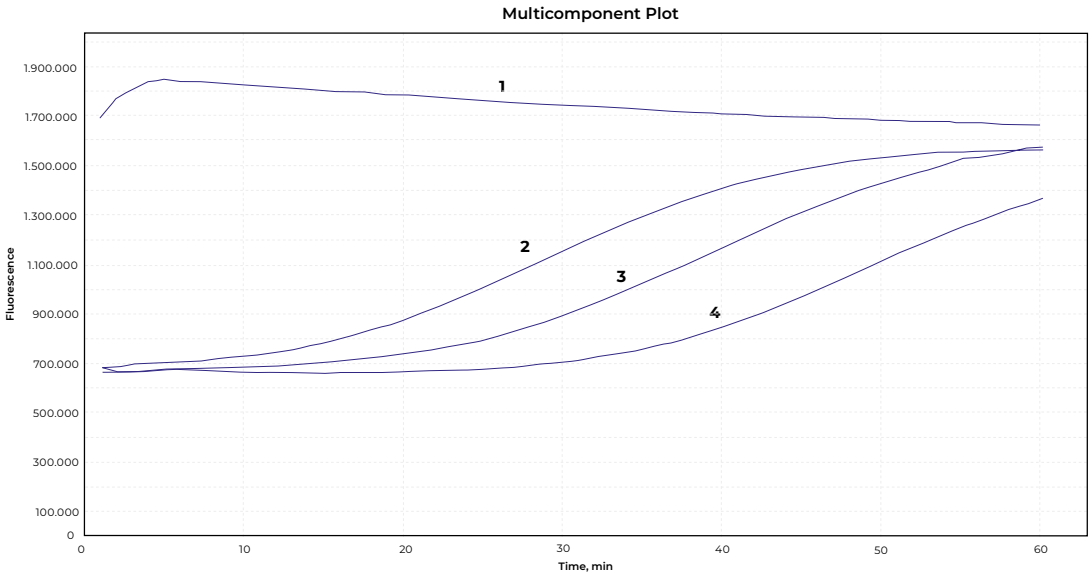
- Inhibit polymerase activity at 55 °C for 30 min

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 Polymerases

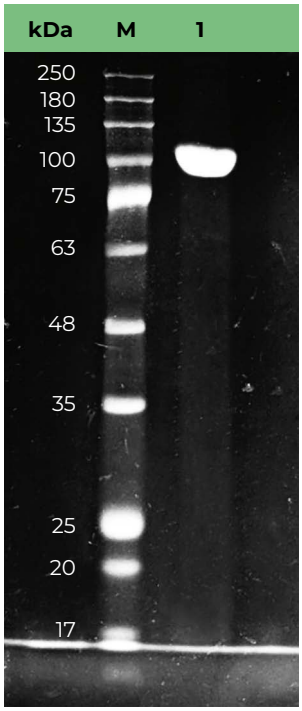
Blitz DNA Polymerase is a highly thermostable DNA polymerase from the hyperthermophilic archaeon *Pyrococcus furiosus*. The modifications of amino acid structure of the native Pfu result in shorter extension times (20 s/kb), more robust and high yield amplification, and the ability to extend long templates 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.
The hot-start version of Blitz DNA Polymerase significantly enhances the sensitivity and specificity of PCR.
Blitz DNA Polymerase, including its hot-start version, is highly purified through affinity and anion-exchange chromatography and can be supplied in glycerol-free buffer for subsequent use in lyophilization-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 sample purification
- NGS libraries preparation



Analysis of Blitz DNA Polymerase Purity

Figure 1. Lane 1 shows a single protein band at ~ 100 kDa

Table 1. List of products

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

*FS – Free sample
**B – Supplied with 2.5X 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 lyophilization-ready mastermixes and kits.

Benefits:

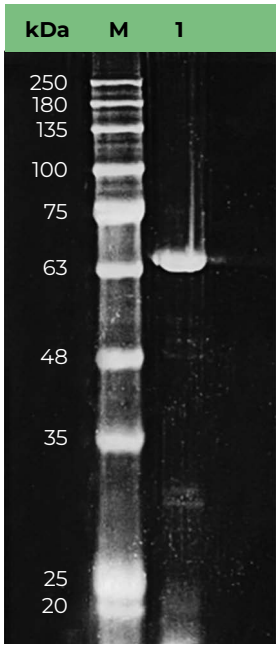
- Isothermal amplification
- Extreme processivity
- High fidelity

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

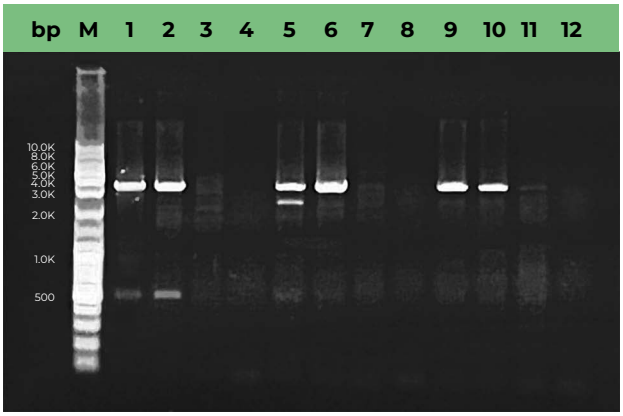
Analysis of Phi29 DNA Polymerase Purity

Figure 1. Lane 1 shows a single protein band at ~ 66.8 kDa



Amplification of Human GAPDH Gene Fragment Using Phi29 DNA Polymerase

Figure 2. Agarose gel electrophoresis of amplicons obtained using human DNA template (10, 1, 0.1 and 0 ng) with Phi29 DNA polymerases



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

Table 1. List of products

Product name	Product code	Size, U	Concentration, U/µl
Phi29 DNA Polymerase	E-PHI-FS	–	10 (5 – 50 upon request)
	E-PHI-0.25B	250	
	E-PHI-GF-0.25B	250	
	E-PHI-1B	1 000	
	E-PHI-GF-1B	1 000	
	E-PHI-5B	5 000	
	E-PHI-GF-5B	5 000	
	E-PHI-10B	10 000	
	E-PHI-GF-10B	10 000	
	E-PHI-25	25 000	
	E-PHI-GF-25	25 000	
	E-PHI-50	50 000	
	E-PHI-GF-50	50 000	

*FS – Free sample
**B – Supplied with 10X reaction buffer
***GF – Supplied in glycerol-free 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.
RevM Revertase, including its hot-start version, is highly purified through affinity and anion-exchange chromatography and can be supplied in glycerol-free buffer for subsequent use in lyophilization-ready mastermixes and kits.

Benefits:

- Effectiveness with GC-rich RNA templates
- Optimal working temperature of 55 °C
- High productivity
- Additionally, RevM Hot-Start Revertase: 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

Analysis of RevM Revertase Purity

Figure 1. SDS-PAGE of purified RevM revertase (5 µg per lane) Lane 1 shows a single protein band at ~70 kDa

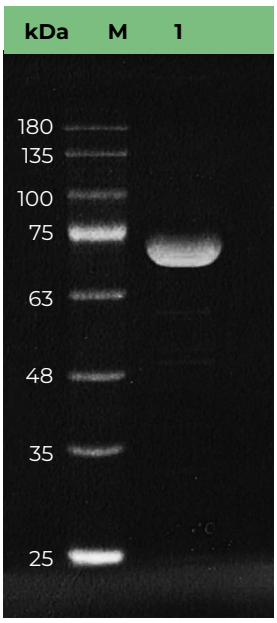


Table 1. List of products

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	–	10
	E-RTH-5B	5 000	10
	E-RTH-25B	25 000	10
	E-RTH-50B	50 000	10
	E-RTH-500	500 000	10
	E-RTH-500B	500 000	10

*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 lyophilization-ready mastermixes and kits (see Table 2).

Benefits:

- UDG: Prevents false-positive results; Inactivated during the first PCR cycle; Maximal activity at 37 °C
- tUDG additionally: Inactivated at 55 °C; activity at RT

Area of applications:

- Routine PCR, Multiplex PCR, Low copy PCR, PCR with dual-labelled probes, PCR with intercalating dyes

Efficiency 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

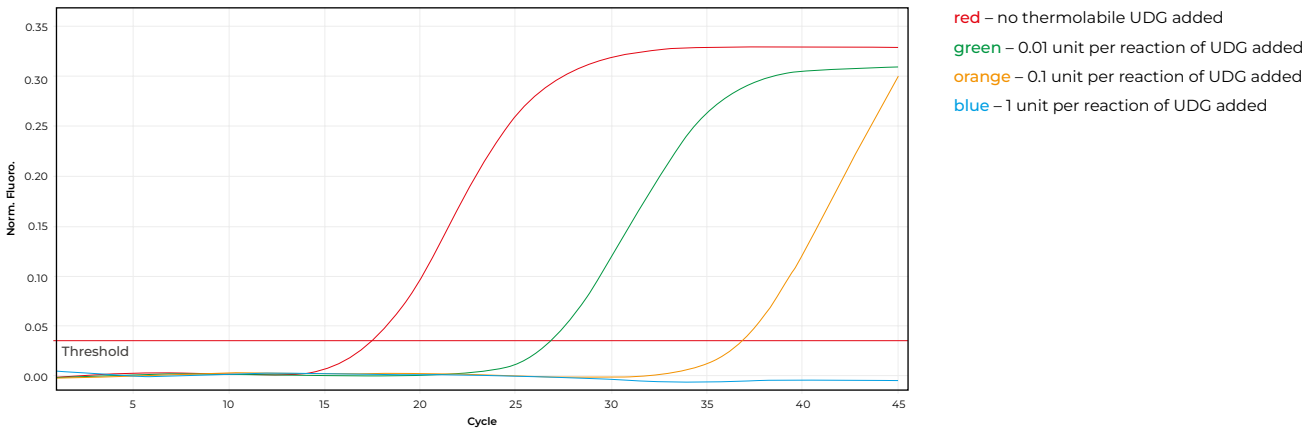


Table 1. Characteristics of Uracil-DNA Glycosylases

Product name	Product code	Optimal working condition	Denaturation condition
Thermolabile Uracil-DNA Glycosylase	E-TUDG	5 min at 25 °C	2 min 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	1 000	5
	E-UDG-5	5 000	5
	E-UDG-GF-5	5 000	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 **Proteinase K**, Molecular Biology Grade in the form of lyophilized powder (≥30 U/mg of lyophilizate, ≥ 40 U/mg of protein) 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, Molecular Biology Grade	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
	E-PK-50	2 x 25 g
	E-PK-100	100 g
Proteinase K (20 mg/ml), Molecular Biology Grade	E-PKS-FS	–
	E-PKS-1	1 ml
	E-PKS-5	5 x 1 ml
	E-PKS-25	25 ml
	E-PKS-50	50 ml
	E-PKS-100	100 ml

*FS – Free sample

3.1 qPCR Mastermixes for Probe-Based Detection

Fast Probe qPCR Mastermixes are universal, ready-to-use line of reagents for quantitative and/or qualitative PCR with real-time detection. The mastermixes are optimized for DNA/LNA dual-labeled fluorescent probes.

Fast Probe qPCR Mastermixes are intended to use in the next application:

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

Fast Probe qPCR Mastermixes can be supplied as liquid ready-to-use form, as lyo-ready solution and as lyophilized powder (see Table 1).

The mastermixes contain a hot-start Taq DNA polymerase, which is activated automatically during the initial DNA denaturation step. This prevents the extension of non-specifically annealed primers and the formation of primer-dimers at low temperatures during qPCR setup. Special additives increase its resistance to common PCR inhibitors. The mastermix provides reproducible results with high sensitivity, enabling the detection of single copies of a DNA target.

The Fast Probe Mastermixes may contain uracil-DNA glycosylase (UDG) and dUTP (M5-FPU, M5-FPU-R, M5-FPU-L, M5-FPU-LR see Table 1).

Presence of dUTP in the reaction mixture leads to the fact that all amplification products will contain uracil. In this case, UDG effectively hydrolyzes uracil from single- and double-stranded DNA molecules during the preparation of the reaction, thus preventing the amplification of the products of previous PCR (amplicons). It helps to avoid carryover contamination. UDG is completely inactivated during PCR and does not interfere with the amplification of the products of the current reaction.

The Fast Probe Mastermixes can be supplied with ROX reference dye (M5-FP-R, M5-FPU-R, see Table 1).

The final concentration in the reaction mixture is 0.5 µM (High ROX) or 0.05 µM (Low ROX), depending on the qPCR instrument. The dye doesn't take part in the PCR reaction but is used to normalize the fluorescent signal, correcting for non-PCR-related variations and providing a stable baseline for data analysis.

Table 1. Properties of Fast Probe qPCR Mastermixes

Product name	Product code	ROX	UDG	Lyo-Ready	Lyo
5X Fast Probe qPCR Mastermix	M5-FP	–	–	–	–
5X Fast Probe R qPCR Mastermix	M5-FP-R	+	–	–	–
5X Fast Probe U qPCR Mastermix	M5-FPU	–	+	–	–
5X Fast Probe UR qPCR Mastermix	M5-FPU-R	+	+	–	–
5X Fast Probe Lyo-Ready qPCR Mastermix	M5-FP-LR	–	–	+	–
5X Fast Probe U Lyo-Ready qPCR Mastermix	M5-FPU-LR	–	+	+	–
Fast Probe Lyo qPCR Mastermix	M-FP-L	–	–	–	+
Fast Probe U Lyo qPCR Mastermix	M-FPU-L	–	+	–	+

Table 2. List of products

Product name	Product code	Size, rxn/25 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 R qPCR Mastermix	M5-FP-R-FS	–
	M5-FP-R-0.25	250
	M5-FP-R-0.5	500
	M5-FP-R-1	1 000
	M5-FP-R-5	5 000
	M5-FP-R-10	10 000
	M5-FP-R-50	50 000
5X Fast Probe U qPCR 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
5X Fast Probe UR qPCR Mastermix	M5-FPU-R-FS	–
	M5-FPU-R-0.25	250
	M5-FPU-R-0.5	500
	M5-FPU-R-1	1 000
	M5-FPU-R-5	5 000
	M5-FPU-R-10	10 000
	M5-FPU-R-50	50 000

Product name	Product code	Size, rxn/25 µl
5X Fast Probe Lyo-Ready Mastermix	M5-FP-LR-FS	–
	M5-FP-LR-0.25	250
	M5-FP-LR-0.5	500
	M5-FP-LR-1	1 000
	M5-FP-LR-5	5 000
	M5-FP-LR-10	10 000
	M5-FP-LR-50	50 000
5X Fast Probe U Lyo-Ready qPCR Mastermix	M5-FPU-LR-FS	–
	M5-FPU-LR-0.25	250
	M5-FPU-LR-0.5	500
	M5-FPU-LR-1	1 000
	M5-FPU-LR-5	5 000
	M5-FPU-LR-10	10 000
	M5-FPU-LR-50	50 000
Fast Probe Lyo qPCR Mastermix	M-FP-L-FS	–
	M-FP-L-0.1	100
	M-FP-L-0.2	200
	M-FP-L-0.5	5 x 100
	M-FP-L-1	5 x 200
Fast Probe U Lyo qPCR Mastermix	M-FPU-L-FS	–
	M-FPU-L-0.1	100
	M-FPU-L-0.2	200
	M-FPU-L-0.5	5 x 100
	M-FPU-L-1	5 x 200

*FS – Free sample

3.2 qPCR Mastermixes for Dye-Based Detection

2X Fast Dye qPCR Mastermixes are universal, ready-to-use reagents for quantitative and/or qualitative PCR with real-time detection with intercalating dye.

The mastermixes contain a hot-start Taq DNA polymerase, which is activated automatically during the initial DNA denaturation step. This prevents the extension of non-specifically annealed primers and the formation of primer-dimers at low temperatures during qPCR setup. Special additives increase its resistance to common PCR inhibitors. The mastermix provides reproducible results with high sensitivity, enabling the detection of single copies of a DNA target.

The 2X Fast Dye mastermixes may contain uracil-DNA glycosylase (UDG) and dUTP (M2-FDU, M2-FDU-R, see Table 1). Presence of dUTP in the reaction mixture leads to the fact that all amplification products will contain uracil. In this case, UDG effectively hydrolyzes uracil from single- and double-stranded DNA molecules during the preparation of the reaction, thus preventing the amplification of the products of previous PCR (amplicons). It helps to avoid false-positive results. UDG is completely inactivated during PCR and does not interfere with the amplification of the products of the current reaction.

