PRODUCT CATALOGUE

PCR ENZYMES

Polymerases
Buffers
Nucleotides
Accessories

AMPLIQON
PCR ENZYMES & REAGENTS

ABOUT THIS CATALOGUE

Dear reader,

The purpose of this Ampliqon PCR enzyme catalogue is to offer you a convenient overview of our PCR enzymes.

Ampliqon enzymes include a wide range of highly pure enzyme kits suitable for all DNA amplification purposes. They are characterised by robust performance, high stability and no contaminating activities.

In the catalogue you find selection charts, stability guidelines, practical information on our proprietary buffer systems and a section on available PCR accessories. Included you will also find our general terms of sale and delivery.

We hope that you will find the updated catalogue very useful. The updated version includes more detailed information about the products. A lot of new products are included, as well as updated guides and other helpful tools.

Hopefully, you will experience that the catalogue you are holding in your hand, is a handy purchasing guide and support in your daily laboratory work.

Ampliqon A/S

Ampliqon A/S is a Danish manufacturer of PCR enzymes and laboratory reagents. Ampliqon was founded in 2002 in Copenhagen by some of Denmark's most skilled PCR specialists. In 2009 we took over a well-established and market leading Danish production line of more than 1000 custom-made laboratory reagents.

Today, we offer a full product range of standard and custom-made polymerases and laboratory reagents for end-user customers at universities, hospitals, research institutions and biotechnological companies. Ampliqon also cooperates with major life science distributors in many countries around the world.

We specialise in custom-made solutions, including agreements on OEM basis, and our aim is to meet the particular needs and requirements of our distributors and customers.

Ampliqon offers many years of experience within standard products for PCR as well as product innovation and strict quality control.

Ampliqon is ISO 9001 certified, which give our customers some important benefits. The focus areas of ISO 9001 are the customers, customer satisfaction, continuous improvements of the processes and of the quality management system.

We are always delighted to participate in sales support seminars and training sessions that benefit the activities of our end-user customers, the scientific communities and distributors.

Website

On our website *ampliqon.com*, you can find even more information about the products. From the user-friendly *Download Center*, you can download datasheets, product sheets, complete product lists and catalogues. If you are looking for publications, technical PCR tools or product related applications, then the *PCR Technology* section is the right place to visit.

As we continuously strive to develop new PCR enzyme products, the website is also the right place to keep yourself updated about the newest technology within modern PCR.

Kind regards,

Helle N. Thestrup

Managing Director
Ampliqon A/S

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Taq DNA Polymerase

Introduction

Ampliqon Taq DNA Polymerase is an excellent thermostable Taq DNA polymerase because of its high performance. Ampliqon Taq DNA Polymerase is stable and reliable, shows no contaminating nuclease activities, and each batch production offers same robust performance. Taq DNA Polymerase is the perfect match for routine PCR applications that require high yield and reliable DNA amplification.

Ampliqon Taq DNA Polymerase has a molecular weight of approximately 95 kDa and exhibits 5'→3' DNA polymerase activity and 5'→3' exonuclease activity. The 5'→3' exonuclease activity leaves 3'dA overhangs on the PCR products, which are convenient for direct T-A cloning. Taq DNA polymerase lacks 3'→5' exonuclease activity and has no proofreading ability.

Ampliqon Taq DNA Polymerase is available with separate buffers and as master mixes.

Ampliqon Taq DNA Polymerase is available in different formulations and concentrations:

- Taq DNA Polymerase 5 U/µl
- Taq DNA Polymerase RED 5 U/µl
- Taq DNA Polymerase Glycerol Free 5 U/µl
- Taq DNA Polymerase Glycerol Free 50 U/µl

Ampliqon Taq DNA Polymerase kits include one of the Taq DNA polymerase formulations and are available either without buffers, with one buffer of choice and extra $MgCl_2$ or with two buffers of choice and extra $MgCl_2$. Additional $MgCl_2$ is included for easy optimisation.

For more information on available buffers and their application, please see the buffer section on page 28-29 .

For more information about Taq DNA Polymerase Glycerol Free, please see page 26.

THE ORIGIN OF AMPLIQON TAQ DNA POLYMERASE

Ampliqon Taq DNA Polymerase originates from the thermophilic bacterium *Thermus aquaticus*, which was first discovered in hot springs in Yellowstone National Park, USA, in the 1960s. Taq DNA polymerase was the first heat-stable enzyme ever isolated, and it formed the basis for the future Nobel Prize-winning PCR technology. Later, a variety of other heat-stable enzymes were isolated and some also became commercially available.

Fortunately, Taq was among the first enzymes to be discovered and is commonly agreed to be one of the best polymerases available. Taq DNA polymerase offers a perfect combination of heat resistance, robustness, specificity, sensitivity and yield. Today, Taq DNA polymerase is still one of the most popular and inexpensive DNA polymerases.

Taq DNA Polymerase

Ampliqon Taq DNA Polymerase is popular because of its robust and consistent performance. Ampliqon Taq DNA Polymerase is suitable for routine PCR applications that require high yield and reliable DNA amplification.

Features

- High product yield
- Processes up to 5 kb
- dUTP incorporation possible
- Leaves a 3'dA overhang

Suitable for

- Standard testing
- Routine PCR
- Screening
- High throughput testing

Taq DNA Polymerase 5 U/µl

Without buffer

Product number	
A110003	500 units
A110004	1000 units
A110006	2 500 units
A110007	5 000 units

With 10x Ammonium Buffer and $MgCl_2$

Product number	
A111103	500 units
A111104	1 000 units
A111106	2 500 units
A111107	5 000 units

With 10x Standard Buffer and $MgCl_2$

Product number	
A112103	500 units
A112104	1 000 units
A112106	2 500 units
A112107	5 000 units

Did you know?

Taq DNA Polymerase is tolerant to incubation at elevated temperatures for long periods without losing activity: at 40 °C for 2 weeks; at 25 °C for 2 months and at 4 °C for 18 months.

Taq DNA Polymerase RED

Ampliqon Taq DNA Polymerase RED provides convenient identification of enzyme addition to the tube and confirmation of complete mixing. The product includes an inert red dye that does not interfere with the PCR reaction but adds visibility to the enzyme. This makes it especially useful for high throughput testing.

Features

- Easy identification of enzyme addition
- Confirmation of complete mixing
- High product yield
- Processes up to 5 kb
- dUTP incorporation possible
- Leaves a 3'dA overhang

Suitable for

- Standard testing
- Routine PCR
- Screening
- High throughput testing

Taq DNA Polymerase RED 5 U/µl

Without buffer	
Product number	
A200003	500 units
A200004	1000 units
A200006	2 500 units
A200007	5 000 units

With 10x Ammonium Buffer and $MgCl_2$	
Product number	
A201103	500 units
A201104	1 000 units
A201106	2 500 units
A201107	5 000 units

With 10x Standard Buffer and $MgCl_2$	
Product number	
A202103	500 units
A202104	1 000 units
A202106	2 500 units
A202107	5 000 units

TIP
Choose the right buffer

Ammonium Buffer is the best buffer to choose for most applications. It promotes robust amplification, high yield and high specificity.

Taq DNA Polymerase master mixes

Introduction

Ampliqon Taq DNA Polymerase master mixes are time-saving alternatives to Taq DNA polymerase kits. Fewer reagent handling steps significantly reduce set-up time and eliminate the risk of contamination of stock solutions. Furthermore, fewer handling steps lead to increased reproducibility, which makes Taq DNA Polymerase master mixes suitable for standard tests.

Taq DNA Polymerase master mixes are ready-to-use master mixes. Just add your template and primers to successfully carry out PCR. Taq DNA Polymerase master mixes are available as standard Taq Master Mix, Taq OptiMix CLEAR or as Taq Master Mix RED for direct loading on DNA gels.

Taq DNA Polymerase master mixes are composed of Ampliqon Taq DNA Polymerase, our ammonium buffer system, dNTPs and $MgCl_2$. Taq DNA Polymerase Master Mix RED is perfect for direct loading and contains an additional inert red dye and stabiliser.

Taq DNA Polymerase master mixes are available in the following ready-to-use formulations:

2x master mix:
1.5 mM $MgCl_2$ final concentration

2x master mix:
2 mM $MgCl_2$ final concentration

2x master mix RED:
1.5 mM $MgCl_2$ final concentration

2x master mix RED:
2 mM $MgCl_2$ final concentration

TIP
Choose the right master mix

2x master mix with 1.5 mM $MgCl_2$ is the right choice for most standard applications . In some cases, e.g. when getting too low yields, 2x master mix with 2 mM $MgCl_2$ gives better results.

Choose master mix RED if you need to visualise on agarose gels.

Taq DNA Polymerase Master Mix

Taq DNA Polymerase Master Mix is a time-saving alternative to Taq DNA Polymerase. Taq DNA Polymerase Master Mix is excellent for robust and reliable PCR as it offers the same eminent performance as Taq DNA Polymerase.

Taq DNA Polymerase Master Mix

2x master mix, 1.5 mM $MgCl_2$ final

Product number	
A140301	100 reactions
A140303	500 reactions
A140306	2 500 reactions
A140307	5 000 reactions
A140308	10 000 reactions

2x master mix, 2 mM $MgCl_2$ final

Product number	
A150301	100 reactions
A150303	500 reactions
A150306	2 500 reactions
A150307	5 000 reactions
A140308	10 000 reactions

Features

- Time-saving premixed solution
- Increased reproducibility
- Minimal optimisation
- High product yield
- dUTP incorporation possible
- Processes up to 5 kb
- Leaves a 3'dA overhang

Suitable for

- Standard testing and routine PCR
- Screening
- High throughput testing

Taq DNA Polymerase Master Mix RED

For direct loading

Taq DNA Polymerase Master Mix RED allows you to load your PCR products directly onto the agarose or SDS DNA gel after DNA amplification. There is no need for a separate loading buffer and no time-consuming sample preparation before electrophoresis. This makes Taq DNA Polymerase Master Mix RED especially suitable for high throughput standard tests.

Taq DNA Polymerase Master Mix RED includes a red dye and stabiliser. These do not interfere with the PCR. Taq DNA Polymerase Master Mix RED is suitable for standard tests that do not need fluorescence-based downstream processing. If you wish, you can remove the red dye by spin column purification or other methods.