The 2X Fast Dye Mastermixes can be supplied with ROX reference dye as separate tube (M2-FD-R, M2-FDU-R see Table 1) or as component of a mastermix (0.05 – 0.5 µM, M2-FD-HR, M2-FD-LR see Table 1). The final concentration in the reaction mixture is 0.5 µM (High ROX) or 0.05 µM (Low ROX), depending on the qPCR instrument. The dye does not take part in the PCR reaction but is used to normalize the fluorescent signal, correcting for non-PCR-related variations and providing a stable baseline for data analysis.

Table 1. Properties of 2X Fast Dye qPCR Mastermixes

Product name	Product code	ROX separate tube	ROX component	UDG
2X Fast Dye qPCR Mastermix	M2-FD	–	–	–
2X Fast Dye R qPCR Mastermix	M2-FD-R	+	–	–
2X Fast Dye HR qPCR Mastermix*	M2-FD-HR	–	+	–
2X Fast Dye LR qPCR Mastermix**	M2-FD-LR	–	+	–
2X Fast Dye U qPCR Mastermix	M2-FDU	–	–	+
2X Fast Dye UR qPCR Mastermix	M2-FDU-R	+	–	+

*0.5 µM, High ROX
**0.05 µM, Low ROX

Table 2. List of products

Product name	Product code	Size, rxn/20 µl
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 R qPCR Mastermix	M2-FD-R-FS	–
	M2-FD-R-0.25	250
	M2-FD-R-0.5	500
	M2-FD-R-1	1 000
	M2-FD-R-5	5 000
	M2-FD-R-10	10 000
	M2-FD-R-50	50 000
2X Fast Dye HR qPCR Mastermix	M2-FD-HR-FS	–
	M2-FD-HR-0.25	250
	M2-FD-HR-0.5	500
	M2-FD-HR-1	1 000
	M2-FD-HR-5	5 000
	M2-FD-HR-10	10 000
	M2-FD-HR-50	50 000
2X Fast Dye LR qPCR Mastermix	M2-FD-LR-FS	–
	M2-FD-LR-0.25	250
	M2-FD-LR-0.5	500
	M2-FD-LR-1	1 000
	M2-FD-LR-5	5 000
	M2-FD-LR-10	10 000
	M2-FD-LR-50	50 000
2X Fast Dye U qPCR 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
2X Fast Dye UR qPCR Mastermix	M2-FDU-R-FS	–
	M2-FDU-R-0.25	250
	M2-FDU-R-0.5	500
	M2-FDU-R-1	1 000
	M2-FDU-R-5	5 000
	M2-FDU-R-10	10 000
	M2-FDU-R-50	50 000

*FS – Free sample

3.3 RT-PCR Mastermixes

KleverLab 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:

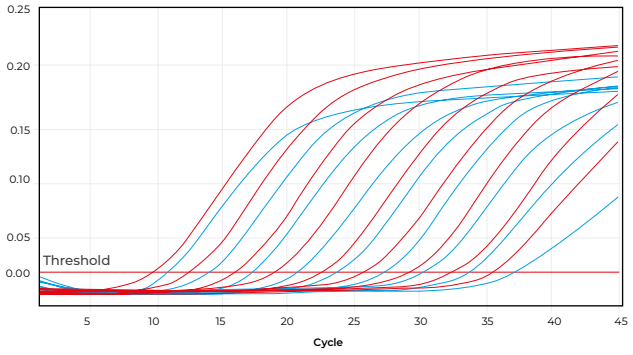
- High sensitivity (single copies of RNA); synthesis of cDNA and PCR is carried out in one tube
- 5X One-Step Plus additionally: increased inhibition resistance, protection against carry-over contamination, protection of RNA from degradation

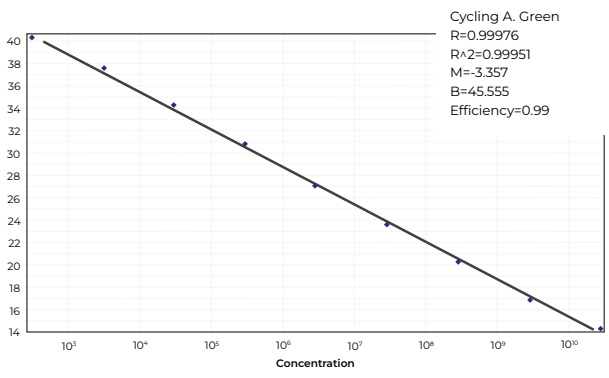
Area of applications:

- Multiplex RT-PCR, Routine RT-PCR, Low copy RT-PCR, RT-PCR with dual-labelled probes

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

Figure 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/25 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

3.4 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. The kit is based on RevM Revertase - genetically modified reverse transcriptase from 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 60 °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:

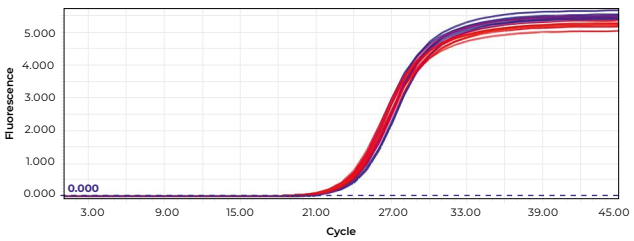
- High yields of full-length first strand cDNA up to 10 kb
- Optimal reaction temperature is 55 °C
- Supplied with the RNase inhibitor
- Supplied with Oligo(dT)18 and random hexamer primers

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

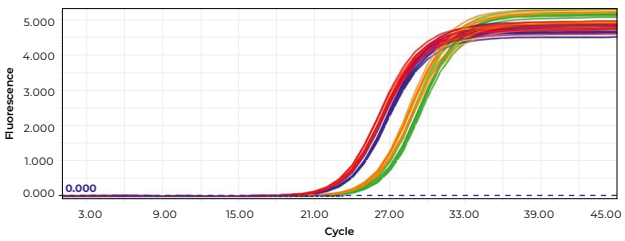
Figure 1. RevM First Strand cDNA Synthesis Kit - red (UBC) Commercial kit - blue (UBC)



red – Ct mean=22.13±0.26
blue – Ct mean=22.18±0.44

Gene-Specific Synthesis / UBC Marker Gene and Gene of Interest (GOI) Expression in *Arabidopsis* Seeds

Figure 2. RevM First Strand cDNA Synthesis Kit - red (UBC) and orange (GOI) Commercial kit - blue (UBC) and green (GOI)



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, reaction
RevM First Strand cDNA Synthesis Kit	RK-RFS-FS	–
	RK-RFS-100	100
	RK-RFS-500	500

*FS – Free sample

3.5 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, dNTPs and optimized buffer. The DNA polymerase included in the mastermix is a chimeric thermostable protein consisting of Pfu polymerase and the Sso7d DNA-binding domain (Blitz DNA Polymerase). The DNA-binding domain stabilizes the complex of DNA polymerase with the template, which leads to an increase in the processivity, synthesis rate, accuracy and stability of the enzyme under high-ionic-strength conditions. 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.
2X Blitz Plus Mastermix additionally contains the hot-start version of Blitz DNA Polymerase, which significantly enhances the sensitivity and specificity of PCR.

Benefits:

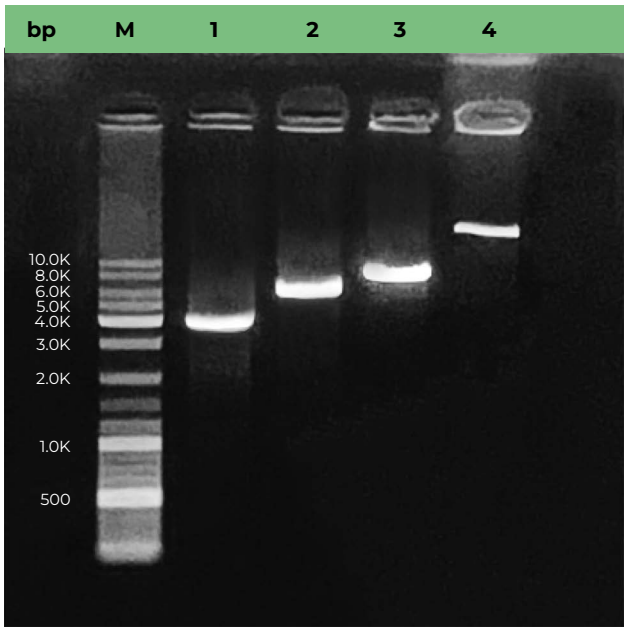
- Increased DNA synthesis rate (up to 3 000 bp/min)
- Long fragments amplification (10 kbp or longer)
- Increased inhibition resistance

Area of applications:

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

Efficiency of 2X Blitz Mastermixes

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



lane 1 – an amplicon of 3.8 kbp
lane 2 – an amplicon of 5.8 kbp
lane 3 – an amplicon of 7.5 kbp
lane 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
2X Blitz Plus Mastermix	M2-BLP-FS	–
	M2-BLP-0.1	100
	M2-BLP-0.2	200
	M2-BLP-0.4	400
	M2-BLP-0.8	800
	M2-BLP-2	2 000
	M2-BLP-4	4 000

*FS – Free sample

3.6 RNase & DNase Detection Kit

The RNase & DNase Detection Kit offers highly sensitive, fast, and easy multiplex detection of both RNase and DNase activity. The kit is based on fluorescently labeled RNA (FAM channel) and DNA (HEX channel) probes. The probes exhibit minimal fluorescence but show a strong increase in fluorescence intensity in the presence of RNases and DNases. The RNase & DNase Detection Kit can detect low amounts of RNase (<0.1 pg/µl) and ss- or ds-DNA degrading DNases (1 x 10^{-5} U/µl) and is invaluable for monitoring a few samples or comprehensive processes. The reagent kit is designed to perform 100 or 500 tests and is supplied with ROX reference dye. The dye does not take part in the detection reaction but is used to normalize the fluorescent signal, correcting for non-PCR-related variations and providing a stable baseline for data analysis.

Benefits:

- Multiplex detection of both RNase and DNase activity
- Highly sensitive

Area of applications:

- RNase and DNase activity measurement

Table 1. List of products

Product name	Product code	Quantity, reactions
RNase & DNase Detection Kit	RK-RDD-100	100
	RK-RDD-500	500

Efficiency of RNase & DNase Detection Kit

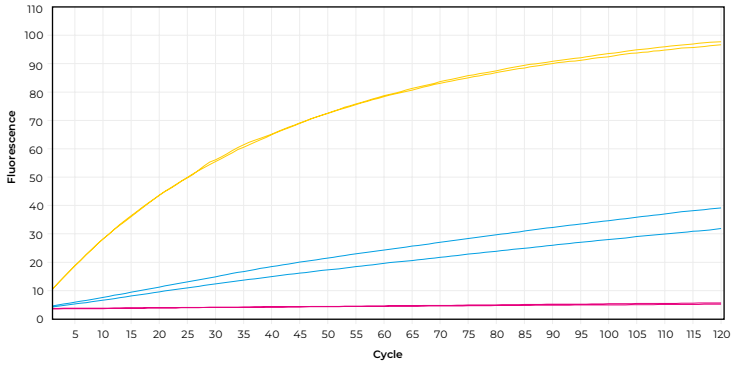


Figure 1. Kinetic evaluation of RNase A activity. Concentration of RNase A standards are 2.5 pg/µl (yellow line) and 0.25 pg/µl (blue line). PCR-grade water was used as negative control (pink line).

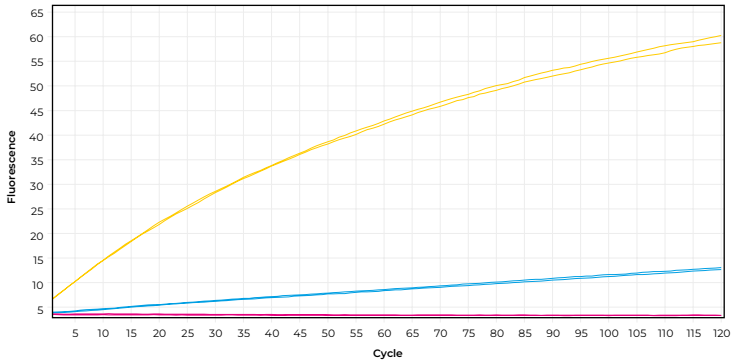
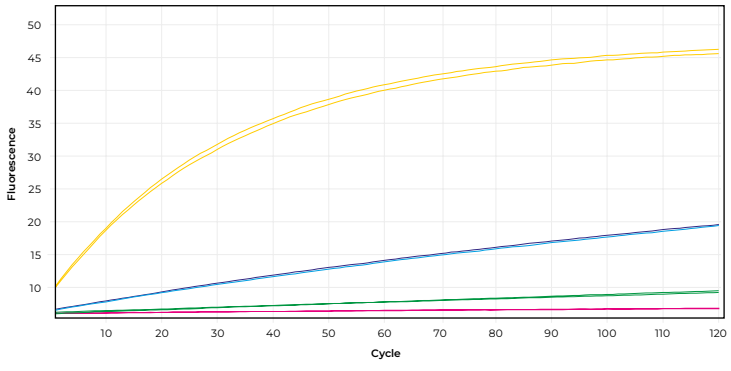
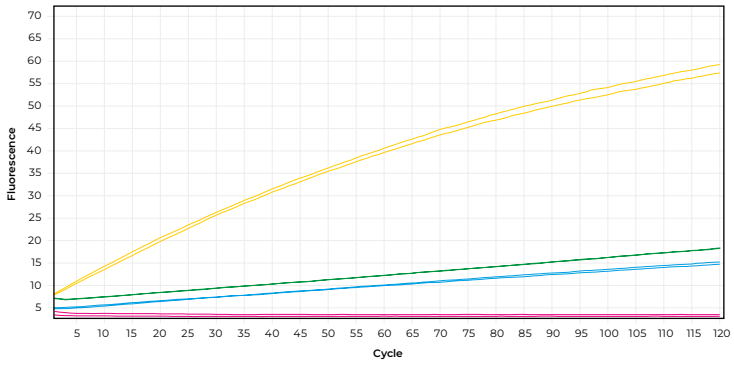


Figure 2. Kinetic evaluation of DNase I activity. Concentration of DNase I standards are 5 x 10^{-5} U/µl (yellow line) and 5 x 10^{-6} U/µl (blue line). PCR-grade water was used as negative control (pink line).

Figures 3.1, 3.2. Semi-quantitative determination of RNase & DNase activity in commercial protein



yellow – 2.5 pg/µl RNase A standard
blue – 0.25 pg/µl RNase A standard
green – sample of commercial protein (10 µg per reaction)
pink – negative control



yellow – 5 x 10^{-5} U/µl DNase I standard
blue – 5 x 10^{-6} U/µl DNase I standard
green – sample of commercial protein (10 µg per reaction)
pink – negative control

4.1 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

Table 1. List of products

Product name	Product code	Size, ml
dNTP Set, 100 mM Solution	R-SET-FS	–
	R-SET-0.25	4 x 0.25
	R-SET-1	4 x 1
	R-SET-5	4 x (5 x 1)
	R-SET-10	4 x 10
	R-SET-25	4 x 25
dUTP, 100 mM Solution	R-UTP-FS	–
	R-UTP-1	1
	R-UTP-5	5 x 1
	R-UTP-10	10
	R-UTP-25	25
dNTP Mix (25 mM each)	R-M25-FS	–
	R-M25-1	1
	R-M25-5	5 x 1
	R-M25-10	10
	R-M25-25	25
dNTP Mix (10 mM each)	R-M10-FS	–
	R-M10-1	1
	R-M10-5	5 x 1
	R-M10-10	10
	R-M10-25	25
dNTP/dUTP Mix	R-MU10-FS	–
	R-MU10-1	1
	R-MU10-5	5 x 1
	R-MU10-10	10
	R-MU10-25	25

*FS – Free sample

4.2 Hexamers and Oligonucleotides

Random Hexamer Primer is a mixture of oligonucleotides representing all possible sequences for a hexamer. Random Hexamers are used for first strand cDNA synthesis with reverse transcriptases.
Oligo(dT)18 Primer hybridizes to the poly(A) tail of mRNA and is used as primer for first strand cDNA synthesis with reverse transcriptases.

Table 1. List of products

Product name	Product code	Size, ml
Random Hexamer Primer, 100 µM	R-RHP-FS	–
	R-RHP-0.2	0.2
	R-RHP-1	5 x 0.2
Oligo(dT)18 Primer, 100 µM	R-ODT-FS	–
	R-ODT-0.2	0.2
	R-ODT-1	5 x 0.2

*FS – Free sample

4.3 ROX Reference Dye

ROX reference dye is a passive reference dye for use on ROX-dependent real-time PCR instruments. The reagent does not take part in the PCR reaction but allows normalization of non-PCR related signal variation and provides a baseline in multiplex reactions. The dye is supplied at 100 µM and 25 µM (50X) concentration.

Table 1. Spectral properties

Property	Value
Excitation/absorption maximum, nm	570
Emission maximum, nm	591
Fluorescence quantum yield	1.0
ε, $L \cdot mol^{-1} \cdot cm^{-1}$	93 000

Table 2. List of products

Product name	Product code	Size, ml
ROX reference dye, 25 µM	R-RD25-FS	–
	R-RD25-1	1
	R-RD25-5	5 x 1
ROX reference dye, 100 µM	R-RD100-FS	–
	R-RD100-1	1
	R-RD100-5	5 x 1

*FS – Free sample

4.4 Color Compensation and Calibration Kits

The **Color Compensation 5-Plex Kit** generates color compensation objects for Roche LightCycler Systems and provides fluorescence crosstalk correction across five detection channels: FAM, HEX, ROX, Cy5, and Cy5.5.

Compatible instruments:

- LightCycler 480 I*
- LightCycler 480 II*
- LightCycler 2.0 Systems for multicolor hybridization probe qPCR
- Cobas® z 480 analyzer*

*Calibration doesn't cover Cy5.5 dye

Table 1. List of products

Product name	Product code	Amount
Color Compensation 5-Plex Kit (for LightCycler® Systems)	RK-CC5-LC-5	5 calibration procedures

The **Dye Calibration 5-Plex Kit** (RK-DC5-AB-5) is a solution for the spectral calibration of custom dyes for the ABI 7500/7500Fast System and QuantStudio Systems. The dye formulations will improve results with multiplexing by more accurately representing fluorescent spectra found in your real-time PCR experiments.

Compatible instruments:

- ABI 7500/7500Fast Systems
- QuantStudio™ series Systems

Table 2. List of products

Product name	Product code	Amount
Dye Calibration 5-plex Kit (for ABI7500 and QuantStudio™ systems)	RK-DC5-AB-5	5 calibration procedures

4.5 Recombinant Bovine Serum Albumin

Recombinant Bovine Serum Albumin (rBSA) is an animal origin-free albumin, expressed in yeast cells. rBSA can be used for protein stabilization during long-term storage and incubation in enzymatic assays and PCR, prevention of enzyme adhesion to reaction plates or pipette surfaces. Due to rBSA higher consistency and homogeneity than native bovine homologous, its superior performance effectively blocks non-specific binding, ensuring precise and reliable results in assays. Supplied in lyophilized form or as a solution (100 mg/ml).

Benefits:

- Animal origin-free
- *E. coli* DNA free
- High consistency and homogeneity
- Effective blocking of non-specific binding

Area of applications:

- PCR
- Nucleic acid isolation, purification and storage
- ELISA
- Western Blot
- CLIA
- Lateral Flow Assays
- Immunohistochemistry (IHC)
- Latex agglutination assays

Table 1. List of products

Product name	Product code	Size
Recombinant Bovine Serum Albumin, Lyophilized	R-RBA-L-1	1 g
	R-RBA-L-5	5 x 1 g
Recombinant Bovine Serum Albumin (100 mg/ml)	R-RBA-FS	–
	R-RBA-1	1 ml
	R-RBA-5	5 x 1 ml
	R-RBA-10	10 x 1 ml

*FS – Free sample

4.6 Trehalose

D-(+)-Trehalose dihydrate, Molecular Biology Grade is a low molecular-weight, non-reducing disaccharide. This highly purified reagent is uniquely suitable for use as a buffer component in many molecular biology applications, including LAMP and PCR. It also imparts physical and chemical stability to nucleic acids, enzymes, and other biomolecules and can be used as cryoprotectant and biomolecule stabilizer at ambient or ultra-cold temperatures as well as in lyophilization processes.

Benefits:

- High glass transition temperature
- Chemical inertness
- Superior water displacement
- Allows storage of ready-to-use PCR kits at ambient temperature
- Increased enzyme thermostability
- Lower DNA melting temperature

Area of applications:

- qPCR
- RT-PCR
- LAMP
- PCR kits and reagents lyophilization

Table 1. List of products

Product name	Product code	Size, g
D-(+)-Trehalose dihydrate, Molecular Biology Grade	R-TRD-FS	–
	R-TRD-0.25	25
	R-TRD-0.5	50
	R-TRD-1	100
	R-TRD-2.5	250
	R-TRD-5	500
	R-TRD-10	1 000

*FS – Free sample

5.1 Magnetic Beads ExtraMag (25 mg/ml)

Magnetic Beads ExtraMag (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 is 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 instruments
- Allsheng instruments
- Maelstrom instruments
- 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} = 1.7 – 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 ExtraMag (25 mg/ml)	R-MB25-FS	–
	R-MB25-5	5
	R-MB25-50	50
	R-MB25-100	100
	R-MB25-500	500
	R-MB25-1000	1 000

*FS – Free sample

5.2 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 lyophilization-ready mastermixes and kits (Table 1).

Benefits:

- 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: improved resistance to oxidation, ideal for low DTT reactions (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 During 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

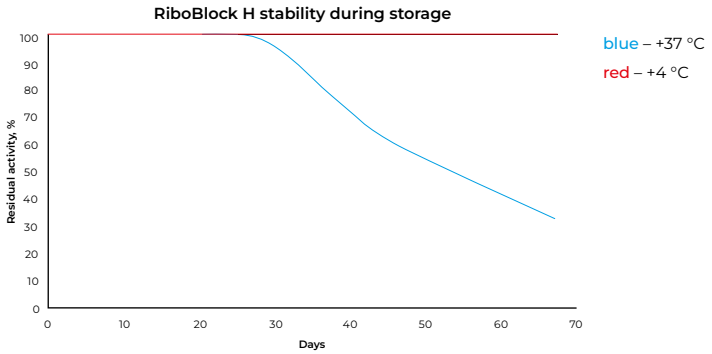


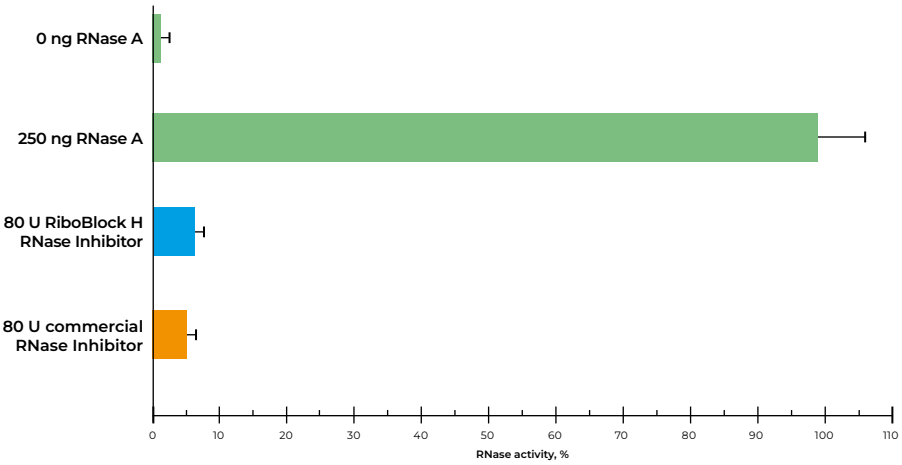
Table 1. List of products

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	200
	R-RBH-400	400 000	40
	R-RBH-GF-400	400 000	200
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	200
	R-RBM-400	400 000	40
	R-RBM-GF-400	400 000	200

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

Efficiency 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



5.3 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

5.4 Guanidine Salts

Guanidine hydrochloride and guanidine thiocyanate are chemical compounds primarily used in molecular biology as powerful chaotropic agents. They are highly effective at denaturing proteins and inactivating enzymes, making them essential for the isolation and purification of ribonucleic acids (RNA) and deoxyribonucleic acids (DNA).

Benefits:

- High purity

Area of applications:

- DNA/RNA isolation

Table 1. List of products

Product name	Product code	Size, g
Guanidine Thiocyanate, Molecular Biology Grade	R-GTC-FS	–
	R-GTC-0.1	100
	R-GTC-4.25	4 x 25
	R-GTC-0.5	500
	R-GTC-20.25	20 x 25
	R-GTC-1	1 000
	R-GTC-40.25	40 x 25
Guanidine Hydrochloride, Molecular Biology Grade	R-GCL-FS	–
	R-GCL-0.1	100
	R-GCL-0.5	500
	R-GCL-1	1 000

*FS – Free sample

RUO

6.1 DNA & RNA Isolation Kits

The list of KleverLab products for nucleic acid purification includes kits based on magnetic bead, spin column, or co-precipitation technologies. These kits allow for the purification of DNA/RNA both in manual mode (using a magnetic rack or centrifuge for 1.5 – 2.0 ml single tubes) and in automated mode using the most popular robotic stations (KingFisher, Allsheng, Maelstrom, etc.). The NA recovery rate depends on the sample type and is typically greater than 75%. Isolated nucleic acids are suitable for further molecular biological studies, including qPCR and RT-PCR.

Benefits:

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

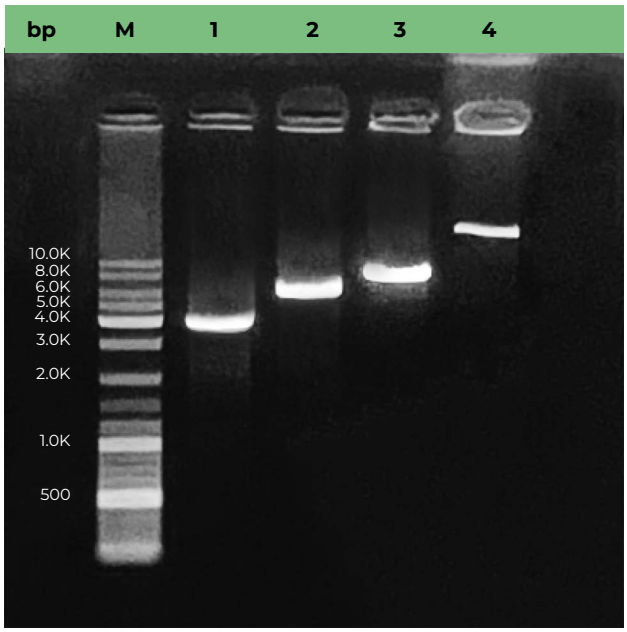
**depending on the sample*

Storage condition:

- RT (< + 25 °C) – 1 year

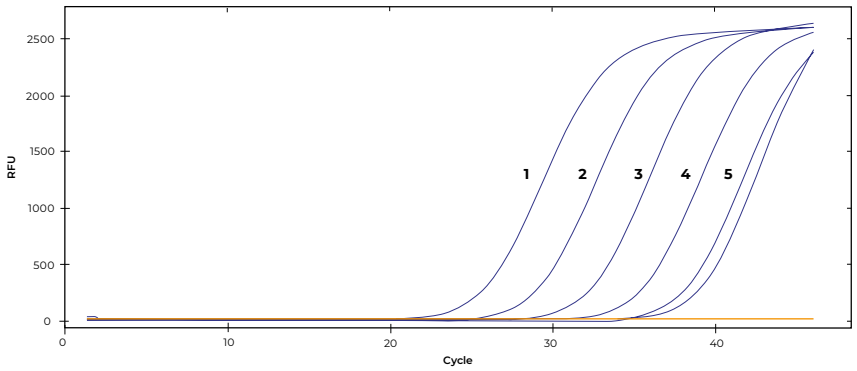
Efficiency of the SciMag Genomic DNA Isolation Kit in DNA Isolation from Human Blood and Plasma

Figure 1. PCR amplification of β-globin gene fragments (3.8, 5.8, 7.5 and 10 kbp) from the isolate purified from human blood.



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

Figure 2. Successful PCR amplification of Cytomegalovirus DNA isolated from CMV Verification Panel (Exact Diagnostics, USA). Initial virus concentration in plasma is 4 x 10^2-4 x 10^6 IU/ml.



1 – 4 x 10^6 IU/ml
2 – 4 x 10^5 IU/ml
3 – 4 x 10^4 IU/ml
4 – 4 x 10^3 IU/ml
5 – 4 x 10^2 IU/ml

RUO

Product code	Product name	Technology	NA type	Number of samples	
RKI-SMG-50	SciMag Genomic DNA Isolation Kit	Magnetic beads	Genomic DNA	50	
RKI-SMG-250	SciMag Genomic DNA Isolation Kit	Magnetic beads	Genomic DNA	5 x 50	
RKI-SMP-50	SciMag Plasmid Mini Isolation Kit	Magnetic beads	Plasmid DNA	50	
RKI-SMP-250	SciMag Plasmid Mini Isolation Kit	Magnetic beads	Plasmid DNA	5 x 50	
RKI-PMS-E-100	PuriMag S Total DNA/RNA Isolation Kit. Version E	Magnetic beads	Total DNA/RNA	100	
RKI-PMS-M-64P	PuriMag S Total DNA/RNA Isolation Kit. Prefilled Plates	Magnetic beads	Total DNA/RNA	64	
RKI-PMS-KF-96P	PuriMag S Total DNA/RNA Isolation Kit. Prefilled Plates	Magnetic beads	Total DNA/RNA	96	
RKI-PMP-E-100	PuriMag P Total DNA/RNA Isolation Kit. Version E	Magnetic beads	Total DNA/RNA	100	
RKI-PMP-M-64P	PuriMag P Total DNA/RNA Isolation Kit. Prefilled Plates	Magnetic beads	Total DNA/RNA	64	
RKI-PMP-KF-96P	PuriMag P Total DNA/RNA Isolation Kit. Prefilled Plates	Magnetic beads	Total DNA/RNA	96	
RKI-PMH-E-100	PuriMag H Total DNA/RNA Isolation Kit. Version E	Magnetic beads	Total DNA/RNA	100	
RKI-PMV-E-100	PuriVet Total DNA/RNA Isolation Kit. Version E	Magnetic beads	Total DNA/RNA	100	
RKI-PMV-M-64P	PuriVet Total DNA/RNA Isolation Kit. Prefilled Plates	Magnetic beads	Total DNA/RNA	64	
RKI-PMV-KF-96P	PuriVet Total DNA/RNA Isolation Kit. Prefilled Plates	Magnetic beads	Total DNA/RNA	96	
RKI-PSS-100	PuriSpin S Total DNA/RNA Isolation Kit	Spin column	Total DNA/RNA	100	
RKI-PP-100	PuriPrep Total DNA/RNA Isolation Kit	Co-precipitation	Total DNA/RNA	100	

	Handling	Compatible instruments	Format	Sample type
	Manual/Auto	All types of automatic stations	Bottles	Blood
	Manual/Auto	All types of automatic stations	Bottles	Blood
	Manual	–	Bottles	*Escherichia coli* cells
	Manual	–	Bottles	*Escherichia coli* cells
	Manual/Auto	All types of automatic stations	Bottles	
	Auto	Auto-Pure Mini and analogs	96-well plates	Mucosal swabs, scrapes, smears, urine etc.
	Auto	KingFisher Flex and analogs	96-well plates	
	Manual/Auto	All types of automatic stations	Bottles	
	Auto	Auto-Pure Mini and analogs	96-well plates	· Blood plasma, serum etc. · low-copy samples of mucosal swabs, scrapes, smears, urine etc.
	Auto	KingFisher Flex and analogs	96-well plates	
	Manual/Auto	All types of automatic stations	Bottles	· Low-copy samples of blood plasma, serum etc.
	Manual/Auto	All types of automatic stations	Bottles	· Homogenates of muscle tissue · Whole blood, plasma/serum · Fecal swabs · Smears and mucosal swabs saliva, urine, conjunctival discharge, cerebrospinal fluid · Arthropods · Water and feed/forage samples
	Auto	Auto-Pure Mini and analogs	96-well plates	
	Auto	KingFisher Flex and analogs	96-well plates	
	Manual	–	Bottles	· Mucosal swabs, scrapes, smears, urine etc.
	Manual	–	Bottles	· Mucosal swabs, scrapes, smears, urine etc. (including low-copy samples) · Blood plasma, serum etc. (including low-copy samples)

RUO

7.1 Urogenital Infections

PCR tests for detecting urogenital infections are highly valuable due to their exceptional sensitivity and specificity. This allows for the rapid and accurate identification of pathogens, including both bacteria and viruses, enabling timely initiation of appropriate treatments. The use of PCR tests also helps prevent chronic or complicated forms of infections and reduces the risk of transmission to partners.
KleverTest PCR kits are designed for the qualitative detection of various urogenital pathogens, either separately or in multiplexes, from clinical samples such as swabs and smears. These kits include an endogenous internal control and offer high sensitivity and specificity. Special additives enhance resistance to inhibitors, while the presence of thermolabile UDG helps eliminate potential carry-over contamination. All KleverTest kits feature fast protocols (70 – 90 minutes) that are compatible with most popular real-time PCR instruments.