Additional features

- Direct loading onto agarose and SDS DNA gels
- Easy visualisation of pipetting
- Dye front runs at 300-1000 bp on a 0.5-1.5 % agarose gel

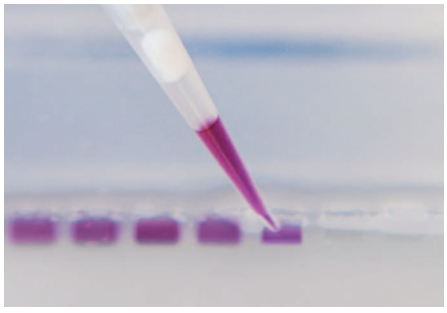
Suitable for

- Standard testing and routine PCR
- Screening
- High throughput testing

Taq DNA Polymerase Master Mix RED

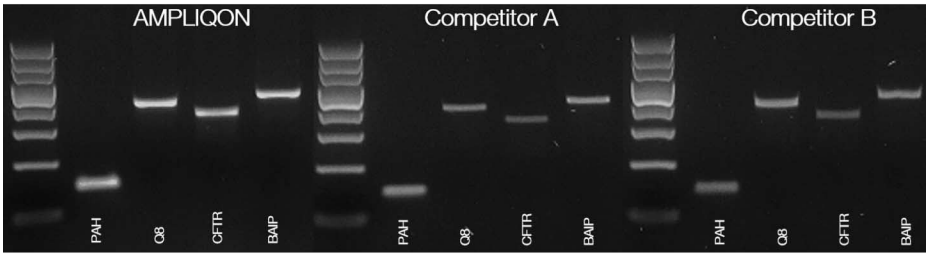
2x master mix, 1.5 mM $MgCl_2$ final	
Product number	
A180301	100 reactions
A180303	500 reactions
A180306	2 500 reactions
A180307	5 000 reactions

2x master mix, 2 mM $MgCl_2$ final	
Product number	
A190301	100 reactions
A190303	500 reactions
A190306	2 500 reactions
A190307	5 000 reactions



Direct gel loading
The red loading dye in the master mix enables direct gel loading (A) and eliminates the necessity for a separate loading buffer.

Comparison between Taq DNA Polymerase Master Mix RED and two competitors
Ampliqon Taq DNA Polymerase Master Mix RED was compared with a Taq DNA Polymerase master mix from two well recognised competitors. Four different DNA target varying in length PAH (203 bp), Q8 (727 bp), CFTR (613 bp) and BAIP (788) were evaluated. Ampliqon Taq DNA Polymerase Master Mix RED performed equally well or better in this study. Each Amplification has been conducted according to suppliers manual.



Best-selling product

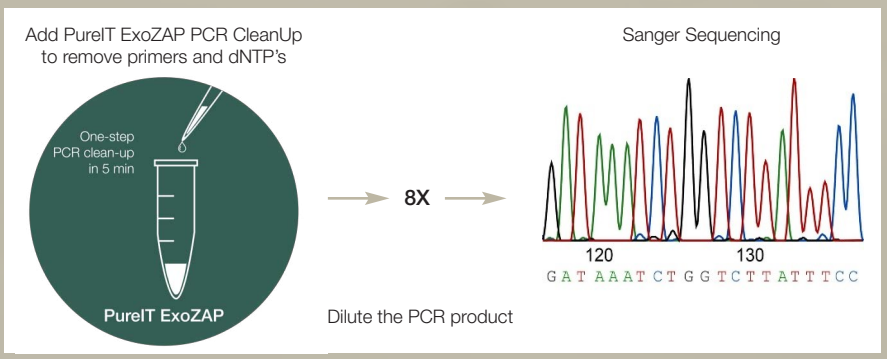
Taq DNA Polymerase Master Mix RED is without doubt the most preferred PCR solution. The popularity of Master Mix RED is due to the user-friendly experience and the convincing and reliable PCR results obtained. The Master Mix RED can be used for all standard PCR applications.

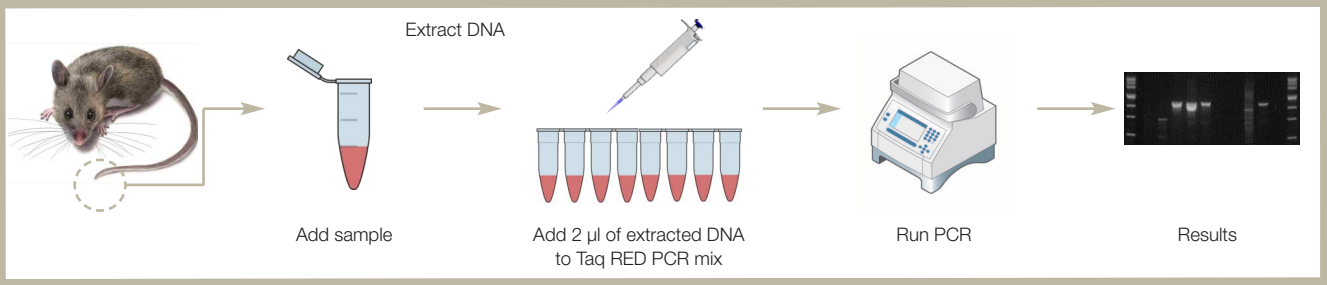
Ampliqon has developed two user-friendly applications using Taq DNA Polymerase Master Mix RED.

Sanger sequencing

Despite the red colour within Taq Master Mix RED, the obtained amplicons can easily be used for Sanger sequencing.

Simply add PureIT ExoZAP PCR CleanUp to the tube containing your PCR product and incubate the tube at 37 °C (enzymatic treatment) for 2 min followed by heat inactivation at 80 °C for 3 min. Prior to Sanger sequencing, perform an 8-fold dilution of the treated PCR product in order to dilute the concentration of the red dye.





High throughput testing of mouse genotypes

Genomic DNA is crude extracted from mouse tails and then used for direct PCR using Taq DNA Polymerase Master Mix RED. Final result is observed after gel-electrophoresis and obtained in 3 - 4 hours after sampling, as compared to more than 1 day using standard extraction protocols.

Taq OptiMix CLEAR

Taq OptiMix CLEAR is an optimised Taq DNA polymerase master mix, which ensures increased specificity and improved PCR performance. Taq OptiMix reduces reaction setup time and also eliminates the risk of contamination.

Fewer handling steps lead to better reproducibility, making Taq OptiMix suitable for standard PCR applications, screening and high throughput testing.

Additional features

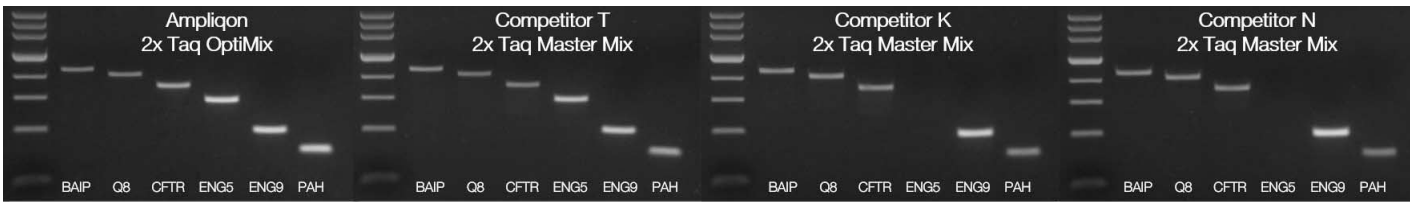
- All-in-one 2x master mix
- Time-saving reaction setup
- Increased specificity compared to Taq DNA Polymerase Master Mix for DNA targets up to 2 kb

Suitable for

- Standard testing and routine PCR
- Screening
- High throughput testing

Taq OptiMix CLEAR

Product number	
A370501	100 reactions
A370503	500 reactions
A370506	2 500 reactions
A370507	5 000 reactions



Comparison between Taq OptiMix CLEAR and three competitors
Taq OptiMix CLEAR was compared with corresponding Taq DNA Polymerase master mixes from three well recognised competitors; T,K and N. Six different primer targets (BAIP, Q8, CFTR, ENG5, ENG9 and PAH) were evaluated. Taq OptMix CLEAR performed equally well or better on all six primer targets tested in this set up. Each amplification was conducted according to supplier's manual.

GET MORE INFORMATION ONLINE

On our website ampliqon.com, you can find even more information about the products. From the user-friendly Download Center, you can download datasheets, product sheets, complete product lists and catalogues. If you are looking for publications, technical PCR tools or product related applications, then the PCR Technology section is the right place to visit.

THE ADVANTAGE OF CHEMICAL INACTIVATION

Chemical inactivation of our TEMPase hot start enzyme has proven highly effective compared to other inactivation methods such as antibody inactivation. The chemically modified enzyme withstands longer periods of time at room temperature without non-specific PCR amplification. This feature is useful if you need pre-incubation steps at elevated temperatures, for example in case of UNG treatment at 50°C prior to PCR.

TEMPase Hot Start DNA Polymerase

Introduction

Ampliqon TEMPase Hot Start DNA Polymerase is a modified form of Ampliqon Taq DNA Polymerase and is activated by heat treatment. A chemical moiety is attached to the enzyme, which makes the enzyme inactive at room temperature. During set-up and the first ramp of thermal cycling the enzyme is not active and misprimed primers are not extended. This results in higher specificity, increased sensitivity and greater yield compared to standard DNA polymerases.

TEMPase Hot Start DNA Polymerase has a molecular weight of approximately 95 kDa and exhibits 5'→3' DNA polymerase activity and 5'→3' exonuclease activity. The 5'→3' exonuclease activity leaves 3'dA overhangs on the products, which are convenient for direct T-A cloning. TEMPase DNA Polymerase lacks 3'→5' exonuclease activity and has no proofreading abilities.