Benefits:

- High specificity (up to 99.9%)
- Universal protocol for all kits
- Contains UDG for eliminating possible carry-over contamination
- Validated according to ISO 13485

Compatible instruments:

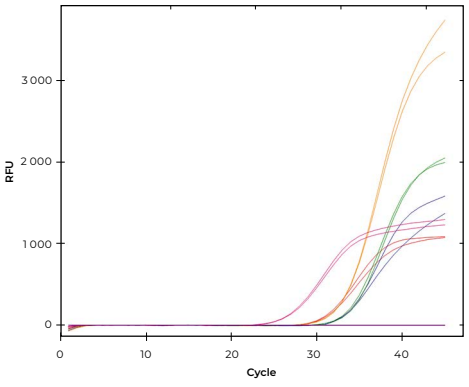
- CFX96™ Systems
- QuantStudio™ 3/5 Systems
- Applied Biosystems™ 7500/7500 Fast Instruments
- Rotor-Gene® Q 5/6 plex Platforms
- LightCycler® 480 I/480 II
- Cobas® z 480 analyzer
- Gentier™ 96R Systems
- LineGene™ 9600/9600 Plus Systems
- CroBEE® CBRT5/96 Systems
- Mx3005P™ Systems
- AriaMx™/AriaDx™ Instruments

Storage condition:

- From -24 °C to -16 °C – 1 year
- From +2 °C to +8 °C – 14 days
- 10 freeze/thaw cycles are allowed

PCR Efficiency of KleverTest CT/TV/MG/NG PCR Kit

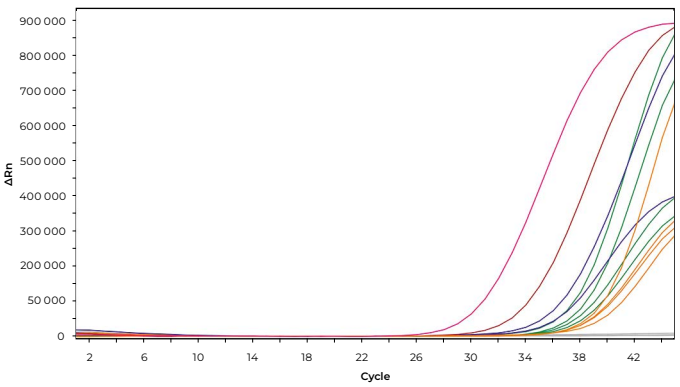
Figure 1. Results of amplification of DNA sample from reference panel



blue – IC
green – *M. genitalium*
orange – *C. trachomatis*
red – *N. gonorrhoeae*
pink – *T. vaginalis*

PCR Efficiency of KleverTest CT PCR Kit

Figure 2. Results of amplification of quantified DNA from Chlamydia trachomatis strains



orange – 2.5 x 10^2 copies/ml
green – 5 x 10^2 copies/ml
blue – 10^3 copies/ml
red – 10^4 copies/ml
pink – 10^5 copies/ml

Product code	Product name	Quantitative	Control type	LOD (copies/ml)*	Pathogen	Genome type	Tests
RK-CA-100	KleverTest CA PCR Kit	–	ENDO	500	*Candida albicans*	DNA	100
RK-CT-100	KleverTest CT PCR Kit	–	ENDO	500	*Chlamydia trachomatis*	DNA	100
RK-TV-100	KleverTest TV PCR Kit	–	ENDO	500	*Trichomonas vaginalis*	DNA	100
RK-UU/UP-100	KleverTest UU/UP PCR Kit	–	ENDO	1 000	*Ureaplasma urealyticum* and *Ureaplasma parvum* with differentiation	DNA	100
RK-US-100	KleverTest USpp PCR Kit	–	ENDO	1 000	*Ureaplasma* spp.	DNA	100
RK-MH-100	KleverTest MH PCR Kit	–	ENDO	1 000	*Mycoplasma hominis*	DNA	100
RK-MG-100	KleverTest MG PCR Kit	–	ENDO	2 000	*Mycoplasma genitalium*	DNA	100
RK-GV-100	KleverTest GV PCR Kit	–	ENDO	1 000	*Gardnerella vaginalis*	DNA	100
RK-NG-100	KleverTest NG PCR Kit	–	ENDO	500	*Neisseria gonorrhoeae*	DNA	100
RK-TP-100	KleverTest TP PCR Kit	–	ENDO	500	*Treponema pallidum*	DNA	100
RK-CT/MG-100	KleverTest CT/MG PCR Kit	–	ENDO	500	*Chlamydia trachomatis* and *Mycoplasma genitalium* with differentiation	DNA	100
RK-CMU-100	KleverTest CT/MG/ US PCR Kit	–	ENDO	500	*Chlamydia trachomatis, Mycoplasma genitalium* and *Ureaplasma* spp. with differentiation	DNA	100
RK-CMUM-100	KleverTest CT/MG/ US/MH PCR Kit	–	ENDO	500	*Chlamydia trachomatis, Mycoplasma genitalium, Ureaplasma* spp. and *Mycoplasma hominis* with differentiation	DNA	100
RK-CTMN-100	KleverTest CT/TV/ MG/NG PCR Kit	–	ENDO	500	*Chlamydia trachomatis, Trichomonas vaginalis, Mycoplasma genitalium* and *Neisseria gonorrhoeae* with differentiation	DNA	100

*Under isolation from 100 µl of sample

RUO

7.2 Urogenital Microbiota Analysis

FloraCheck PCR kits are designed as a versatile tool for assessing the composition and balance of the human urogenital microbiota. These kits enable the detection and quantification of a broad panel of microorganisms – both beneficial (lactobacilli) and potentially pathogenic (opportunistic and pathogenic bacteria, fungi, and protozoa) – from a single clinical sample, typically a vaginal, cervical, or urethral swab.
The core technology relies on real-time PCR (qPCR) to amplify and quantify specific DNA sequences unique to each target microorganism. By comparing the amount of DNA from individual bacterial species against the total bacterial mass (total DNA) present in the sample, the test calculates the relative abundance of each microbial group as a percentage. This quantitative approach distinguishes normal microbiota states from dysbiosis, including bacterial vaginosis or aerobic vaginitis, more precisely than traditional culture-based methods.

FloraCheck urogenital microbiota panel includes:

- *Lactobacillus* spp. – the dominant protective genus in a healthy vaginal microbiome
- Opportunistic anaerobic bacteria such as *Gardnerella vaginalis* and *Atopobium vaginae* (associated with bacterial vaginosis)
- Facultative anaerobic bacteria such as *Enterococcus* spp., *Streptococcus* spp., and *Staphylococcus* spp. (associated with aerobic vaginitis)
- Mycoplasmas – *Mycoplasma genitalium*
- Ureaplasmas – *Ureaplasma urealyticum*, *Ureaplasma parvum*
- Fungi – *Candida* spp. (e.g., *C. albicans*, *C. glabrata*, *C. krusei*, *C. tropicalis*, *C. parapsilosis*)
- STI agents – *Trichomonas vaginalis*, *Chlamydia trachomatis*, *Neisseria gonorrhoeae*
- Human papillomaviruses – HPV16, HPV18, HPV45 (high-risk oncogenic types)

FloraCheck kits can be used for:

- Diagnosing bacterial vaginosis, aerobic vaginitis, and vulvovaginal candidiasis
- Investigating recurrent infections or unexplained symptoms (discharge, odor, itching)
- Pre-conception and prenatal screening
- Monitoring treatment efficacy after antimicrobial therapy
- Fertility workups and pre-IVF preparation

Benefits:

- High specificity (up to 99.9%)
- Universal protocol for all kits
- Contains UDG for eliminating possible carry-over contamination
- Validated according to ISO 13485

Compatible instruments:

- CFX96™ Systems
- QuantStudio™ 3/5 Systems
- Applied Biosystems™ 7500/7500 Fast Instruments
- Rotor-Gene® Q 5/6 plex Platforms
- LightCycler® 480 I/480 II
- Cobas® z 480 analyzer
- Gentier™ 96R Systems
- LineGene™ 9600/9600 Plus Systems
- CroBEE® CBRT5/96 Systems
- Mx3005P™ Systems
- AriaMx™/AriaDx™ Instruments

Storage condition:

- From -24 °C to -16 °C – 1 year
- From +2 °C to +8 °C – 14 days
- 10 freeze/thaw cycles are allowed

Product code	Product name	Quantitative	Control type	LOD (copies/ml)*	Pathogen	Genome type	Tests
FC-BV-100	FloraCheck BV PCR kit	+	ENDO	1 000	*Lactobacillus* spp., *Gardnerella vaginalis* and *Atopobium vaginae* with differentiation	DNA	100
FC-CA5-100	FloraCheck CA5 PCR kit	+	ENDO	2 000	*Candida albicans*, *Candida krusei*, *Candida glabrata*, *Candida tropicalis* and *Candida parapsilosis*	DNA	100

*Under isolation from 100 µl of sample

Example of PCR Efficiency for the FloraCheck BV Kit in Bacterial Vaginosis Diagnostics

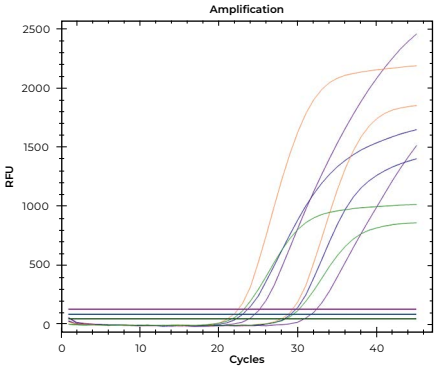


Figure 1. Results of Calibrators (synthetic DNA) amplification with FloraCheck BV PCR Kit. Blue – bacterial DNA, green – G. vaginalis, orange – Lactobacillus spp., violet – A. vaginae.

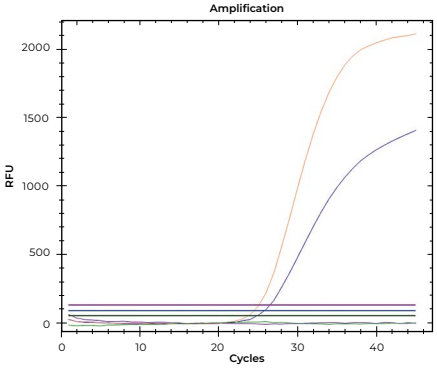


Figure 2. Results of BV- (negative control) amplification with FloraCheck BV PCR Kit. Blue – bacterial DNA, green – G. vaginalis, orange – Lactobacillus spp., violet – A. vaginae. The final diagnosis can be made by comparing the concentrations of total bacterial mass, lactobacilli and potential pathogens of vaginosis.

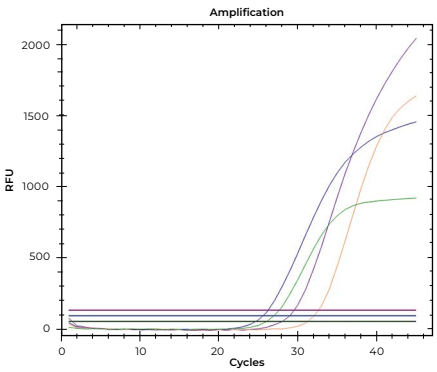


Figure 3. Results of BV+ (positive control) amplification with FloraCheck BV PCR Kit. Blue – bacterial DNA, green – G. vaginalis, orange – Lactobacillus spp., violet – A. vaginae. The final diagnosis can be made by comparing the concentrations of total bacterial mass, lactobacilli and potential pathogens of vaginosis.

RUO

7.3 TORCH Infections

TORCH infections are a group of congenital infections transmitted from mother to child during pregnancy, birth, or shortly after. TORCH is an acronym for infections caused by *Toxoplasma gondii*, other agents, Rubella, Cytomegalovirus (CMV), and Herpes simplex virus (HSV).
KleverTest PCR kits are designed for the qualitative and quantitative detection of TORCH infections, either individually or in multiplex, from blood plasma samples. These kits offer high sensitivity and specificity.
Special additives enhance resistance to inhibitors, and the inclusion of thermolabile UDG helps prevent carry-over contamination. All KleverTest kits feature fast (70 – 90 minutes) protocols and are compatible with most popular real-time PCR instruments.

Benefits:

- High specificity (up to 99.9%)
- Universal protocol for all kits
- Contains UDG for eliminating possible carry-over contamination
- Validated according to ISO 13485

Compatible instruments:

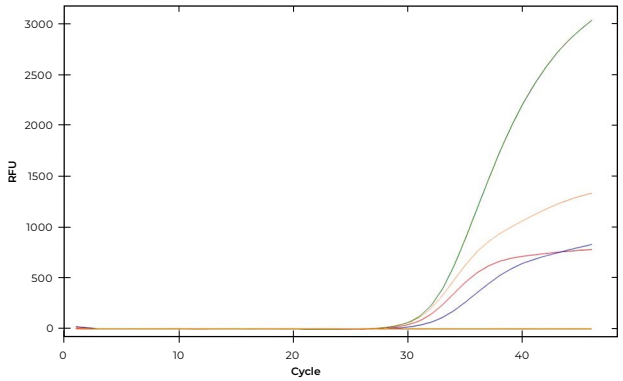
- CFX96™ Systems
- QuantStudio™ 3/5 Systems
- Applied Biosystems™ 7500/7500 Fast Instruments
- Rotor-Gene® Q 5/6 plex Platforms
- LightCycler® 480 I/480 II
- Cobas® z 480 analyzer
- Gentier™ 96R Systems
- LineGene™ 9600/9600 Plus Systems
- CroBEE® CBRT5/96 Systems
- Mx3005P™ Systems
- AriaMx™/AriaDx™ Instruments

Storage condition:

- From -24 °C to -16 °C – 1 year
- From +2 °C to +8 °C – 14 days
- 10 freeze/thaw cycles are allowed

Amplification of Reference DNA by KleverTest EBV/CMV/HHV-6 PCR Kit

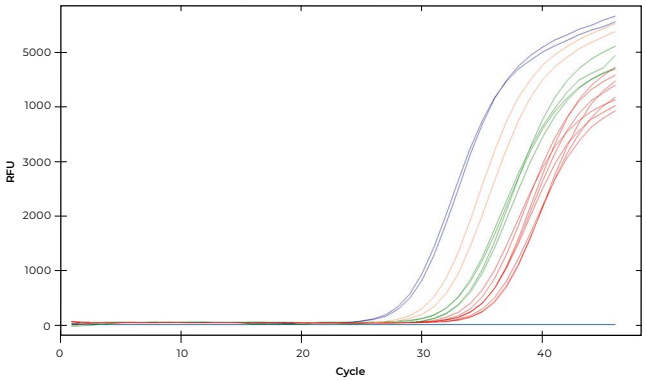
Figure 1. Results of amplification of DNA samples from reference panel



blue – IC
green – CMV
orange – EBV
pink – HHV-6

Amplification of Reference DNA by KleverTest TG PCR Kit

Figure 2. Results of amplification and quantification of Toxoplasma gondii DNA from the reference panel (Vircell)



blue – 10^4 copies/ml
yellow – 10^3 copies/ml
green – $5x10^2$ copies/ml
red – 2.5×10^2 copies/ml

Product code	Product name	Quantitative	Control type	LOD (copies/ml)*	Pathogen	Genome type	Tests
RK-ECH6-100	KleverTest EBV/ CMV/HHV-6 PCR Kit	–	EXO	500	Epstein-Barr virus, Cytomegalovirus and Human herpes virus 6 with differentiation	DNA	100
RK-PVB19-100	KleverTest PV B19 PCR Kit	–	EXO	500	Parvovirus B19	DNA	100
RK-PVB19q-100	KleverTest PV B19 Quant PCR Kit	+	EXO	500	Parvovirus B19	DNA	100
RK-RV-100	KleverTest Rubella PCR Kit	–	EXO	500	Rubella virus	RNA	100
RK-VZV-100	KleverTest VZV PCR Kit	–	EXO	500	Varicella zoster virus	DNA	100
RK-TG-100	KleverTest TG PCR Kit	–	EXO	500	*Toxoplasma gondii*	DNA	100

*Under isolation from 100 µl of sample

RUO

7.4 Human Papilloma Viral Infections

Using PCR tests to detect Human papillomavirus (HPV) is essential due to their high sensitivity and specificity. These tests enable the detection and genotyping of HPV, which is critical for screening, diagnosing, and monitoring the progression of infection. They also play a significant role in preventing cervical cancer and other HPV-related cancers.
KleverTest PCR kits are designed for the qualitative and quantitative detection of high- and low-risk carcinogenic HPV from clinical samples, such as swabs and smears. HPV types can be analyzed in screening and/or genotyping modes. The kits include an endogenous internal control and offer high sensitivity and specificity. Special additives enhance resistance to inhibitors, while the presence of thermolabile UDG helps prevent carry-over contamination. All KleverTest kits feature fast (70 – 90 minutes) protocols and are compatible with the most popular real-time PCR instruments.

Benefits:

- High specificity (up to 99.9%)
- Universal protocol for all kits
- Contains UDG for eliminating possible carry-over contamination
- Validated according to ISO 13485

Compatible instruments:

- CFX96™ Systems
- QuantStudio™ 3/5 Systems
- Applied Biosystems™ 7500/7500 Fast Instruments
- Rotor-Gene® Q 5/6 plex Platforms
- LightCycler® 480 I/480 II
- Cobas® z 480 analyzer
- Gentier™ 96R Systems
- LineGene™ 9600/9600 Plus Systems
- CroBEE® CBRT5/96 Systems
- Mx3005P™ Systems
- AriaMx™/AriaDx™ Instruments

Storage condition:

- From -24 °C to -16 °C – 1 year
- From +2 °C to +8 °C – 14 days
- 10 freeze/thaw cycles are allowed

Amplification of positive control samples

Figure 1. Results of amplification of HPV 16/18/45 positive control

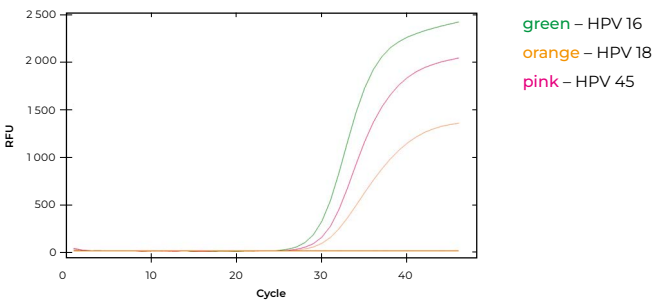
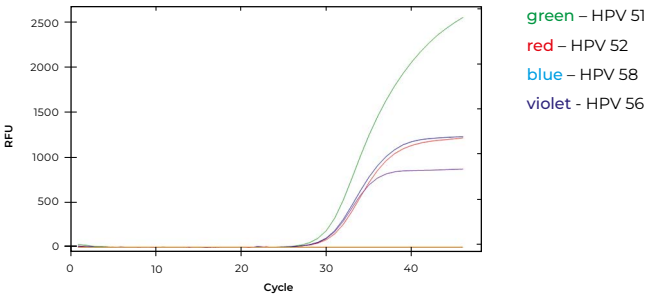


Figure 2. Results of amplification of HPV 51/52/56/58 positive control



Product code	Product name	Quantitative	Control type	LOD (copies/ml)*	Pathogen	Genome type	Tests
RK-HPVq-100	KleverTest HPV Screen Quant PCR Kit	+	ENDO	500	Human papillomavirus types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66, 68 and HPV types 16, 18, 45 with differentiation	DNA	100
RK-HPV-100	KleverTest HPV Screen PCR Kit	–	ENDO	500	Human papillomavirus types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66, 68 and HPV types 16, 18, 45 with differentiation	DNA	100
RK-HPV14q-25	KleverTest HPV 14 genotypes Quant PCR Kit	+	ENDO	500	Human papillomavirus types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66, 68 with differentiation	DNA	25
RK-HPV14q-100	KleverTest HPV 14 genotypes Quant PCR Kit	+	ENDO	500	Human papillomavirus types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66, 68 with differentiation	DNA	100
RK-HPV6/11/44q-100	KleverTest HPV 6/11/44 Quant PCR Kit	+	ENDO	500	Human papillomavirus types 6, 11, 44 with differentiation	DNA	100
RK-HPV16/18-100	KleverTest HPV 16/18 PCR Kit	–	ENDO	500	Human papillomavirus types 16 and 18 with differentiation	DNA	100
RK-HPV16/18q-100	KleverTest HPV 16/18 Quant PCR Kit	+	ENDO	500	Human papillomavirus types 16 and 18 with differentiation	DNA	100
RK-HPV16/18/45-100	KleverTest HPV 16/18/45 PCR Kit	–	ENDO	500	Human papillomavirus types 16, 18, 45 with differentiation	DNA	100

*Under isolation from 100 µl of sample

Figure 3. Results of amplification of HPV 31/33/35/39 positive control

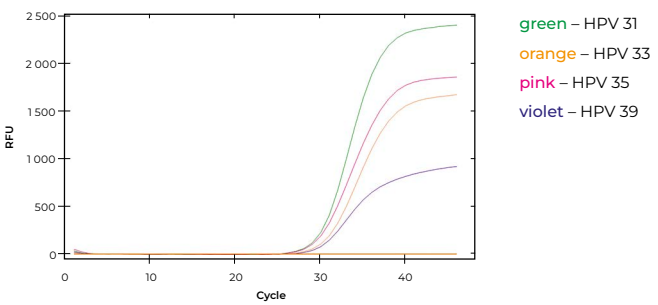
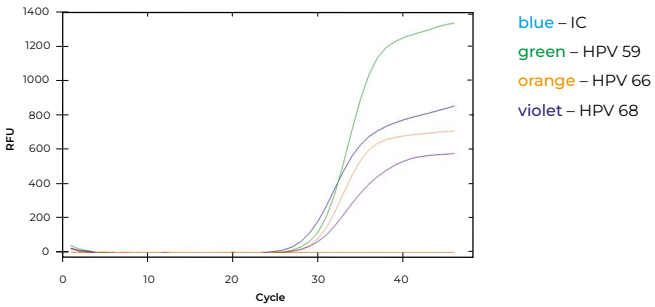


Figure 4. Results of amplification of HPV 59/66/68 positive control



RUO

7.5 Herpes Viral Infections

Nine types of herpesviruses are known to primarily infect humans, at least five of which are extremely widespread across most human populations and cause common diseases: Herpes simplex virus types 1 and 2 (HSV-1 and HSV-2), which cause orolabial and genital herpes; Varicella zoster virus (VZV), the cause of chickenpox and shingles; Epstein-Barr virus (EBV), implicated in several diseases, including mononucleosis and some cancers; and Cytomegalovirus (CMV), which has been associated with mucoepidermoid carcinoma and potentially other malignancies, such as prostate and breast cancer.

PCR testing for human herpesviruses is crucial due to its high sensitivity and specificity, enabling the rapid and accurate identification of infectious agents. This allows for timely initiation of treatment, prevents disease transmission, and reduces the risk of complications.

KleverTest PCR kits are designed for the qualitative detection of various herpes pathogens, either individually or in multiplex, from clinical samples such as swabs and smears. These kits offer high sensitivity and specificity, enhanced by special additives that increase resistance to inhibitors. The inclusion of thermolabile UDG helps to prevent carry-over contamination. All KleverTest kits feature fast (70 – 90 minutes) protocols and are validated for use with the most popular real-time PCR instruments.

Benefits:

- High specificity (up to 99.9%)
- Universal protocol for all kits
- Contains UDG for eliminating possible carry-over contamination
- Validated according to ISO 13485

Compatible instruments:

- CFX96™ Systems
- QuantStudio™ 3/5 Systems
- Applied Biosystems™ 7500/7500 Fast Instruments
- Rotor-Gene® Q 5/6 plex Platforms
- LightCycler® 480 I/480 II
- Cobas® z 480 analyzer
- Gentier™ 96R Systems
- LineGene™ 9600/9600 Plus Systems
- CroBEE® CBRT5/96 Systems
- Mx3005P™ Systems
- AriaMx™/AriaDx™ Instruments

Storage condition:

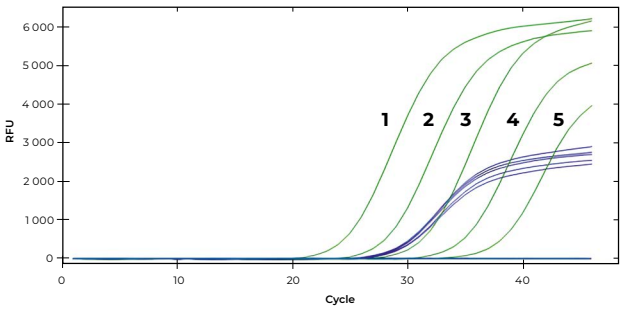
- From -24 °C to -16 °C – 1 year
- From +2 °C to +8 °C – 14 days
- 10 freeze/thaw cycles are allowed

Product code	Product name	Quantitative	Control type	LOD (copies/ml)*	Pathogen	Genome type	Tests
RK-CMV-100	KleverTest CMV PCR Kit	–	EXO	500	Cytomegalovirus	DNA	100
RK-CMVq-100	KleverTest CMV Quant PCR Kit	+	EXO	500	Cytomegalovirus	DNA	100
RK-EBV-100	KleverTest EBV PCR Kit	–	EXO	500	Epstein-Barr virus	DNA	100
RK-EBVq-100	KleverTest EBV Quant PCR Kit	+	EXO	500	Epstein-Barr virus	DNA	100
RK-HHV6-100	KleverTest HHV-6 PCR Kit	–	EXO	500	Human herpes virus 6	DNA	100
RK-HHV6q-100	KleverTest HHV-6 Quant PCR Kit	+	EXO	500	Human herpes virus 6	DNA	100
RK-HSV1/2-100	KleverTest HSV-1/ HSV-2 PCR Kit	–	EXO	1 000	Human herpes virus types 1 and 2 with differentiation	DNA	100
RK-HSV-100	KleverTest HSV PCR Kit	–	EXO	1 000	Human herpes virus types 1 and 2 without differentiation	DNA	100

*Under isolation from 100 µl of sample

PCR Efficiency of KleverTest EBV PCR Kit

Figure 1. Results of amplification of samples from EBV reference panel (plasma). Virus concentration in plasma is 5 x 10^2 – 5 x 10^6 IU/ml

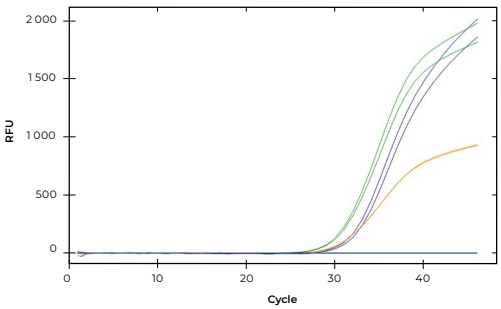


blue – EIC
green – EBV

1 – 5x10^6 IU/ml
2 – 5x10^5 IU/ml
3 – 5x10^4 IU/ml
4 – 5x10^3 IU/ml
5 – 5x10^2 IU/ml

PCR Efficiency of KleverTest HSV-1/HSV-2 PCR Kit

Figure 2. Results of amplification of HSV-1 and HSV-2 reference samples (plasma)



blue – EIC
green – HSV-1
orange – HSV-2

RUO

7.6 HIV and Viral Hepatitis

Detection of hemotransmissive infectious diseases, such as Human immunodeficiency virus (HIV) and Hepatitis viruses, requires highly sensitive methods such as PCR testing.
KleverTest PCR kits are designed for the qualitative and quantitative detection of HIV, Hepatitis viruses types B, C and D, either separately or in multiplexes from blood plasma samples. These kits possess high sensitivity and specificity, special additives provide increased resistance to inhibitors, and the presence of thermolabile UDG helps to eliminate possible carry-over contamination. All KleverTest kits have fast (70 – 90 minutes) and universal protocols. Our kits have been validated for use with the most popular real-time PCR instruments.

Benefits:

- High specificity (up to 99.9%)
- Universal protocol for all kits
- Contains UDG for eliminating possible carry-over contamination
- Validated according to ISO 13485

Compatible instruments:

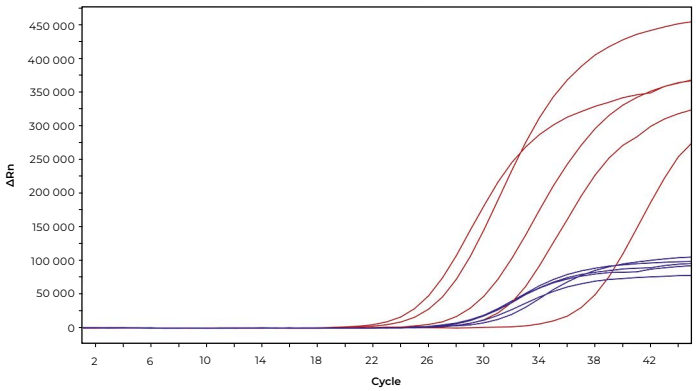
- CFX96™ Systems
- QuantStudio™ 3/5 Systems
- Applied Biosystems™ 7500/7500 Fast Instruments
- Rotor-Gene® Q 5/6 plex Platforms
- LightCycler® 480 I/480 II
- Cobas® z 480 analyzer
- Gentier™ 96R Systems
- LineGene™ 9600/9600 Plus Systems
- CroBEE® CBRT5/96 Systems
- Mx3005P™ Systems
- AriaMx™/AriaDx™ Instruments

Storage condition:

- From -24 °C to -16 °C – 1 year
- From +2 °C to +8 °C – 14 days
- 10 freeze/thaw cycles are allowed

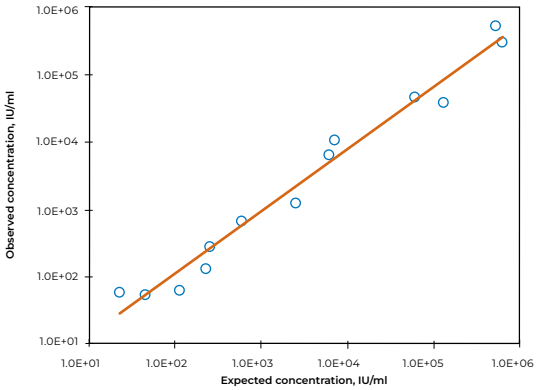
PCR Efficiency of KleverTest HCV Quant PCR Kit

Figure 1. Results of amplification of RNA samples from reference panel



red – HCV
blue – IC

Figure 2. Comparative analysis of KleverTest HCV Quant PCR Kit and commercial kit on reference panel



Product code	Product name	Quantitative	Control type	LOD	Pathogen	Genome type	Tests
RK-BCI-100	KleverTest HBV/HCV/HIV PCR Kit	–	EXO	HBV RNA/DNA – 50** HCV RNA – 150** HIV-1 RNA – 120* HIV-2 RNA – 600*	Hepatitis B, Hepatitis C and Human immunodeficiency viruses types 1 and 2 with differentiation	RNA/ DNA	100
RK-BD-100	KleverTest HBV/HDV PCR Kit	–	EXO	HBV RNA/DNA – 50** HDV RNA – 400**	Hepatitis B and Hepatitis D viruses with differentiation	RNA/ DNA	100
RK-HBV-100	KleverTest HBV PCR Kit	–	EXO	50**	Hepatitis B virus	DNA	100
RK-HBVq-100	KleverTest HBV Quant PCR Kit	+	EXO	50**	Hepatitis B virus	DNA	100
RK-HBV(R)-100	KleverTest HBV (RNA) PCR Kit	–	EXO	35**	Hepatitis B virus	RNA/ DNA	100
RK-HBV(R)q-100	KleverTest HBV (RNA) Quant PCR Kit	+	EXO	35**	Hepatitis B virus	RNA/ DNA	100
RK-HCV-100	KleverTest HCV PCR Kit	–	EXO	150**	Hepatitis C virus	RNA	100
RK-HCVq-100	KleverTest HCV Quant PCR Kit	+	EXO	150**	Hepatitis C virus	RNA	100
RK-HDV-100	KleverTest HDV PCR Kit	–	EXO	400**	Hepatitis D virus	RNA	100
RK-HDVq-100	KleverTest HDV Quant PCR Kit	+	EXO	400**	Hepatitis D virus	RNA	100
RK-HIV-100	KleverTest HIV PCR Kit	–	EXO	HIV-1 – 120* HIV-2 – 600*	Human immunodeficiency virus types 1 and 2	RNA	100
RK-HIVq-100	KleverTest HIV Quant PCR Kit	+	EXO	500*	Human immunodeficiency virus types 1 and 2	RNA	100

*Copies/ml (under isolation from 100 µl of sample)
**IU/ml (under isolation from 100 µl of sample)

RUO

7.7 Respiratory Infections

The use of PCR tests for detecting respiratory infections is important because they provide high sensitivity and specificity, allowing for the rapid and accurate identification of infectious agents. This facilitates timely initiation of treatment, prevents disease spread, and reduces the risk of complications.
KleverTest PCR kits are designed for qualitative detection of various respiratory pathogens separately or in multiplexes from clinical samples, such as swabs, smears, etc. Kits contain endogenous or exogenous internal controls and possess high sensitivity and specificity. Special additives provide increased resistance to inhibitors, thermolabile UDG presence helps to eliminate possible carry-over contamination. All KleverTest kits have fast (70 – 90 minutes) and universal protocols. Our kits were validated for the most popular real-time PCR instruments.