Ampliqon TEMPase Hot Start DNA Polymerase is available in two formulations:

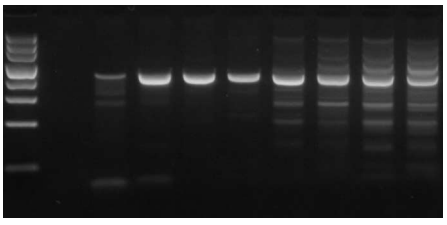
TEMPase Hot Start DNA Polymerase, 5 U/µl
TEMPase Hot Start DNA Polymerase Glycerol Free, 5 U/µl

TEMPase Hot Start DNA Polymerase kits are available either without buffers, with one buffer of choice and extra $MgCl_2$ or with two buffers of choice and extra $MgCl_2$.

For more information on available buffers and their application, please see the buffer section on page 28-29.

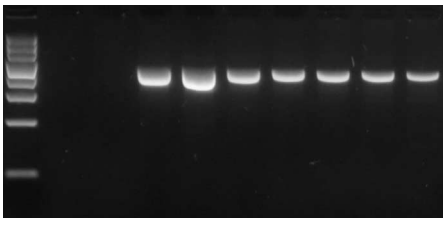
For more information about TEMPase Hot Start DNA Polymerase Glycerol Free, please see page 27.

Taq



M 0.5 1 1.5 2 2.5 3 3.5 4 4.5
mM Mg^{2+}

TEMPase



M 0.5 1 1.5 2 2.5 3 3.5 4 4.5
mM Mg^{2+}

TEMPase promotes increased specificity and yield
Example of PCR amplifications of BAIP3. Taq or TEMPase were used as indicated with Ammonium Buffer at the indicated Mg^{2+} concentrations. Taq results in a specific and high yield band at only one Mg^{2+} concentration (2 mM). TEMPase results in specific bands over a broad range of Mg^{2+} concentrations and increased yield. M: Marker.

TEMPase Hot Start DNA Polymerase

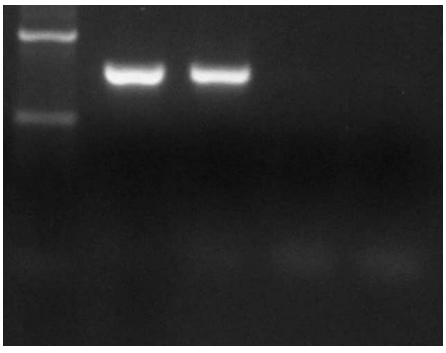
TEMPase Hot Start DNA Polymerase has been designed to diminish the formation of non-specific priming events during reaction set-up and the first ramp of thermal cycling. TEMPase Hot Start DNA Polymerase features higher specificity, superior sensitivity and greater yield compared to Taq DNA polymerases. These features enable the detection of low abundance targets.

Features

- Convenient reaction set-up at room temperature
- Increased sensitivity
- Increased specificity
- Increased product yield
- dUTP incorporation possible

Suitable for

- Detection of low abundance targets
- Screening
- Amplification of GC-rich sequences
- Multiplex PCR
- Direct colony PCR
- Real-time PCR



TEMPase is inactive at ambient temperature
Ampliqon TEMPase is activated by initial heating at 95 °C for 15 minutes (lane 1). Without activation the enzyme is completely inactive (lane 2). M: Marker.

TEMPase DNA Polymerase 5 U/µl

Without buffer

Product number	
A220003	500 units
A220004	1000 units
A220006	2 500 units
A220007	5 000 units

With 10x Ammonium Buffer and $MgCl_2$

Product number	
A221103	500 units
A221104	1 000 units
A221106	2 500 units
A221107	5 000 units

With 10x Combination Buffer and $MgCl_2$

Product number	
A223103	500 units
A223104	1 000 units
A223106	2 500 units
A223107	5 000 units

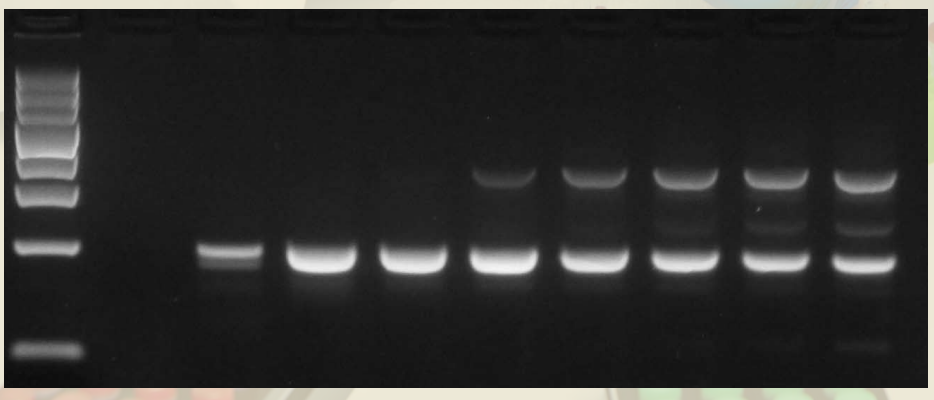
TIP
Choose the right buffer

Ammonium Buffer is the best buffer to choose for most applications. It promotes robust amplification, high yield and high specificity.

THE EFFECT OF MAGNESIUM

Mg^{2+} is required for polymerase activity. The right Mg^{2+} concentration increases the fidelity and specificity of the polymerase (see lanes 1.5 and 2 in figure below). On the other hand, too low Mg^{2+} concentrations make the polymerase inactive (lane 0.5) and too high Mg^{2+} concentrations increase the amount of unspecific bands (lanes 2.5 to 4.5).

The Mg^{2+} concentration in a reaction depends on several factors: the DNA quality, the presence of chelators and the dNTP concentration. Therefore, you often need to optimise the Mg^{2+} concentration.



Mg^{2+}: fine-tuning the PCR
PCR products of a Mg^{2+} dilution series from 0.5 to 4.5 mM with 0.5 mM increments are visualised on an agarose gel (lanes 0.5 to 4.5). M: Marker.

TEMPase Hot Start DNA Polymerase master mixes

Introduction

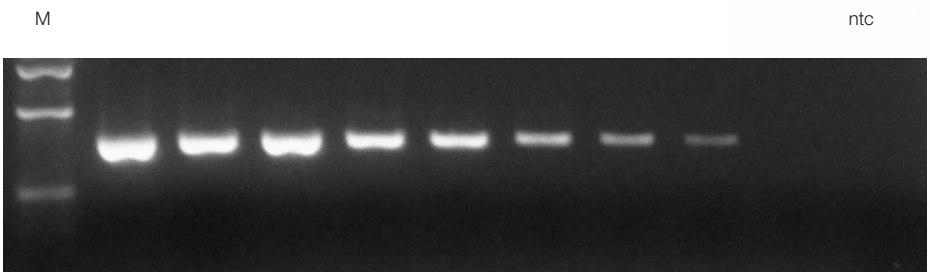
TEMPase Hot Start DNA Polymerase master mixes offer easy reaction assembly at room temperature. Fewer reagent handling steps significantly reduce set-up time and eliminate the risk of contamination of stock solutions. Fewer handling steps also lead to increased reproducibility, and this feature makes TEMPase Hot Start DNA Polymerase master mixes suitable for standard tests.

TEMPase Hot Start Master Mix is a ready-to-use 2x Master Mix composed of Ampliqon TEMPase Hot Start DNA Polymerase, a buffer system, dNTPs and $MgCl_2$. Just add your template and primers to successfully carry out PCR.

TEMPase master mix is available in four variations:

- TEMPase Hot Start 2x Master Mix A
- TEMPase Hot Start 2x Master Mix C
- TEMPase Hot Start Master Mix BLUE A
- TEMPase Hot Start Master Mix BLUE C

Master Mix A is based on Ammonium Buffer (a NH_4^+ buffer system). Master Mix C is based on Combination Buffer (a balanced KCl/NH_4^+ buffer system). Master Mix Blue is for direct gel loading.



High sensitivity
TEMPase Hot Start Polymerase has high sensitivity and enables the detection of as little as one copy of a gene. In this experiment the indicated amount of DNA was amplified in a PCR using TEMPase and Ammonium Buffer. DNA quantities are given in ng or pg under each lane. M: Marker; ntc: No template control.

TEMPase Hot Start DNA Polymerase Master Mix

TEMPase Hot Start DNA Polymerase Master Mix is an alternative to TEMPase Hot Start DNA Polymerase. It offers the same excellent performance and increased reproducibility.

Features

- Convenient reaction set-up at room temperature
- Minimal optimisation
- Time-saving premixed solution
- Increased sensitivity
- Increased specificity
- Increased product yield
- dUTP incorporation possible

Suitable for

- Detection of low abundance targets
- Screening
- Direct colony PCR
- Amplification of GC-rich DNA sequences

TEMPase DNA Polymerase Master Mix

2x Master Mix A

Product number	
A230301	100 reactions
A230303	500 reactions
A230306	2 500 reactions
A230307	5 000 reactions

2x Master Mix C

Product number	
A230701	100 reactions
A230703	500 reactions
A230706	2 500 reactions
A230707	5 000 reactions

TIP
Choose the right master mix

For most standard applications our Master Mix A based on Ammonium Buffer works best. It promotes robust amplification, high yield and high specificity. In some cases you may prefer to switch to our Master Mix C based on Combination Buffer.

If you want to visualise on agarose gels, we suggest that you choose Master Mix BLUE A or C.

For more information on buffers, please see the buffer section on page 28-29.

TEMPase Hot Start DNA Polymerase Master Mix BLUE

For direct loading

TEMPase DNA Polymerase Master Mix BLUE

2x Master Mix A BLUE

Product number	
A290401	100 reactions
A290403	500 reactions
A290406	2 500 reactions
A290407	5 000 reactions

2x Master Mix C BLUE

Product number	
A290801	100 reactions
A290803	500 reactions
A290806	2 500 reactions
A290807	5 000 reactions

TEMPase Hot Start Master Mix BLUE is a time-saving alternative to TEMPase Hot Start Master Mix. It offers the same excellent performance, and products can be loaded directly onto the agarose or SDS DNA gel after PCR. You do not need a separate loading buffer and time-consuming sample preparation before electrophoresis. This makes TEMPase Hot Start Master Mix BLUE especially suitable for high throughput standard tests.

TEMPase Master Mix BLUE is composed of TEMPase DNA Polymerase, a buffer system, dNTPs, $MgCl_2$, blue dye and stabiliser. The blue dye and stabiliser do not interfere with the PCR. If necessary, you can remove the blue dye by spin column purificaition or other methods.

TIP
Direct colony PCR

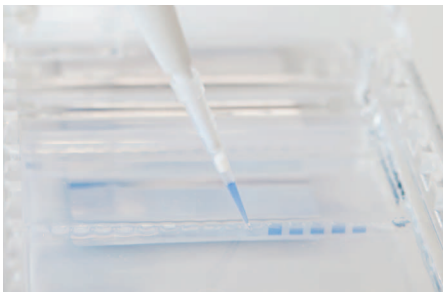
Please visit ampliqon.com under the PCR Technology section to see the application note *Screening of bacterial and yeast colonies.*

Features

- Direct loading onto agarose and SDS DNA gels
- Easy visualisation of pipetting
- Dye front runs at 100 – 500 bp on a 0.5-1.5 % agarose gel

Suitable for

- Detection of low abundance targets
- Screening
- Amplification of GC-rich sequences
- Multiplex PCR



Direct gel loading
After PCR with Master Mix BLUE, the products are loaded directly onto the agarose gel.

Glycerol Free DNA Polymerases

Introduction

Glycerol Free variants of Taq and TEMPase Hot Start DNA Polymerase is well suited for automation and freeze drying applications.

The glycerol free formulation of these two glycerol free DNA polymerases is ideal for preparation of dried-down amplification mixtures. This makes Taq DNA Polymerase Glycerol Free and TEMPase Hot Start DNA Polymerase Glycerol Free ideal for diagnostic test kits and gene expression analysis. Furthermore, the absence of glycerol also makes the glycerol free formulations ideal for automation or other applications where accurate pipetting of small volumes is critical.

Ampliqon Glycerol Free DNA polymerases are available with separate buffers

Taq DNA Polymerase Glycerol Free, 5 U/µl

Taq DNA Polymerase Glycerol Free, 50 U/µl

TEMPase Hot Start DNA Polymerase Glycerol Free, 5 U/µl

Glycerol Free DNA polymerase are available either without buffer or with one buffer of choice and extra $MgCl_2$.
Additional $MgCl_2$ is included for easy optimisation.

For more information about buffers and their application, please see the buffer section on page 28-29.

HIGH STABILITY OF TAQ DNA POLYMERASE GLYCEROL FREE

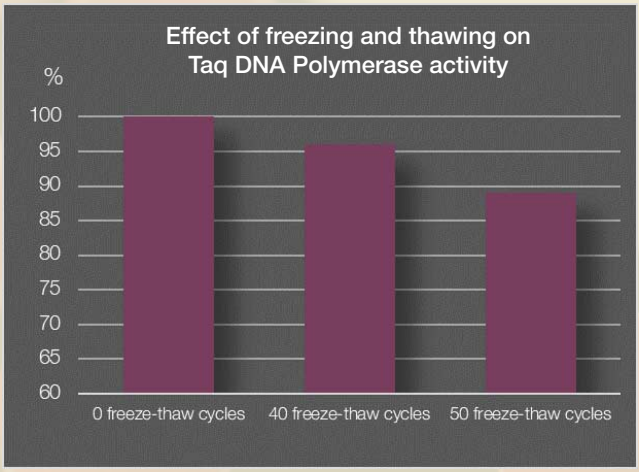
ESTIMATED BY FREEZE-THAW STUDIES

To test the resistance of Ampliqon Taq DNA Polymerase Glycerol Free to freezing and thawing, a freeze-thaw test was performed by applying 50 freeze-thaw cycles. The Taq DNA Polymerase activity after 40 and 50 freeze-thaw cycles, respectively, was measured using real-time PCR amplification and compared to a standard curve of Taq DNA polymerase activities.

Samples were thawed at 30 °C for 7 minutes, shortly vortexed and spun down at room temperature and then placed on ice. 30 minutes after the start of thawing, samples were placed at -20 °C for at least 1 hour before the cycle was started again. At 40 and 50 cycles, the according samples were collected and stored at -20 °C until analysis. Initially, one sample was kept at -20 °C without any thawing to serve as reference for 100 % activity and to prepare the standard series.

Samples were diluted to a concentration, where the amount of Taq polymerase was limiting, thereby allowing to monitor changes in enzyme activity. Starting with the same dilution, a standard curve for Ampliqon Taq polymerase activity was prepared from the sample without freeze-thaw cycles.

Here we have plotted the activity of DNA Polymerase against numbers of freeze-thaw cycles; 0, 40 and 50, respectively. The estimated activity after 40 freeze-thaw cycles was slightly below 100 % activity, indicating a minor decrease in activity.



After 50 freeze-thaw cycle, approximately 90 % of the full activity for Taq DNA polymerase was retained.

Long term stability at -20 °C for Taq DNA Polymerase Glycerol Free is stated on the label. Furthermore, it is also possible to store glycerol free DNA polymerases at +4 °C for up to 6 months.

For more information about Taq DNA Polymerase stability, please see our website:
ampliqon.com/en/ordering/storage-and-shipping-conditions-pcr-enzymes/stability-test-taq-dna-polymerase/

Taq DNA Polymerase Glycerol Free

Ampliqon Taq DNA Polymerase Glycerol Free is developed for automation and freeze-drying. It is a glycerol free formulation of standard Ampliqon Taq DNA Polymerase and is well suited for automated routine PCR applications that require high yield and reliable DNA amplification, or where accurate pipetting of small amounts is crucial.

Features

- Glycerol free storage buffer
- High product yield
- Processes up to 5 kb
- dUTP incorporation possible
- Leaves a 3'dA overhang

Suitable for

- Standard testing and routine PCR
- Freeze-drying
- Robot-aided pipetting
- Automated high throughput testing

Taq DNA Polymerase Glycerol Free 5 U/µl

Without buffer

Product number	
A100003	500 units
A100004	1000 units
A100006	2 500 units
A100007	5 000 units

With 10x Ammonium Buffer and $MgCl_2$

Product number	
A101103	500 units
A101104	1 000 units
A101106	2 500 units
A101107	5 000 units

With 10x Standard Buffer and $MgCl_2$

Product number	
A102103	500 units
A102104	1 000 units
A102106	2 500 units
A102107	5 000 units

Taq DNA Polymerase Glycerol Free 50 U/µl

Without buffer

Product number	
A490010	25 000 units
A490012	250 000 units
A490044	2 000 000 units

TEMPase Hot Start DNA Polymerase Glycerol Free

TEMPase DNA Polymerase Glycerol Free 5 U/µl

Without buffer	
Product number	
A240003	500 units
A240004	1000 units
A240006	2 500 units
A240007	5 000 units

With 10x Ammonium Buffer and $MgCl_2$	
Product number	
A241103	500 units
A241104	1 000 units
A241106	2 500 units
A241107	5 000 units

With 10x Combination Buffer and $MgCl_2$	
Product number	
A243103	500 units
A243104	1 000 units
A243106	2 500 units
A243107	5 000 units

TIP
Choose the right buffer

Ammonium Buffer is the best buffer to choose for most applications. It promotes robust amplification, high yield and high specificity.

TEMPase Hot Start DNA Polymerase Glycerol Free is a glycerol-free formulation of regular TEMPase Hot Start DNA Polymerase. It is well suited for automation, freeze-drying and routine PCR applications that require high specificity, superior sensitivity, high yield and reliable DNA amplification.

Features

- Convenient reaction set-up at room temperature
- Increased sensitivity
- Increased specificity
- Increased product yield
- dUTP incorporation possible

Suitable for

- Automated high throughput tests
- Freeze-drying
- Detection of low abundance targets
- Amplification of GC-rich sequences
- Multiplex PCR

PCR buffers for Taq and TEMPase

An optimal buffer is essential to perform successful PCR, and a reliable PCR result depends on many factors: the quality of the DNA and primers, the region to be amplified as well as the PCR instrument itself. For the same reasons, Ampliqon has developed different Tris-based buffer solutions to match different requirements.

Ammonium Buffer

Ammonium Buffer is recommended for most PCR applications. It results in high yield of PCR products and minimises the need for optimisation of Mg^{2+} concentrations or the annealing temperatures. In our tests we observed high specificity over a broad range of annealing temperatures and Mg^{2+} concentrations. Ammonium Buffer also works well when dealing with difficult templates, e.g. GC-rich DNA sequences.

Standard Buffer

We recommend that you continue using our Standard Buffer if you have already optimised your protocols for this buffer. Standard Buffer is the traditional potassium buffer and has high specificity. However, optimisation of primer annealing temperatures and Mg^{2+} concentrations is often necessary. Highly pure DNA templates are preferable if you use this buffer.

Combination Buffer

Combination buffer is another option that gives high product yield and good specificity. The balanced ammonium-potassium formulation results in tolerance towards optimisation of primer annealing temperatures and Mg^{2+} concentrations. In our experience this buffer shows good results on some PCR instruments and is worth testing when selecting buffers for a new set-up.

Choose the right buffer

Ammonium-, Combination- and Standard Buffer are available in four formulations:

- 1.5 mM $MgCl_2$
- Mg^{2+} free
- Detergent free, 1.5 mM $MgCl_2$
- Mg^{2+} free, detergent free

Ammonium Buffer works for most PCR applications. It promotes robust amplification, high yield and high specificity.

Our Mg^{2+} free buffer is recommended if you need to optimise your Mg^{2+}, especially if your application requires Mg^{2+} concentrations lower than 1.5 mM.

Detergent free buffers are recommended for automation and downstream applications that involve fluorescent spectrometry.

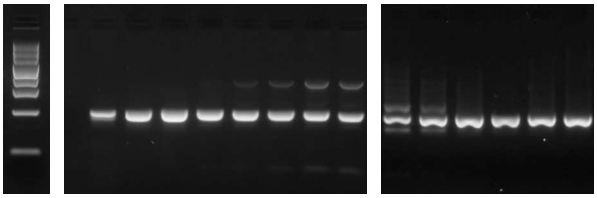
5x PCR Buffer RED

5x PCR Buffer RED offers the same specification as Ammonium Buffer. The included red dye and density reagent, eliminates the need for loading dye as well as the time-consuming sample preparation before electrophoresis.