Benefits:

- High specificity (up to 99.9%)
- Universal protocol for all kits
- Contains UDG for eliminating possible carry-over contamination
- Validated according to ISO 13485

Compatible instruments:

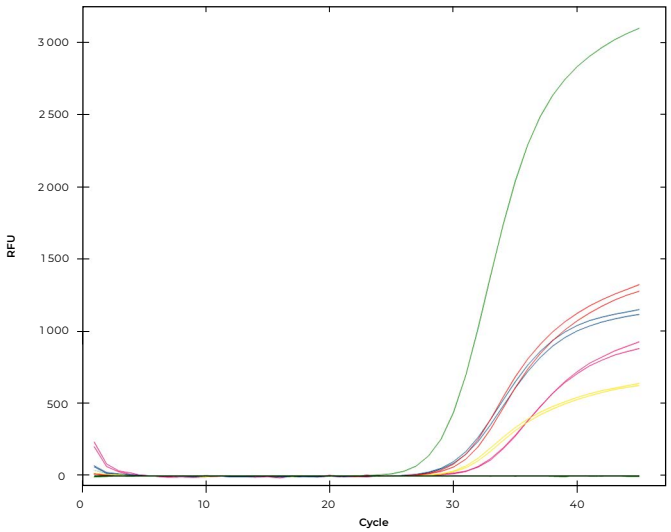
- CFX96™ Systems
- QuantStudio™ 3/5 Systems
- Applied Biosystems™ 7500/7500 Fast Instruments
- Rotor-Gene® Q 5/6 plex Platforms
- LightCycler® 480 I/480 II
- Cobas® z 480 analyzer
- Gentier™ 96R Systems
- LineGene™ 9600/9600 Plus Systems
- CroBEE® CBRT5/96 Systems
- Mx3005P™ Systems
- AriaMx™/AriaDx™ Instruments

Storage condition:

- From -24 °C to -16 °C – 1 year
- From +2 °C to +8 °C – 14 days
- 10 freeze/thaw cycles are allowed

PCR Efficiency of KleverTest C-19/Flu/RSV PCR Kit

Figure 1. Results of amplification of RNA sample from reference panel



blue – IC
green – SARS-CoV-2
red – Influenza A
pink – Respiratory syncytial virus A and B
yellow – Influenza B

Product code	Product name	Quantitative	Control type	LOD (copies/ml)*	Pathogen	Genome type	Tests
RK-MTB-100	KleverTest MTB PCR Kit	–	EXO	500	*Mycobacterium tuberculosis* complex: *Mycobacterium bovis*, *Mycobacterium tuberculosis*, *Mycobacterium bovis* BCG, *Mycobacterium africanum* and *Mycobacterium microti*	DNA	100
RK-C19-100	KleverTest COVID-19 PCR Kit	–	ENDO	500	SARS-CoV-2 virus	RNA	100
RK-C19/Flu-100	KleverTest C-19/ FluA/FluB PCR Kit	–	ENDO	500	SARS-CoV-2, Influenza A and Influenza B viruses with differentiation	RNA	100
RK-Flu-100	KleverTest FluA/ FluB PCR Kit	–	ENDO	500	Influenza A and Influenza B viruses with differentiation	RNA	100
RK-Flu/RSV-100	KleverTest Flu/RSV PCR Kit	–	ENDO	500	Influenza A/B and Respiratory syncytial viruses with differentiation	RNA	100
RK-C19/Flu/ RSV-100	KleverTest C-19/Flu/ RSV PCR Kit	–	ENDO	500	SARS-CoV-2, Influenza A/B and Respiratory syncytial viruses with differentiation	RNA	100
RK-ABP-100	KleverTest ABP PCR Kit	–	ENDO	500	*Mycoplasma pneumoniae* and *Chlamydophila pneumoniae*	DNA	100

*Under isolation from 100 µl of sample

RUO

7.8 Tick-Borne Infections

Tick-borne infections comprise a group of infections transmitted to humans by the bite of ticks infected with bacteria, viruses or parasites. Tick-borne infections affecting humans include: Lyme disease, anaplasmosis, ehrlichiosis, Q fever, Tick-borne encephalitis among others.
The use of PCR tests for detecting Tick-borne infections is important because they provide high sensitivity and specificity, allowing for the rapid and accurate identification of infectious agents. This facilitates timely initiation of treatment, prevents disease spread, and reduces the risk of complications. KleverTest PCR kits are designed for qualitative detection of various tick pathogens separately or in multiplexes from clinical samples, including ticks. Kits contain endogenous or exogenous internal controls and possesses high sensitivity and specificity. Special additives provide increased resistance to inhibitors, thermolabile UDG presence helps to eliminate possible carry-over contamination. All KleverTest kits have fast (70 – 90 minutes) and universal protocols. Our kits were validated for the most popular real-time PCR instruments.

Benefits:

- High specificity (up to 99.9%)
- Universal protocol for all kits
- Contains UDG for eliminating possible carry-over contamination
- Validated according to ISO 13485

Compatible instruments:

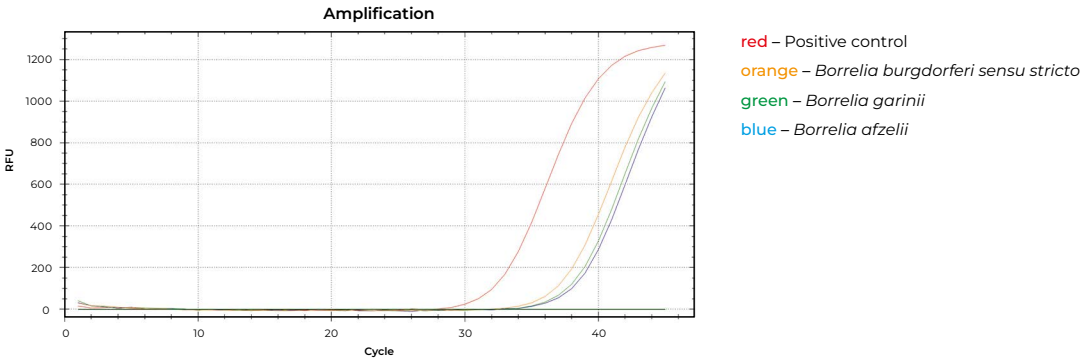
- CFX96™ Systems
- QuantStudio™ 3/5 Systems
- Applied Biosystems™ 7500/7500 Fast Instruments
- Rotor-Gene® Q 5/6 plex Platforms
- LightCycler® 480 I/480 II
- Cobas® z 480 analyzer
- Gentier™ 96R Systems
- LineGene™ 9600/9600 Plus Systems
- CroBEE® CBRT5/96 Systems
- Mx3005P™ Systems
- AriaMx™/AriaDx™ Instruments

Storage condition:

- From -24 °C to -16 °C – 1 year
- From +2 °C to +8 °C – 14 days
- 10 freeze/thaw cycles are allowed

PCR Efficiency of KleverTest Borrelia PCR Kit

Figure 1. Results of amplification of NA isolated from Borrelia burgdorferi sensu lato strains (10^3 copies of genome per ml)



Product code	Product name	Quantitative	Control type	LOD (copies/ml)*	Pathogen	Genome type	Tests
RK-BRS-100	KleverTest Borrelia PCR kit	–	EXO	1 000	*Borrelia burgdorferi* sensu lato (*B. burgdorferi sensu stricto, B. garinii, B. afzelii*)	RNA/ DNA	100
RK-APH-100	KleverTest Anaplasma phagocytophilum PCR Kit	–	EXO	1 000	*Anaplasma phagocytophilum*	RNA/ DNA	100

*Under isolation from 100 µl of sample

8.0 Veterinary Infections

KleverVet PCR Kits are an *in vitro* diagnostic kits designed for the fast qualitative and/or quantitative detection of nucleic acids of various veterinary and environmental pathogens in the laboratory practice by real-time PCR with hybridization-fluorescence detection of amplified products.
Kits contain special additives which significantly increase resistance to inhibitors. Usage of uracil-DNA glycosylase allows to avoid risk of carry-over contamination.
The KleverVet reagent kits use a rapid and simple amplification protocol, resulting in reliable assay results in 70 – 90 minutes with minimal risk of operator's error, significantly improving the accuracy of laboratory analyses.
KleverVet PCR Kits are suitable for the most popular real-time PCR instruments. The reagent kits are designed to perform 100 tests.

Benefits:

- High specificity (up to 99.9%)
- Universal protocol for all kits
- Contains UDG for eliminating possible carry-over contamination
- Validated according to ISO 13485

Compatible instruments:

- CFX96™ Systems
- QuantStudio™ 3/5 Systems
- Applied Biosystems™ 7500/7500 Fast Instruments
- Rotor-Gene® Q 5/6 plex Platforms
- LightCycler® 480 I/480 II
- Cobas® z 480 analyzer
- Gentier™ 96R Systems
- LineGene™ 9600/9600 Plus Systems
- CroBEE® CBRT5/96 Systems
- Mx3005P™ Systems
- AriaMx™/AriaDx™ Instruments

Storage condition:

- From -24 °C to -16 °C – 1 year
- From +2 °C to +8 °C – 14 days
- 10 freeze/thaw cycles are allowed

8.1 Ruminants Infections

Category	Product code	Product name	Pathogen
Parasitic infections	RKV-TG-100	KleverVet Toxoplasmosis PCR Kit	*Toxoplasma gondii*
Viral infections	RKV-BLV-100	KleverVet Bovine leukemia virus PCR Kit	Bovine leukemia virus, *Retroviridae*
	RKV-BRD-100	KleverVet Bovine respiratory diseases PCR Kit	Bovine viral diarrhea virus, Bovine parainfluenza type 3 virus, Bovine herpesvirus 1
	RKV-BRSV-100	KleverVet BRSV PCR Kit	Bovine Respiratory Syncytial Virus or *Orthopneumovirus bovis*
	RKV-BRVA-100	KleverVet Bovine rotavirus A PCR Kit	Bovine rotavirus A
	RKV-BVD-100	KleverVet Bovine viral diarrhea PCR Kit	Bovine viral diarrhea virus, *Pestivirus*
	RKV-CAE-100	KleverVet Caprine arthritis and encephalitis PCR Kit	Caprine arthritis encephalitis virus, *Retroviridae*
	RKV-C19-100	KleverVet COVID-19 PCR Kit	SARS-CoV-2
	RKV-FMD-100	KleverVet FMDV PCR Kit	*Aphthovirus*
	RKV-IBR-100	KleverVet Infectious bovine rhinotracheitis PCR Kit	Bovine herpesvirus 1
	RKV-LSD-100	KleverVet Lumpy skin disease PCR Kit	Lumpy skin disease virus, *Capripoxvirus*
	RKV-PI3-100	KleverVet Parainfluenza virus 3 PCR Kit	Bovine parainfluenza virus type 3, *Paramyxoviridae*
	RKV-RAB-100	KleverVet Rabies virus PCR Kit	Rabies lyssavirus
Bacterial infections	RKV-BA-100	KleverVet Bacillus anthracis PCR Kit	*Bacillus anthracis*
	RKV-BR4-100	KleverVet Brucella AMOS PCR Kit	*Brucella* spp incl *B. abortus, B. melitensis, B. ovis, B. suis* identification
	RKV-BRS-100	KleverVet Brucellosis PCR Kit	*Brucella* spp.
	RKV-CAL-100	KleverVet Caseous lymphadenitis PCR Kit	*Corynebacterium pseudotuberculosis*
	RKV-CS-100	KleverVet Chlamydia PCR Kit	*Chlamydia* spp, incl. *C. psittaci, C. abortus, C. felis, C. suis, C. pecorum*
	RKV-LPS-100	KleverVet Leptospirosis PCR Kit	*Leptospira* spp.
	RKV-MT/B-100	KleverVet Mycobacterium tuberculosis/ bovis PCR Kit	*Mycobacterium tuberculosis* and *Mycobacterium bovis*
	RKV-CBU-100	KleverVet Q fever PCR Kit	*Coxiella burnetii*
	RKV-PM-100	KleverVet Pasteurellosis PCR Kit	*Pasteurella multocida*
	RKV-SS-100	KleverVet Salmonellosis PCR Kit	*Salmonella* spp.
	RKV-TRS-100	KleverVet Trichomoniasis PCR Kit	*Tritrichomonas foetus*
	RKV-TUB-100	KleverVet Tuberculosis PCR Kit	*Mycobacterium bovis, Mycobacterium tuberculosis, Mycobacterium bovis BCG, Mycobacterium africanum* and *Mycobacterium microti*
	RKV-FRT-100	KleverVet Tularemia PCR Kit	*Francisella tularensis*
	RKV-YS-100	KleverVet Yersiniosis PCR Kit	*Yersinia* spp.

8.2 Swine Infections

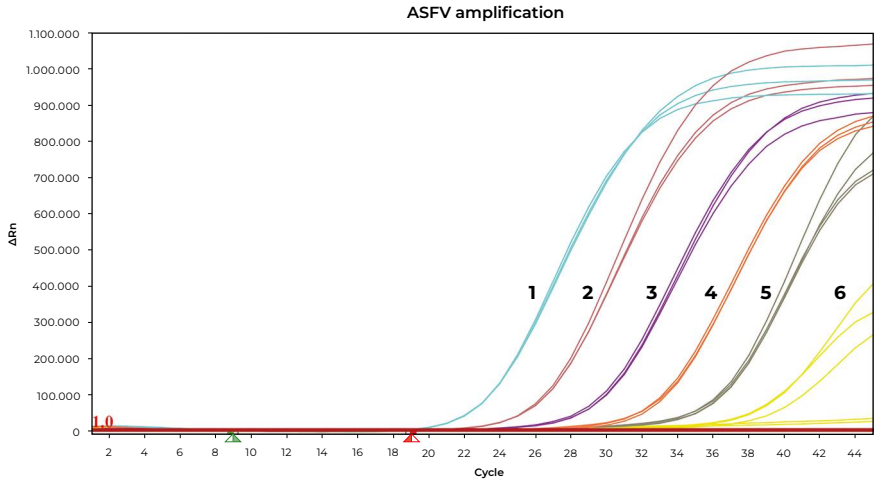
Category	Product code	Product name	Pathogen
Viral infections	RKV-ASF-100	KleverVet ASFV PCR Kit **VALIDATED BY CISA-INIA/EURL-ASF**	African swine fever virus
	RKV-ASFT-100	KleverVet ASFV Triplex PCR Kit	African swine fever virus
	RKV-AUJ-100	KleverVet Aujeszky's disease virus PCR Kit	Pseudorabies virus or Suid herpesvirus 1
	RKV-CSF-100	KleverVet CSFV PCR Kit	Classical swine fever virus, *Pestivirus*
	RKV-CSFT-100	KleverVet CSFV Triplex PCR Kit	Classical swine fever virus, *Pestivirus*
	RKV-FMD-100	KleverVet FMDV PCR Kit	*Aphthovirus*
	RKV-FLA-100	KleverVet Influenza A virus PCR Kit	Influenza A virus
	RKV-H13-100	KleverVet Influenza A (H1/H3) virus PCR Kit	Influenza A virus subtypes H1 and H3
	RKV-PC23-100	KleverVet Porcine circovirus 2/3 PCR Kit	Porcine circovirus types 2 and 3
	RKV-PPV-100	KleverVet Porcine parvovirus PCR Kit	Porcine Parvoviruses
	RKV-PRS-100	KleverVet PRRSV PCR Kit	*Arteriviruses* (European strains)
Bacterial infections	RKV-BR4-100	KleverVet Brucella AMOS PCR Kit	*Brucella* spp incl *B. abortus, B. melitensis, B. ovis, B. suis* identification
	RKV-BRS-100	KleverVet Brucellosis PCR Kit	*Brucella* spp.
	RKV-CS-100	KleverVet Chlamydia PCR Kit	*Chlamydia* spp., incl. *C. psittaci, C. abortus, C. felis, C. suis, C. pecorum*
	RKV-LPS-100	KleverVet Leptospirosis PCR Kit	*Leptospira* spp.
	RKV-MT/B-100	KleverVet Mycobacterium tuberculosis/ bovis PCR Kit	*Mycobacterium tuberculosis* and *Mycobacterium bovis*
	RKV-MHY-100	KleverVet Mycoplasma hyopneumoniae PCR Kit	*Mycoplasma hyopneumoniae*
	RKV-PM-100	KleverVet Pasteurellosis PCR Kit	*Pasteurella multocida*
	RKV-SS-100	KleverVet Salmonellosis PCR Kit	*Salmonella* spp.
	RKV-TUB-100	KleverVet Tuberculosis PCR Kit	*Mycobacterium bovis, Mycobacterium tuberculosis, Mycobacterium bovis BCG, Mycobacterium africanum* and *Mycobacterium microti*
	RKV-FRT-100	KleverVet Tularemia PCR Kit	*Francisella tularensis*
	RKV-YS-100	KleverVet Yersiniosis PCR Kit	*Yersinia* spp.

Validation of the KleverVet African Swine Fever Virus PCR Kit

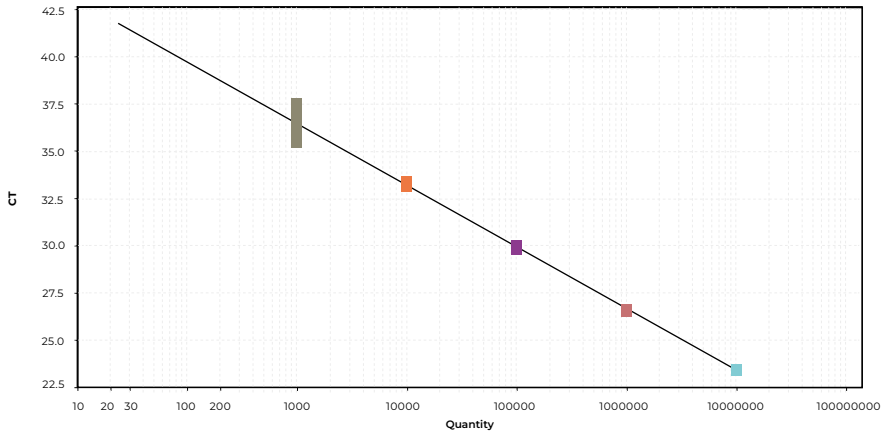
Validation of the KleverVet ASFV PCR Kit was evaluated on 22 ASFV reference DNAs belonging to 21 of the reported p72 genotypes and showed 100% sensitivity. Kit also was validated on 268 reference samples from INIA-CISA (EDTA-blood and tissue samples from infected domestic pigs) and showed K index of 0.99 (CI 95%) according to the reference method (WOAH-UPL).

PCR Efficiency for the Diagnosis of Swine DNA Viruses: ASFV

Figures 1, 2. Results of amplification of quantified ASFV DNA by KleverVet African Swine Fever Virus detection Kit



1 – 1 x 10^7 copies/ml
2 – 1 x 10^6 copies/ml
3 – 1 x 10^5 copies/ml
4 – 1 x 10^4 copies/ml
5 – 1 x 10^3 copies/ml
6 – 1 x 10^2 copies/ml



Slope: -3.257
Intersection: 46.211
R^2: 0.993
Eff%: 102.8

8.3 Avian Infections

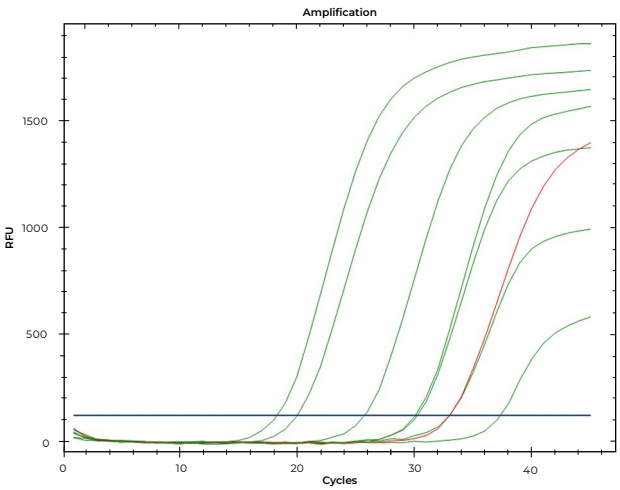
Category	Product code	Product name	Pathogen
Viral infections	RKV-FLA-100	KleverVet Influenza A virus PCR Kit	Influenza A virus
	RKV-IBV-100	KleverVet IBV Screen PCR Kit	Avian infectious bronchitis virus, Avian gammacoronaviruses
	RKV-IB02-100	KleverVet IBV-Variant 02 PCR Kit	Avian infectious bronchitis virus 02 strains (IS-1494, GI-23, incl. vaccine 2-06)
	RKV-IB491-100	KleverVet IBV-Variant 4/91 PCR Kit	Avian infectious bronchitis virus 4/91 strains (793B, CR88 or 1/96 variant, incl. vaccines)
	RKV-IBD274-100	KleverVet IBV-Variant D274 PCR Kit	Avian infectious bronchitis virus D-274 strains (D-207, incl. vaccines)
	RKV-IBMAS-100	KleverVet IBV-Variant Mass PCR Kit	Avian infectious bronchitis virus Mass-like strains (M41, H120 strains, incl. vaccines)
	RKV-IBQX-100	KleverVet IBV-Variant QX PCR Kit	Avian infectious bronchitis virus QX strains (GI-19)
	RKV-NDV-100	KleverVet NDV Screen PCR Kit	Avian paramyxovirus type 1 including virulent strains (Newcastle disease virus)
Bacterial infections	RKV-CS-100	KleverVet Chlamydia PCR Kit	*Chlamydia* spp., incl. *C. psittaci, C. abortus, C. felis, C. suis, C. pecorum*
	RKV-TRS-100	KleverVet Trichomoniasis PCR Kit	*Tritrichomonas foetus*
	RKV-MG/MS-100	KleverVet Mycoplasma Mg/Ms PCR Kit	*Mycoplasma gallisepticum* and *Mycoplasma synoviae* with differentiation
	RKV-MGTS11-100	KleverVet MG-Variant TS11 PCR Kit	*Mycoplasma gallisepticum* vaccine strain ts-11 and its derivatives
	RKV-MGF-100	KleverVet MG-Variant F PCR Kit	*Mycoplasma gallisepticum* vaccine strain F and its derivatives
	RKV-MG685-100	KleverVet MG-Variant 6-85 PCR Kit	*Mycoplasma gallisepticum* vaccine strain 6-85 and its derivatives
	RKV-CP-100	KleverVet Ornithosis PCR Kit	*Chlamydia psittaci*
	RKV-PM-100	KleverVet Pasteurellosis PCR Kit	*Pasteurella multocida*
	RKV-SS-100	KleverVet Salmonellosis PCR Kit	*Salmonella* spp.
	RKV-FRT-100	KleverVet Tularemia PCR Kit	*Francisella tularensis*
	RKV-YS-100	KleverVet Yersiniosis PCR Kit	*Yersinia* spp.

Examples of PCR Efficiency in Avian Infectious Bronchitis Virus Detecting and Vaccine Strains Differentiating

Table 1. Results of testing vaccines from different manufacturers using the IBV genotyping kits

Vaccines	IBV series PCR kits					
	Screen	variant QX	variant 4/91	variant Mass	variant D274	variant V02
Cevac Mass L	+	-	-	+	-	-
Cevac Ibird	+	-	+	-	-	-
Cevac Bron 120L	+	-	-	+	-	-
Nobilis IB 4-91	+	-	+	-	-	-
Nobilis Ma5+Clone30	+	-	-	+	-	-
Tabic IB Var206	+	-	-	-	-	+
Poulvac IB QX	+	+	-	-	-	-
Primun Bronchitis H120	+	-	-	+	-	-

Figure 1. Results of testing samples confirmed for the presence of IBV by the reference commercial PCR kit with the KleverVet IBV Screen PCR Kit. Consistent results were observed across a wide range of virus concentrations. The positive control signal is shown in red.



8.4 Pets Infections

Category	Product code	Product name	Pathogen
Parasitic infections	RKV-DIR-100	KleverVet Dirofilaria PCR Kit	*Dirofilaria* spp.
	RKV-GIA-100	KleverVet Giardiasis PCR Kit	*Giardia* spp.
	RKV-LEI-100	KleverVet Leishmaniasis PCR Kit	*Leishmania* spp.
	RKV-TG-100	KleverVet Toxoplasmosis PCR Kit	*Toxoplasma gondii*
Viral infections	RKV-CAV1/2-100	KleverVet Canine adenovirus 1/2 PCR Kit	Canine adenovirus types 1 and 2 with differentiation
	RKV-CAV1-100	KleverVet Canine adenovirus 1 PCR Kit	Canine adenovirus type 1
	RKV-CAV2-100	KleverVet Canine adenovirus 2 PCR Kit	Canine adenovirus type 2
	RKV-CDV-100	KleverVet Canine distemper virus PCR Kit	Canine distemper virus, or *Morbillivirus canis*
	RKV-CCoV-100	KleverVet Canine enteric coronavirus PCR Kit	Canine enteric coronavirus
	RKV-CHV-100	KleverVet Canine herpesvirus PCR Kit	Canine herpesvirus or Canid alphaherpesvirus 1
	RKV-FPV-100	KleverVet Feline panleukopenia virus PCR Kit	Feline parvovirus or Feline panleukopenia virus
	RKV-CPIV-100	KleverVet Canine parainfluenza virus PCR Kit	Canine parainfluenza virus, *Paramyxoviridae*
	RKV-CPV-100	KleverVet Canine parvovirus PCR Kit	Canine parvovirus
	RKV-C19-100	KleverVet COVID-19 PCR Kit	SARS-CoV-2
	RKV-FCV-100	KleverVet Feline calicivirus PCR Kit	Feline calicivirus
	RKV-FCoV-100	KleverVet Feline coronavirus PCR Kit	Feline coronavirus
	RKV-FIV-100	KleverVet Feline immunodeficiency virus PCR Kit	Feline immunodeficiency virus
	RKV-FLV-100	KleverVet Feline leukemia virus PCR Kit	Feline leukemia virus
	RKV-FVR-100	KleverVet Feline viral rhinotracheitis PCR Kit	Feline alphaherpesvirus 1
	RKV-FLIV-100	KleverVet FLV/FIV PCR Kit	Feline leukemia virus, Feline immunodeficiency virus
	RKV-FVRC-100	KleverVet FVR/Chlamydiosis PCR Kit	Feline alphaherpesvirus 1 and *Chlamydia* spp.
	RKV-RAB-100	KleverVet Rabies virus PCR Kit	Rabies lyssavirus
Bacterial infections	RKV-CS-100	KleverVet Chlamydia PCR Kit	*Chlamydia* spp., incl. *C. psittaci, C. abortus, C. felis, C. suis, C. pecorum*
	RKV-FRT-100	KleverVet Tularemia PCR Kit	*Francisella tularensis*
	RKV-HEM-100	KleverVet Hemoplasmosis PCR Kit	*Candidatus Mycoplasma haemominutum, Candidatus Mycoplasma turicensis* and *Mycoplasma haemofelis*
	RKV-LPS-100	KleverVet Leptospirosis PCR Kit	*Leptospira* spp.
	RKV-PM-100	KleverVet Pasteurellosis PCR Kit	*Pasteurella multocida*
	RKV-SS-100	KleverVet Salmonellosis PCR Kit	*Salmonella* spp.
	RKV-TRS-100	KleverVet Trichomoniasis PCR Kit	*Tritrichomonas foetus*
	RKV-YS-100	KleverVet Yersiniosis PCR Kit	*Yersinia* spp.

8.5 Furbearing Animals Infections

Category	Product code	Product name	Pathogen
Parasitic infections	RKV-DIR-100	KleverVet Dirofilaria PCR Kit	*Dirofilaria* spp.
Viral infections	RKV-ADV-100	KleverVet Aleutian disease virus PCR Kit	Aleutian disease virus or Carnivore amdoparvovirus 1
	RKV-C19-100	KleverVet COVID-19 PCR Kit	SARS-CoV-2
	RKV-RAB-100	KleverVet Rabies virus PCR Kit	Rabies lyssavirus
Bacterial infections	RKV-FRT-100	KleverVet Tularemia PCR Kit	*Francisella tularensis*
	RKV-LPS-100	KleverVet Leptospirosis PCR Kit	*Leptospira* spp.
	RKV-PM-100	KleverVet Pasteurellosis PCR Kit	*Pasteurella multocida*
	RKV-SS-100	KleverVet Salmonellosis PCR Kit	*Salmonella* spp.

8.6 Tick-Borne Infections

Category	Product code	Product name	Pathogen
Mixed infections	RKV-TIC-100	KleverVet Tick-borne diseases PCR Kit	*Anaplasma* spp., *Ehrlichia* spp., *Borrelia* spp., *Babesia* spp. and Tick-borne encephalitis virus with differentiation
Parasitic infections	RKV-BAB-100	KleverVet Babesiosis PCR Kit	*Babesia* spp.
Viral infections	RKV-TBEV-100	KleverVet TBEV PCR Kit	Tick-borne encephalitis virus
Bacterial infections	RKV-AES-100	KleverVet Anaplasmosis/Ehrlichiosis PCR Kit	*Anaplasma* spp., *Ehrlichia* spp.
	RKV-APH-100	KleverVet Anaplasma phagocytophilum PCR Kit	*Anaplasma phagocytophilum*
	RKV-BS-100	KleverVet Borreliosis PCR Kit	*Borrelia* spp.
	RKV-CBU-100	KleverVet Q fever PCR Kit	*Coxiella burnetii*

8.7 Environmental and Water Pathogens

Category	Product code	Product name	Pathogen
Bacterial infections	RKV-HYG-100	KleverVet Hygiene PCR Kit	*Bacillus anthracis, Vibrio cholerae, Francisella tularensis*
	RKV-LGP-100	KleverVet Legionella pneumophila PCR Kit	*Legionella pneumophila*
	RKV-VCH-100	KleverVet Vibrio cholerae PCR Kit	*Vibrio cholerae*
	RKV-YS-100	KleverVet Yersiniosis PCR Kit	*Yersinia* spp.

9.1 Foodborne Bacterial Pathogens

Foodborne pathogens (e.g. viruses, bacteria, parasites) are biological agents that can cause a foodborne illness event. Most common foodborne germs causing illness are: *Salmonella* spp., *Listeria monocytogenes*, Norovirus, *Clostridium perfringens*, *Escherichia coli*, *Staphylococcus aureus* and *Campylobacter*. The use of PCR tests for detecting foodborne pathogens is important because they provide high sensitivity and specificity, allowing for the rapid and accurate identification of infectious agents. This facilitates timely initiation of treatment, prevents disease spread, and reduces the risk of complications.

KleverTest PCR kits are designed for qualitative detection of various foodborne bacterial pathogens from animal, food or enriched cultural samples. Kits possess high sensitivity and specificity. Special additives provide increased resistance to inhibitors, thermolabile UDG presence helps to eliminate possible carry-over contamination. All KleverTest kits have fast (70 – 90 minutes) and universal protocols. Our kits were validated for the most popular real-time PCR instruments.