GC Buffer I and II

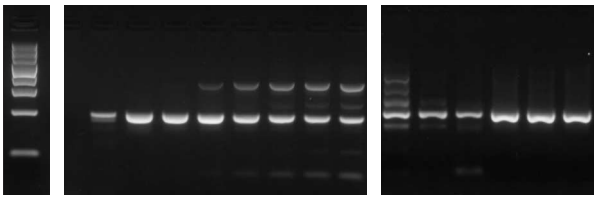
GC-rich DNA sequences often require laborious work to optimise the amplification assay. Please see the section GC-rich DNA amplification on page 38-39 for more information.

Ammonium Buffer



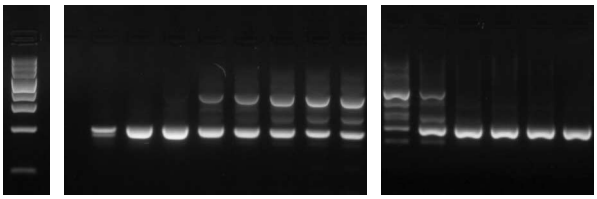
Minimal need for optimisation
A broad range of Mg^{2+} concentrations and temperatures result in a specific product with high yield. (Lanes 1.5 - 2.5 and lanes 57-66).

Standard Buffer



Optimisation needed
A narrow range of Mg^{2+} concentrations result in a specific product. (Lanes 1.5 - 2 and lanes 60-66).

Combination Buffer



Optimisation needed
A narrow range of Mg^{2+} concentrations result in a specific product with high yield. (Lane 1.5 and lanes 60-66).

Performance of three Ampliqon buffers
Example of PCR amplifications of ENG9. TEMPase and the indicated buffers were used at the indicated Mg^{2+} concentrations or temperatures. The first image shows a Mg^{2+} dilution series from 0.5 – 4.5 mM $MgCl_2$ at 60 °C. The second part shows a temperature gradient from 51 – 66 °C at 1.5 mM $MgCl_2$. M: Marker.

Ampliqon buffers

10x Ammonium Buffer

15 mM $MgCl_2$

Product number	
A301103	3 x 1.5 ml

10x Standard Buffer

15 mM $MgCl_2$

Product number	
A302103	3 x 1.5 ml

10x Combination Buffer

15 mM $MgCl_2$

Product number	
A303103	3 x 1.5 ml

5x PCR Buffer RED

7.5 mM $MgCl_2$

Product number	
A301803	3 x 1.5 ml

Other product sizes and combinations are available. See the full product list on page 56.

Buffer overview

Buffer	High yield	High specificity	Tolerance for primer annealing temperatures	Performance on GC-rich templates	Visualisation
Ammonium Buffer	✓✓	✓	✓	✓	÷
Standard Buffer	✓	✓✓	÷	÷	÷
Combination Buffer	✓	✓	✓	✓	÷
5x PCR Buffer RED	✓✓	✓	✓	✓	✓
4x GC Buffer I and II	✓	✓	✓	✓✓	÷

AQ90 High Fidelity DNA Polymerase

AQ90 High Fidelity DNA Polymerase is a proofreading DNA polymerase displaying the following features; fidelity measured up to 50x Taq DNA Polymerase, ability to amplify problematic DNA targets, such as those with low to high GC content and ability to perform amplification of long DNA targets. These features enable accurate and reliable PCR results.

Features

- High fidelity – measured up to 50x Taq Fidelity
- Exceptional low error rate
- Processes up to 8.5 kb gDNA and ≤ 12.5 kb for λDNA
- Good coverage on DNA templates with low to high GC content

Suitable for

- Cloning/sub-cloning
- Mutagenesis
- Gene expression
- Construction of libraries
- NGS applications

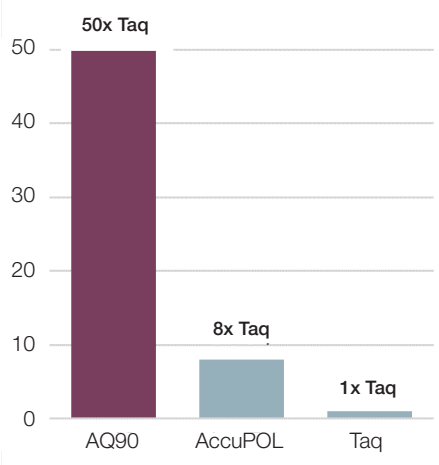
AQ90 High Fidelity DNA Polymerase

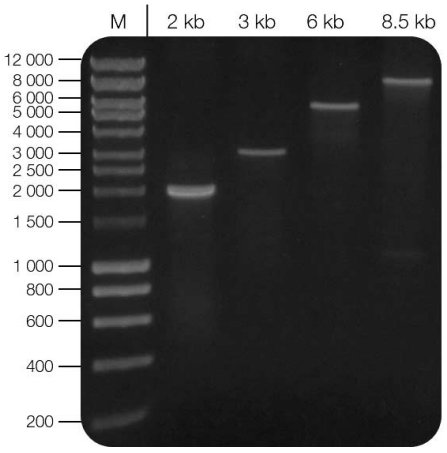
With 10x AQ90 Buffer	
Product number	
A457401	100 units
A457403	500 units
A457404	1 000 units
A457406	2 500 units

TIP
Remember betaine

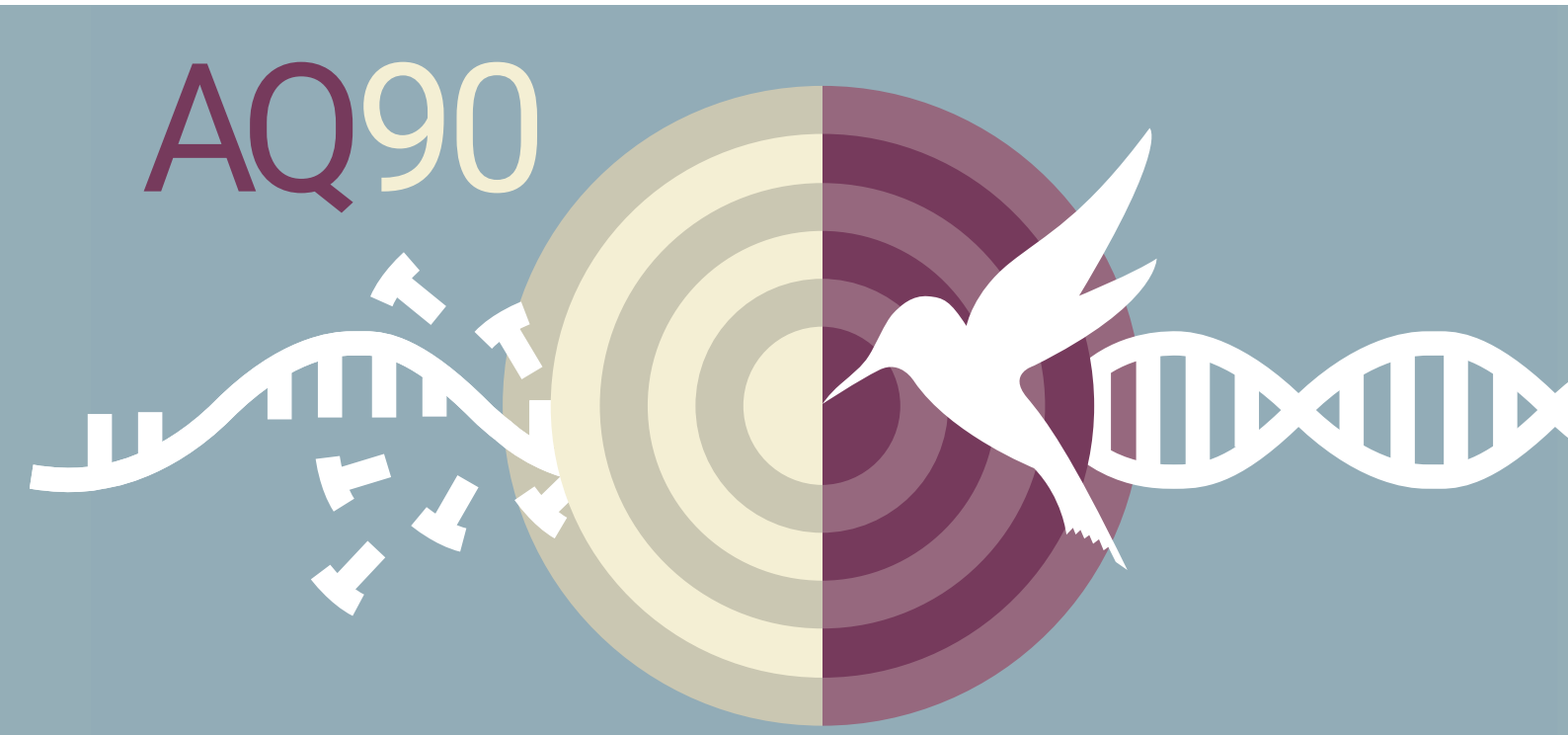
Betaine for amplification of GC-rich DNA targets can be purchased separately, see page 47.

Fidelity compared to Taq DNA Polymerase





Long range amplification
AQ90 High Fidelity DNA Polymerase enables amplification of large and complex amplicons. Four different targets of human genomic DNA ranging from 2 kb and up to 8.5 kb was used in this study. Amplicon sizes are indicated at the top of the gel. Marker M is High Range DNA Ladder from Ampliqon (A610141).



ENGINEERED FOR HIGH-PERFORMANCE PCR

The development and construction of a High Fidelity DNA Polymerase with ultra-high fidelity was a key point for Ampliqon. AQ90 High Fidelity DNA Polymerase features; fidelity measured up to 50 times higher than Taq DNA Polymerase, ability to amplify problematic DNA targets, such as those with low and high GC content and capacity to perform long range amplication up to 12.5 kb.

These unique features of AQ90 High Fidelity DNA Polymerase have been attained by combining functional domains from two wildtype archaeal high fidelity DNA polymerases, thereby creating a unique and chimeric DNA Polymerase displaying the most desired features from both wildtype DNA Polymerases.

The improved high fidelity of AQ90 High Fidelity DNA Polymerase dramatically lowers the risk of carrying out mistakes during amplification.

If by mistake an incorrect dNTP is incorporated into the newly synthesized DNA, the proofreading capacity of the AQ90 High Fidelity DNA Polymerase senses the mispaired dNTP, which is then immediately removed by the 3' - 5' exonuclease activity and replaced by the correct dNTP.