Benefits:

- High specificity (up to 99.9%)
- Universal protocol for all kits
- Contains UDG for eliminating possible carry-over contamination
- Validated according to ISO 13485

Compatible instruments:

- CFX96™ Systems
- QuantStudio™ 3/5 Systems
- Applied Biosystems™ 7500/7500 Fast Instruments
- Rotor-Gene® Q 5/6 plex Platforms
- LightCycler® 480 I/480 II
- Cobas® z 480 analyzer
- Gentier™ 96R Systems
- LineGene™ 9600/9600 Plus Systems
- CroBEE® CBRT5/96 Systems
- Mx3005P™ Systems
- AriaMx™/AriaDx™ Instruments

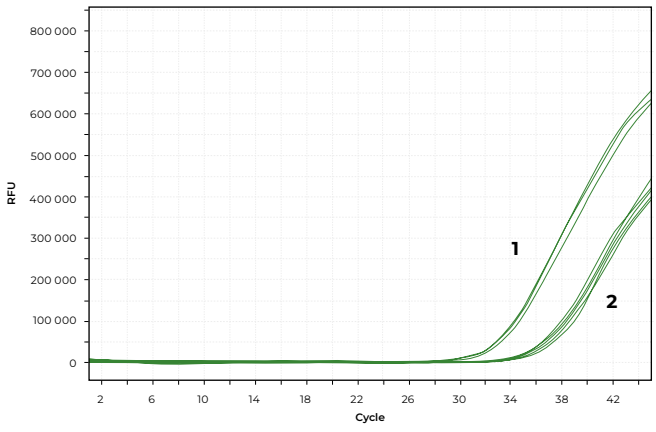
Storage condition:

- From -24 °C to -16 °C – 1 year
- From +2 °C to +8 °C – 14 days
- 10 freeze/thaw cycles are allowed

PCR Efficiency of KleverTest Kits for Detecting Foodborne Pathogen

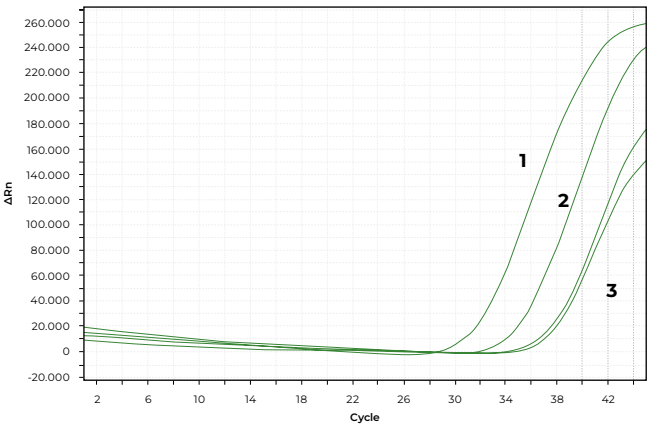
Limits of detection (LOD) for the kits is estimated to be 10^3 genome equivalent copies of DNA per 1 ml of sample (95% confidence interval). LOD was evaluated on quantified DNA from verified Listeria monocytogenes (Figure 1) and Salmonella enterica (Figure 2) cell cultures

Figure 1.



1 – 10^4 copies/ml
2 – 10^3 copies/ml

Figure 2.



1 – 10^5 copies/ml
2 – 10^4 copies/ml
3 – 10^3 copies/ml

Product code	Product name	Quantitative	Control type	LOD (copies/ml)*	Pathogen	Genome type	Tests
RKF-SYSC-100	KleverTest Bacterial Gastroenteritis PCR Kit	–	EXO	1 000	*Salmonella* spp., *Yersinia* spp., *Shigella* spp. / enteroinvasive *E. coli* (EIEC) and *Campylobacter* spp.	DNA	100
RKF-SS-100	KleverTest Salmonella spp. PCR Kit	–	EXO	1 000	*Salmonella* spp.	DNA	100
RKF-LM-100	KleverTest Listeria monocytogenes PCR Kit	–	EXO	1 000	*Listeria monocytogenes*	DNA	100

*Under isolation from 100 µl of sample

9.2 Bacterial Toxin Genes Differentiation

Bacterial foodborne and environmental pathogens are responsible for a wide range of diseases, ranging from gastroenteritis, food poisoning, and dysentery to sepsis and bacteremia. The pathogenic potential of these bacteria is largely determined by their production of specific toxins, which are encoded by distinct virulence-associated genes. Detecting and differentiating these genes is essential for accurate diagnosis, appropriate treatment, outbreak investigation, and public health surveillance.

Identifying specific toxin genes enables:

- Accurate diagnosis: confirming that a clinical isolate is truly the causative agent rather than a mere contaminant or colonizer
- Severity prediction: determining the likely clinical course (mild gastroenteritis vs. severe hemorrhagic colitis, localized skin infection vs. necrotizing fasciitis)
- Treatment guidance: Helping clinicians choose appropriate antimicrobial therapies and supportive care intensity

KleverTest DiTox PCR Kits are designed for the qualitative detection and differentiation of virulence-associated toxin genes in the most common bacterial foodborne pathogens, like *Bacillus cereus*, *Clostridium perfringens*, and *Staphylococcus aureus*.

Benefits:

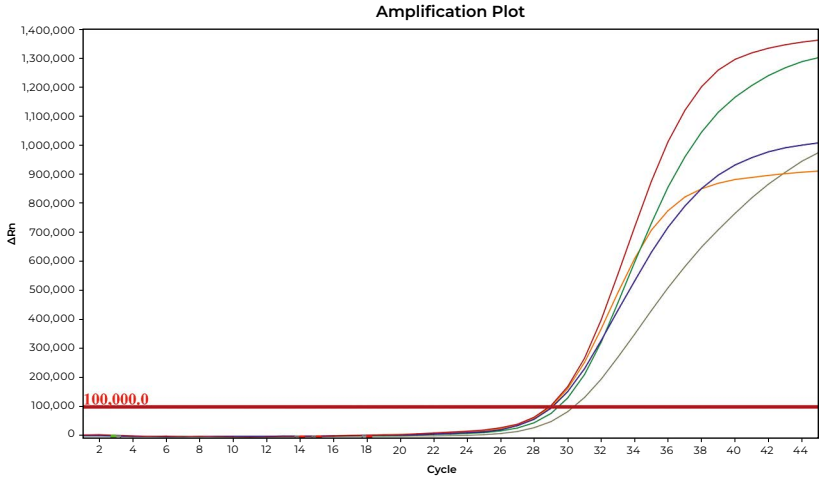
- High specificity (up to 99.9%)
- Universal protocol for all kits
- Contains UDG for eliminating possible carry-over contamination
- Validated according to ISO 13485

Compatible instruments:

- CFX96™ Systems
- QuantStudio™ 3/5 Systems
- Applied Biosystems™ 7500/7500 Fast Instruments
- Rotor-Gene® Q 5/6 plex Platforms
- LightCycler® 480 I/480 II
- Cobas® z 480 analyzer
- Gentier™ 96R Systems
- LineGene™ 9600/9600 Plus Systems
- CroBEE® CBRT5/96 Systems
- Mx3005P™ Systems
- AriaMx™/AriaDx™ Instruments

Storage condition:

- From -24 °C to -16 °C – 1 year
- From +2 °C to +8 °C – 14 days
- 10 freeze/thaw cycles are allowed



Examples of the PCR Efficiency in Detecting and Differentiating Virulence-Associated Toxin Genes in *Bacillus Cereus, Clostridium Perfringens* and *Staphylococcus Aureus* are Shown in Figures 1–3

Figure 1. Results of positive control amplification of KleverTest Bacillus cereus DiTox PCR Kit (amplification plot from FAM channel is presented). Red – CesA curve on PC, blue – CytK1 curve on PC, green – CytK2 curve on PC, gray – NHE curve on PC, orange – hblD curve on PC

Product code	Product name	Quantitative	Control type	LOD (copies/ml)*	Pathogen	Genome type	Tests
RKF-BCDT-100	KleverTest Bacillus cereus DiTox PCR Kit	–	EXO	1 000	*Bacillus cereus genes: nheA* (non-hemolytic enterotoxin), *hblD* (hemolysin BL), *cytK1* (cytolysin variant 1), *cytK2* (cytolysin variant 2), and *ces* (cereulide synthase/emetic syndrome marker)	DNA	100
RKF-CPDT-100	KleverTest Clostridium perfringens DiTox PCR Kit	–	EXO	1 000	*Clostridium perfringens* genes: *cpe* (clostridial enterotoxin), *cpb* (beta-toxin), *cpb2* (beta2-toxin)	DNA	100
RKF-SADT-100	KleverTest Staphylococcus aureus DiTox PCR Kit	–	EXO	1 000	*Staphylococcus aureus* genes: *sea* (enterotoxin A), *seb* (enterotoxin B), *sec* (enterotoxin C), *sed* (enterotoxin D), *see* (enterotoxin E)	DNA	100

*Under isolation from 100 µl of sample

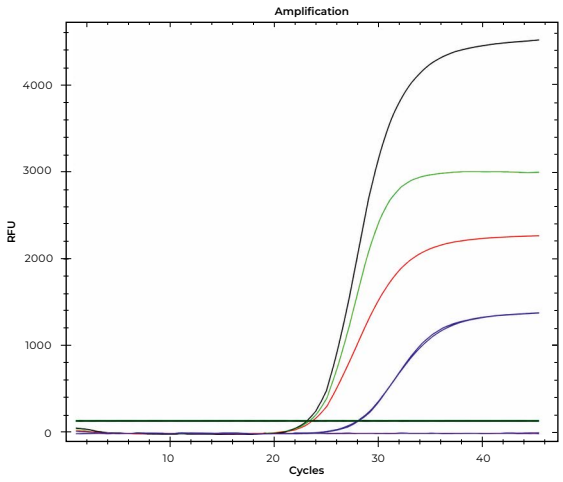


Figure 2. Results of positive control and bacterial DNA amplification with KleverTest Clostridium perfringens DiTox PCR Kit. Red – beta-toxin curve on PC, black – beta2-toxin curve on PC, green – cpe curve on PC, blue – exogenous internal control curve, violet – absence of toxins signal in C. perfringens ATCC 13124 and C. difficile ATCC 43593 DNA.

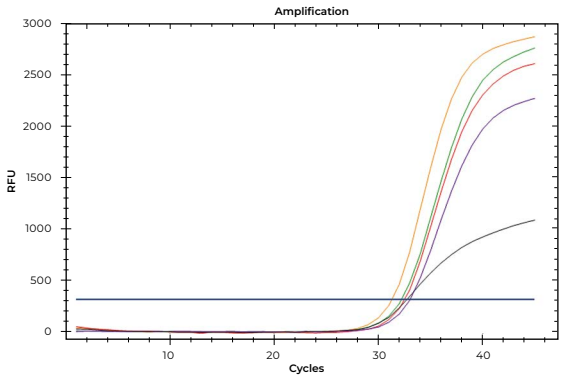


Figure 3. Results of positive control amplification with KleverTest Staphylococcus aureus DiTox PCR Kit (only FAM channel). Green – sea, orange – seb, red – sec, violet – sed, black – see signal.

9.3 Animal Identification

KleverTest ID PCR kits are designed for the rapid, sensitive, and specific detection of animal-derived material in food, feed, and raw material samples. The kits enable accurate identification of species origin — including beef, pork, rabbit, poultry, horse, sheep, goat, donkey, insects and other commercially relevant species — even in processed, heat-treated, or highly degraded matrices such as sausages, canned goods, gelatin, and meat-and-bone meal.

Benefits:

- High specificity (up to 99.9%)
- Universal protocol for all kits
- Contains UDG for eliminating possible carry-over contamination
- Validated according to ISO 13485

Compatible instruments:

- CFX96™ Systems
- QuantStudio™ 3/5 Systems
- Applied Biosystems™ 7500/7500 Fast Instruments
- Rotor-Gene® Q 5/6 plex Platforms
- LightCycler® 480 I/480 II
- Cobas® z 480 analyzer
- Gentier™ 96R Systems
- LineGene™ 9600/9600 Plus Systems
- CroBEE® CBRT5/96 Systems
- Mx3005P™ Systems
- AriaMx™/AriaDx™ Instruments

Storage condition:

- From -24 °C to -16 °C – 1 year
- From +2 °C to +8 °C – 14 days
- 10 freeze/thaw cycles are allowed

Product code	Product name	Quantitative	Control type	LOD, %*	Target species	Genome type	Tests
RKF-FID-100	KleverTest Farm ID PCR Kit	–	EXO	0.015 (ruminant & swine); 0.01 (poultry)	*genera Gallus, Meleagris, Anas/Anser, Sus scrofa* and *genera Bos, Capra, Ovis* with differentiation	DNA	100
RKF-PID-100	KleverTest Pork ID PCR Kit	–	EXO	0.015	*Sus scrofa*	DNA	100
RKF-CID-100	KleverTest Chicken ID PCR Kit	–	EXO	0.01	*Gallus gallus*	DNA	100
RKF-BSID-100	KleverTest Beef/ Sheep ID PCR Kit	–	EXO	0.015	genus *Bos* and genus *Ovis* with differentiation	DNA	100
RKF-HID-100	KleverTest Horse ID PCR Kit	–	EXO	0.015	*Equus caballus, Equus ferus*	DNA	100
RKF-PoID-100	KleverTest Poultry ID PCR Kit	–	EXO	0.01	*genera Gallus, Meleagris* and *Anas/Anser* with differentiation	DNA	100
RKF-BPHID-100	KleverTest Beef/ Pork/Horse ID PCR Kit	–	EXO	0.015	*genus Bos, Sus scrofa, Equus caballus, Equus ferus* with differentiation	DNA	100
RKF-TID-100	KleverTest Turkey ID PCR Kit	–	EXO	0.01	*Meleagris gallopavo*	DNA	100
RKF-SID-100	KleverTest Sheep ID PCR Kit	–	EXO	0.015	genus *Ovis*	DNA	100
RKF-RID-100	KleverTest Rabbit ID PCR Kit	–	EXO	0.015	*Oryctolagus cuniculus*	DNA	100
RKF-IID-100	KleverTest Insect ID PCR Kit	–	EXO	0.025	*Gryllodes sigillatus, Acheta domesticus, Locusta migratoria* and *Tenebrio molitor* with differentiation	DNA	100
RKF-DPPoID-100	KleverTest Donkey/ Pork/Poultry ID PCR Kit	–	EXO	0.015 (donkey & swine); 0.01 (poultry)	*Equus asinus, Sus scrofa* and *genera Gallus, Meleagris* and *Anas / Anser* with differentiation	DNA	100
RKF-DPID-100	KleverTest Donkey/ Pork ID PCR Kit	–	EXO	0.015	*Equus asinus, Sus scrofa* with differentiation	DNA	100
RKF-DID-100	KleverTest Donkey ID PCR Kit	–	EXO	0.015	*Equus asinus*	DNA	100

*For 100 ng of isolated DNA

RUO

10.1 Transport Media

Transport Media is a ready-to-use sterile buffered saline solution intended for the transportation and storage of swabs and discharges collected from the urogenital tract, throat, rectum, and erosive or ulcerative lesions of human skin and mucous membranes. It is used for the subsequent analysis of the material for various infections by polymerase chain reaction (PCR). The Transport Media contains preservatives and stabilizing agents that prevent the growth of nonspecific microflora and premature cell lysis, providing long-term stability of microbial nucleic acids across a wide temperature range. Transport Media may also contain mucolytic agents, which depolymerize mucins and other polymeric components of mucus or sputum, ensuring effective and homogeneous mixing of clinical material with the transport medium.

Product code	Product name	Quantity, ml	Type of isolated DNA/RNA
R-TM-1	Transport medium	1 x 0.75	DNA & RNA
R-TM-25	Transport medium	25 x 0.75	DNA & RNA
R-TM-100	Transport medium	100 x 0.75	DNA & RNA
R-TMM-1	Transport medium with mucolytic agent	1 x 0.75	DNA & RNA
R-TMM-25	Transport medium with mucolytic agent	25 x 0.75	DNA & RNA
R-TMM-100	Transport medium with mucolytic agent	100 x 0.75	DNA & RNA

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 catalogue SKU, quantity

Shipment

All shipments will be arranged by courier shipping services. 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 catalogue 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 catalogue, please contact us.

Free Samples

KleverLab provides free samples for most of our 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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www.kleverlab.eu