AQ90 High Fidelity DNA Polymerase is suitable for blunt end cloning, cloning, library constructions, gene expression and many more application requiring the highest fidelity.

Inspiration for the name of the AQ90 High Fidelity DNA Polymerase was taken from several places: Its key feature (Accuracy), its manufacture (Ampliqon) and lastly from the molecular weight of the enzyme (90kDa).

AQ90 High Fidelity DNA Polymerase Master Mix

AQ90 High Fidelity DNA Polymerase 2x Master Mix is a convenient alternative to AQ90 High Fidelity DNA Polymerase, displaying the following features; high fidelity - measured up to 50x Taq DNA Polymerase, ability to amplify problematic DNA targets, such as those with low to high GC content and ability to perform amplification on long DNA targets.

Features

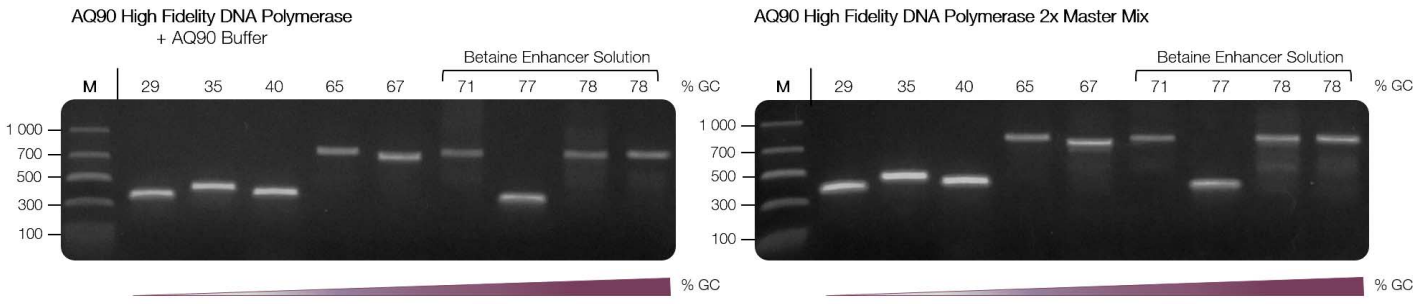
- All-in-one 2x master mix for great convenience
- Time-saving reaction set-up
- High fidelity – measured up to 50x Taq Fidelity
- Exceptional low error rate
- Processes up to 8.5 kb gDNA and ≤ 12kb for λDNA
- Good coverage on DNA templates with low to high GC content

Suitable for

- Cloning/sub-cloning
- Mutagenesis
- Gene expression
- Construction of libraries
- NGS applications

AQ90 High Fidelity DNA Polymerase Master Mix

2x master mix, 2 mM $MgCl_2$ final	
Product number	
A470701	100 reactions
A470703	500 reactions
A470706	2 500 reactions
A470707	5 000 reactions



AQ90 High Fidelity DNA Polymerase and AQ90 High Fidelity 2x Master Mix promotes specific and clear results on a variety of DNA targets with low to high GC content. Here we have tested 9 different DNA targets varying in both length; ranging from 200 bp to above 700 bp and in GC content; ranging from 29 – 78 %. Amplification of targets with 71 – 78 % GC content was only successful when Betaine Enhancer Solution (2 M) was added to the PCR reaction.

FIDELITY

Fidelity depends on the polymerase, the buffer system and the quality of the template DNA.

POLYMERASE-INDEPENDENT ERRORS

Polymerase-independent errors are caused by the DNA either because it has been damaged from the start (old DNA) or during the PCR. To avoid polymerase-independent errors the following tips could be useful:

- Add enough template DNA
- Run as few cycles as possible

Starting amount of DNA and cycle number above are interconnected. Because the lesser DNA at the beginning, the more cycles you have to run to obtain the same amount of the final product. With each additional amplification cycle the already existing errors will be copied and consequently doubled.

- Short DNA melting steps
- Low DNA melting temperatures

If DNA is exposed to high temperatures the DNA will be damaged and unwanted deamination of cytosine to uracil will occur. This results in a C-G to T-A mutation. To avoid this choose short denaturation time and if possible omit the initial denaturation step completely.

POLYMERASE-DEPENDENT ERRORS

To minimise polymerase-dependent errors you should choose conditions that promote a slow elongation rate. Because the slower the elongation rate of the polymerase, the more time is available to secure the incorporation of the correct nucleotides.

Conditions known to slow down polymerase extension rates are:

- Low enzyme concentrations
- Low dNTP concentrations
- Low Mg^{2+} concentrations

dNTP and Mg^{2+} concentrations are interconnected. High fidelity of Taq is obtained with equimolar concentrations of dNTPs and Mg^{2+}, e.g. 1 mM total dNTPs and 1 mM Mg^{2+}. Other substances in the reaction can consume Mg^{2+}, for example a chelator introduced with a DNA sample. Therefore, the optimal Mg^{2+} concentration for high fidelity is often a little higher than the theoretical values.

- Optimise cycling time

Unfortunately, high fidelity conditions are not the same as high yield conditions. To optimise yield with high fidelity conditions you should optimise your PCR cycling time. For that purpose use short DNA melting time and long annealing and elongation time.

AccuPOL DNA Polymerase

AccuPOL DNA Polymerase is a thermostable high fidelity DNA polymerase with proofreading ability. This feature enables accurate and reliable PCR. Besides a 5'→3' DNA polymerase activity, AccuPOL DNA Polymerase exhibits a 3'→5' proofreading exonuclease activity that enables the enzyme to correct base pair mismatches. This results in PCR products with few errors and blunt ends.

Features

- High fidelity, proofreading – measured up to 8x Taq fidelity
- Processes up to 3 kb
- Renders blunt-ended DNA
- Cost-saving alternative to AQ90

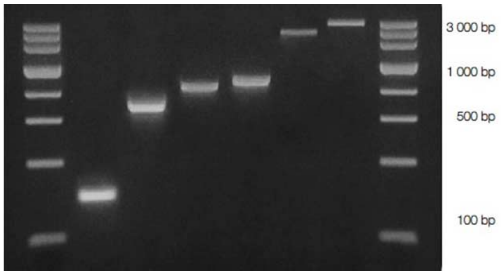
Suitable for

- Cloning and mutagenesis
- Gene expression
- Library construction
- Mutation studies

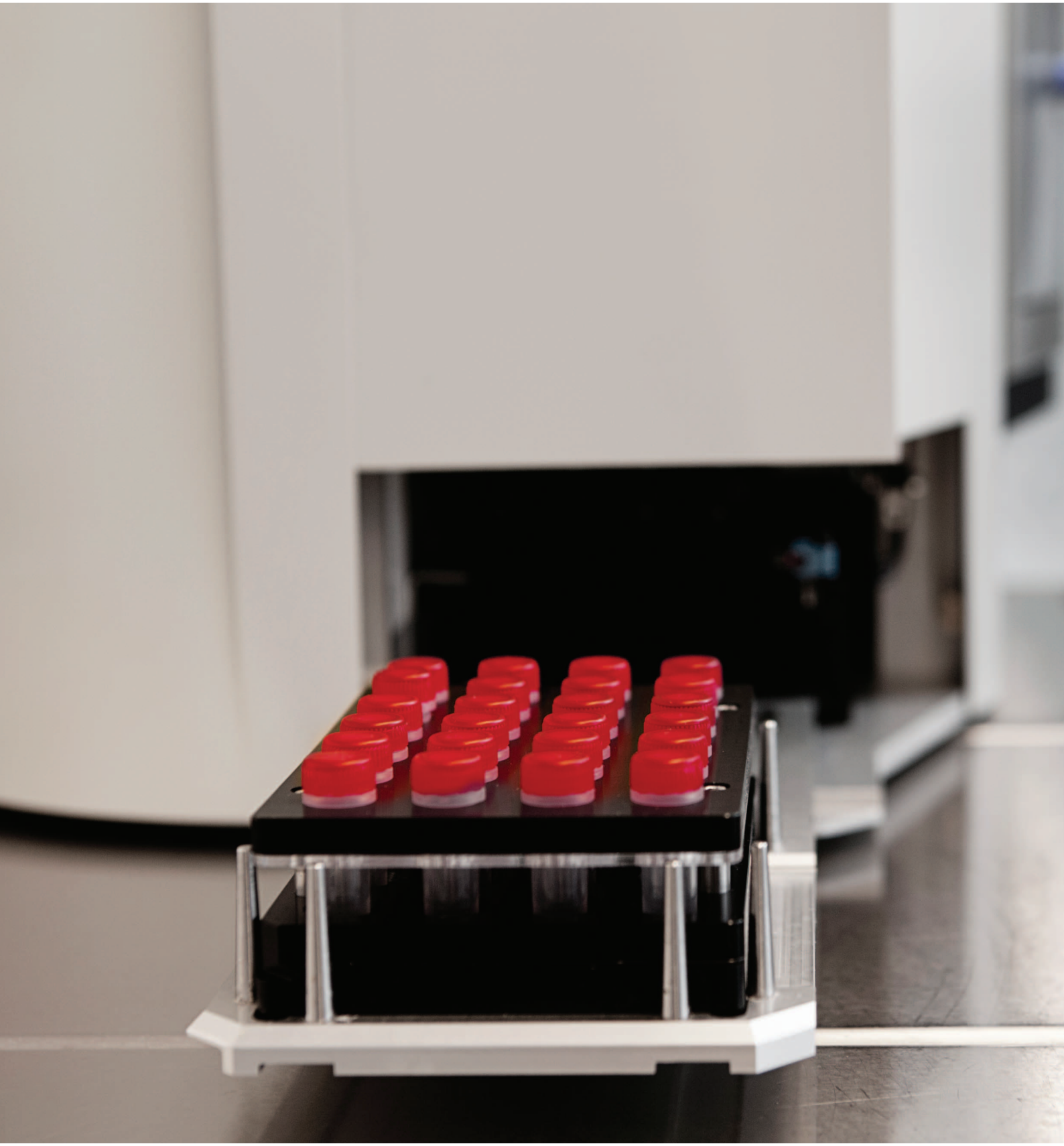
AccuPOL DNA Polymerase

Without buffer and $MgCl_2$	
Product number	
A210002	250 units
A210003	500 units
A210004	1 000 units
A210006	2 500 units

With Ammonium Buffer and $MgCl_2$	
Product number	
A211102	250 units
A211103	500 units
A211104	1 000 units
A211106	2 500 units



AccuPOL DNA Polymerase promotes specific and clear results
Here we have tested 6 different DNA target varying in both length; ranging from 200 bp to above 3.000 bp and in GC content; ranging from 30 – 65 %.



Multiplex TEMPase Master Mix

Introduction

Multiplex TEMPase Master Mix is developed for the simultaneous amplification of two or more amplicons in a single reaction tube. The Multiplex TEMPase Master Mix minimises the need for optimisation and makes the development of multiplex PCR assays fast and easy.

Features

- Amplification of multiple PCR products in one tube
- High specificity, sensitivity and product yield
- Diminished formation of non-specific product
- Detection of low abundance targets
- Reaction set-up at room temperature

Suitable for

- Genotyping
- Forensics
- Detection and typing of microorganisms

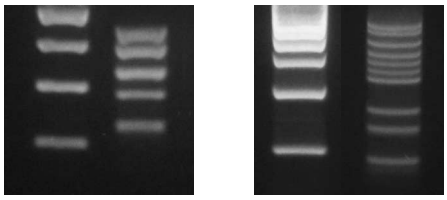
Multiplex 2x master mix is composed of TEMPase Hot Start DNA Polymerase and a specialised buffer system designed for multiplex PCR. TEMPase Hot Start DNA Polymerase is well suited for multiplex PCR because of its high specificity.

Additional $MgCl_2$ is enclosed in the multiplex kit to enable optimisation.

Betaine for enhancement can be purchased separately.

Multiplex TEMPase Master Mix

2x master mix, 3 mM $MgCl_2$ final	
Product number	
A260301	100 reactions
A260303	500 reactions
A260306	2 500 reactions
A260307	5 000 reactions



Amplification of a five-plex and a ten-plex reaction
Five different templates of the CFTR gene (CFTR five-plex) and ten different templates of the DMD gene (DMD ten-plex) were amplified simultaneously in one tube respectively. M: Marker.

GC-rich DNA amplification

Introduction

Ampliqon offers a product series specifically developed for the amplification of GC-rich DNA sequences. Combined with TEMPase Hot Start DNA Polymerase, GC Buffer I and GC Buffer II promote excellent amplification results with targets of varying high degrees of GC content.

TEMPase Hot Start DNA Polymerase is a chemically modified form of Ampliqon Taq DNA Polymerase and is activated by an initial heating step. The heat activation is beneficial when amplifying GC-rich DNA sequences.

Features

- High success rate with the amplification of GC-rich DNA
- High specificity, sensitivity and product yield
- Diminished formation of non-specific product
- Reaction set-up at room temperature

Suitable for

- Amplification of GC-rich DNA targets
- Detection of low abundance targets
- Screening

GC-rich DNA amplification products are available in the following formats:

- GC TEMPase Master Mix I
- GC TEMPase Master Mix II
- 4x GC Buffer I
- 4x GC Buffer II

GC-rich DNA amplification products offer easy reaction assembly at room temperature. The master mixes promote fewer handling steps, which significantly reduce set-up time and lead to increased reproducibility as well as minimises the risk of contamination of stock solutions.

TIP
When to choose specialised GC buffers

If your PCR fails with TEMPase Hot Start Polymerase and Ammonium Buffer, try TEMPase and GC Buffer I either as a master mix or a kit. Both give very good results in many cases. If your amplification is still not satisfactory, then switch to our GC Buffer II.

To save time all buffers can be tested at the same time.

4x GC Buffer I	
Product number	
A301703	3 x 1.5 ml

4x GC Buffer II	
Product number	
A302703	3 x 1.5 ml

GC TEMPase DNA Polymerase Master Mix

2x Master Mix I	
Product number	
A331701	100 reactions
A331703	500 reactions
A331706	2 500 reactions
A331707	5 000 reactions

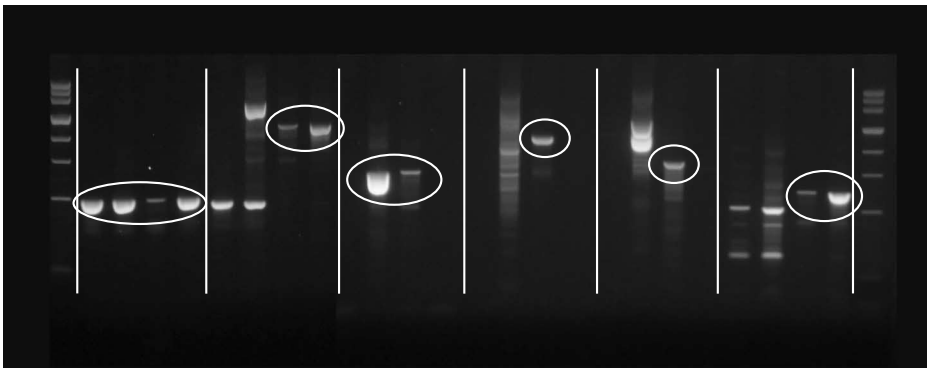
2x Master Mix II	
Product number	
A332701	100 reactions
A332703	500 reactions
A332706	2 500 reactions
A332707	5 000 reactions

GC TEMPase master mixes

The GC TEMPase master mixes are ready-to-use 2x master mixes based on GC Buffer I or GC Buffer II. The master mixes contain TEMPase Hot Start DNA Polymerase, GC Buffer I or GC Buffer II, dNTPs and $MgCl_2$. Just add template and primers to successfully carry out PCR.

GC TEMPase master mixes

M	ENG9	CDK5	ENG5	KLF14	ABCC8	FECH1	M
% GC:	58.4	64.2	68.5	71.4	72.9	76.6	



S A I II S A I II S A I II S A I II S A I II S A I II

Optimisation of GC-rich DNA amplification
Six genes with a varying percentage of GC contents were amplified with Standard Buffer (lanes S), Ammonium Buffer (lanes A), GC Buffer I (lanes I) and GC Buffer II (lanes II). M: Marker.

With an increasing percentage of GC in the expected amplicon, Standard Buffer and Ammonium Buffer fail to give the correct amplification products, while GC Buffer I and GC Buffer II succeed. Correct amplified products are circled.

Notice: Ammonium Buffer is the best buffer to choose for most PCR applications. For example, you only need to change your buffer from Standard Buffer to Ammonium Buffer to obtain a good result for ENG5.

RealQ Plus master mixes

Introduction

Real-time PCR is a sensitive and reliable method for gene analysis and DNA quantification. RealQ Plus master mixes are developed to enable real-time-based DNA amplification with high specificity and efficiency.

Ampliqon offers RealQ Plus 2x master mixes in two formulations: DNA binding fluorescent dye-based detection and probe-based detection. The two formulations cover most real-time PCR applications.

Choose between RealQ Master Mix Green or for Probe

RealQ Plus 2x Master Mix Green is the right choice when expenses and experiment preparation time should be limited or if you need to quickly analyse many genes.

RealQ Plus 2x Master Mix for Probe is the right choice when specificity is absolutely essential or if you need multiplexing.

To ensure best possible compatibility with the most popular real-time PCR instruments, our RealQ Plus master mixes are available with three different levels of ROX™ internal reference dye: high ROX, low ROX or without ROX.

For more information on ROX please see chart on page 43.

Ampliqon RealQ Plus master mixes are available in the following formats:

RealQ Plus 2x Master Mix Green

Without ROX

With low ROX

With high ROX

RealQ Plus 2x Master Mix for Probe

Without ROX

With low ROX

With high ROX

RealQ Plus master mixes are 2x master mixes and contain TEMPase Hot Start DNA Polymerase, an optimised buffer system, dNTPs and $MgCl_2$. Just add DNA template and primers to successfully carry out PCR.

REAL-TIME WITH GREEN OR FOR PROBE

GREEN

When fluorescent dye is free in the solution, it emits a very low fluorescent signal. As soon as the dye binds to the double-stranded DNA the signal increases significantly (thousandfold), which makes the fluorescent signal of the dye directly proportional to the amount of amplified dsDNA.

Advantage

Since you neither need to design nor purchase a probe, an experiment set up with RealQ Plus Green becomes both cheaper and faster than an experiment with RealQ Plus for Probe.

You can check the specificity of your primers by performing a melt curve analysis, which is only possible when using intercalating dyes.

Disadvantage

The use of fluorescent dye-based detection is not as specific as probe-based detection.

PROBE

In general most probe-based detection methods take advantage of fluorescent resonance energy transfer (FRET) by quenching the signal of a fluorescent reporter in the absence of the desired target. During the annealing or elongation period the quenching factor is separated from the fluorescent reporter and a signal is emitted and monitored.

This makes probe-based detection significantly more specific than fluorescent dye-based detection, since a signal is only detected when the correct target is amplified.

Advantage

You have the opportunity to use several different fluorescent reporters, thereby enabling multiplexing. Furthermore, the probe annealing step results in high specificity.

Disadvantage

The need for specifically designed probes makes this method more expensive and time-consuming to set up than fluorescent dye-based detection.

RealQ Plus Master Mix Green

Ampliqon RealQ Plus 2x Master Mix Green is a reliable master mix for real-time PCR based on DNA-binding fluorescent dye detection.

Features

- High specificity
- High stability and reproducibility
- Reliable quantification and high efficiency
- Premixed all-in-one 2x solution
- Reaction set-up at room temperature

Applications

- Absolute and relative quantification
- Presence / absence experiments
- SNP analysis
- Genotyping
- Pathogen detection

RealQ Plus 2x Master Mix Green

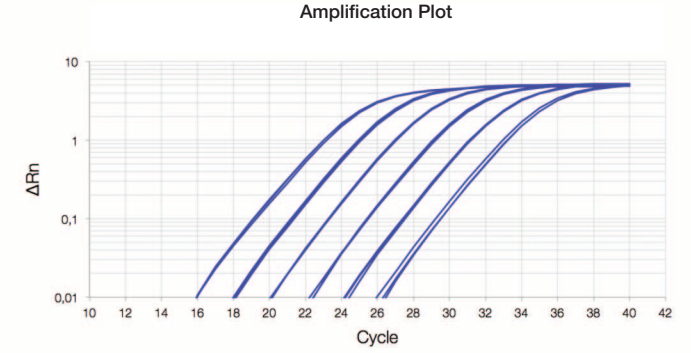
Without ROX	
Product number	
A323402	400 reactions
A323406	4 000 reactions

With low ROX	
Product number	
A324402	400 reactions
A324406	4 000 reactions

With high ROX	
Product number	
A325402	400 reactions
A325406	4 000 reactions

Performance of RealQ Plus Master Mix Green

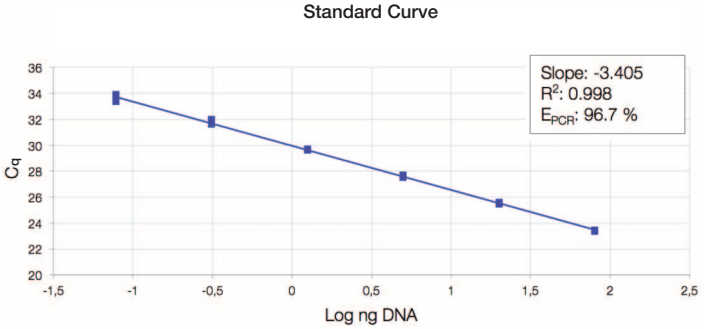
Amplification Plot



Amplification plot of a fourfold dilution series for PAH target (203 bp) amplified from human gDNA. Starting amounts of 80 ng gDNA was amplified in triplicates using RealQ Plus 2x Master Mix Green with high ROX™.

Performance of RealQ Plus Master Mix Green

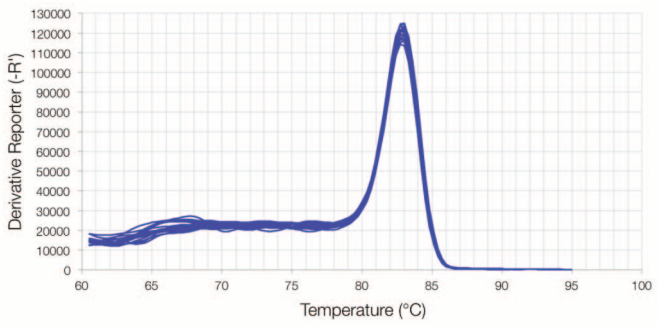
Standard Curve



Standard curve based on the amplification data above. This confirms a high linear range, high efficiency and low replicate deviations.

Performance of RealQ Plus Master Mix Green

Melt Curve



The melt curve analysis detected no non-specific products, which confirm the specificity of the mix.

ROX level for selected real-time instruments

	RealQ Plus Green, High	RealQ Plus Green, Low	RealQ Plus Green, Without	RealQ Plus for Probe, High	RealQ Plus for Probe, Low	RealQ Plus for Probe, Without
Bio-Rad						
CFX96 Touch™ & CFX384 Touch™			x			x
CFX Connect™			x			x
Opticon® 2			x			x
Chromo4™			x			x
iCycler iQ™ & MyiQ™			x			x
Roche						
Lightcycler® 480			x			x
Lightcycler® 1536			x			x
Lightcycler® Nano			x			x
Lightcycler® 96			x			x
Qiagen/Corbett						
Rotor-Gene Q			x			x
Rotor-Gene 6000			x			x
Life Technologies						
7500, 7500 Fast		x			x	
Vii™A7		x			x	
QuantStudio™ 12K Flex		x	x*		x	x*
7000 7300, 7700, 7900, 7900HT	x			x		
StepOne™, StepOnePlus™	x			x		
Agilent						
Mx3000™		x			x	
Mx3005P™		x			x	
Mx4000™		x			x	
Thermo						
PikoReal™			x			x
Cepheid						
SmartCycler®			x			x

* For openArray® experiments

See the full list on Ampliqons website.

RealQ Plus Master Mix for Probe

RealQ Plus 2x Master Mix for Probe is a real-time PCR master mix for probe-based detection. The RealQ Plus 2x Master Mix for Probe is optimised to suit the application of TaqMan probes, but can also be used with other probe chemistries such as Molecular Beacon and Scorpion. The mix is also well suited for multiplexing.

Features

- High specificity
- High stability and reproducibility
- Reliable quantification and high efficiency
- Pre-mixed all-in-one solution
- Reaction set-up at room temperature

Applications

- Multiplexing
- Absolute and relative quantification
- Presence / absence experiments
- SNP analysis
- Genotyping
- Pathogen detection

RealQ Plus 2x Master Mix for Probe

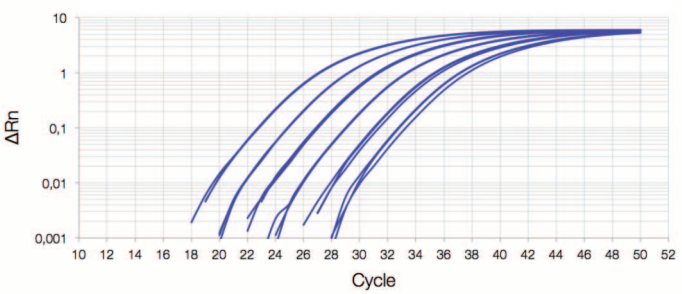
Without ROX	
Product number	
A313402	400 reactions
A313406	4 000 reactions

With low ROX	
Product number	
A314402	400 reactions
A314406	4 000 reactions

With high ROX	
Product number	
A315402	400 reactions
A315406	4 000 reactions

Performance of RealQ Plus Master Mix for Probe

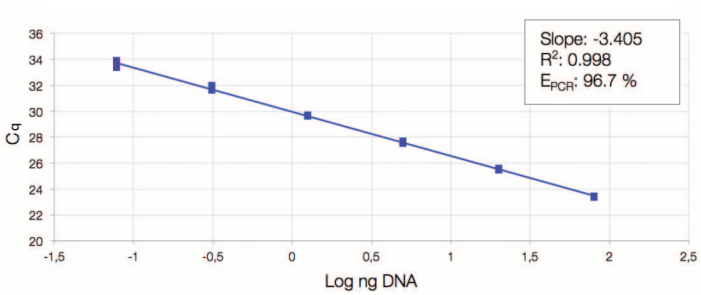
Amplification Plot



Amplification plot of a fourfold dilution series for Pthr target (75 bp) amplified from human gDNA. Starting amounts of 80 ng gDNA was amplified in triplicates using RealQ Plus 2x Master Mix for Probe with high ROX™.

Performance of RealQ Plus Master Mix for Probe

Standard Curve



Standard curve based on the adjacent amplification data. This confirms a high linear range, high efficiency and low replicate deviations.

STABILITY STUDIES AND GUIDELINES

STABILITY OF PCR ENZYMES AND MIXES

Ampliqon DNA Polymerases originates from thermophilic organisms exhibiting natural heat resistance. We continuously document and perform ongoing tests to verify that all Ampliqon DNA polymerases master mixes, buffers and PCR reagents are stable and tolerant to incubation at elevated temperatures for longer periods without loss of activity.

Freezing and thawing

Taq and TEMPase are highly stable polymerases when exposed to repeated freezing and thawing. We tested Taq and TEMPase and found no loss in activity for at least 50 freeze-thaw cycles. Even Taq Glycerol Free, which is stored without glycerol as a cryoprotectant, maintains its full activity for up to 40 freeze-thaw cycles. After 50 freeze-thaw cycles still more than 90 % activity remains. For more information, please see page 25.

RECOMMENDED STORAGE

Long-term storage of unopened tubes

Storage at -20 °C is recommended in order to guarantee maximal shelf life. The minimum shelf life at -20 °C in unopened tubes is three years for all enzymes and master mixes and five years for buffers. Date of expiry at -20 °C is stated on the label of each product.

Storage of opened tubes

After the first opening of a tube we recommend that you store enzymes, master mixes and buffers at -20 °C.

CONVENIENT DAY-TO-DAY STORAGE

Short-term storage of unopened tubes

In order to avoid the time-consuming process of thawing it is also possible to store all Ampliqon DNA polymerases, master mixes, buffers and PCR reagents at +4 °C for up to 6 months. RealQ Plus master mixes can be kept at + 4°C for up to 3 months.

If you forget your enzyme on the lab bench

Due to the high stability of Taq-, TEMPase Hot Start- and AQ90 High Fidelity DNA polymerases, no harm is done, if you forget your enzymes, master mixes or buffers even over the weekend.

SHIPPING

We strongly recommend shipping on dry ice to ensure maximal shelf life. Our recommendations are based on our stability studies performed at different temperatures.
Upon arrival, it is always important to ensure that the products are transferred to optimal storage conditions.

Nucleotides

dNTP

Introduction

Ampliqon dNTPs have a certified 99 % purity determined by HPLC. You can use our dNTPs in all molecular biology applications, including DNA polymerisation.

Features

- Ready to use
- High purity: >99 % by HPLC
- High stability
- pH 7.5

Suitable for

- DNA polymerisation
- Labelling
- Sequencing

dNTP Mix

dNTPs are available as convenient all-in-one mixes of dATP, dCTP, dGTP and dTTP with either a 100 mM or 40 mM total concentration.

dNTP Set

dNTPs are available as sets with each dNTP in a separate tube containing 100 mM of either dATP, dCTP, dGTP or dTTP.

Single dNTPs

Single dNTPs are available in 100 mM concentrations as:
dATP, dCTP, dGTP or dTTP

dNTP Mix

100 mM total concentration

Product number	
A500004	2 x 0.5 ml
A500007	8 x 0.5 ml

40 mM total concentration

Product number	
A502004	2 x 0.5 ml
A502007	8 x 0.5 ml

dNTP Set

100 mM dATP, dCTP, dGTP & dTTP

Product number	
A511104	4 x 250 µl
A511107	16 x 250 µl

Single dNTPs

100 mM dATP

Product number	
A521102	1 x 250 µl

100 mM dCTP

Product number	
A521202	1 x 250 µl

100 mM dGTP

Product number	
A521302	1 x 250 µl

100 mM dTTP

Product number	
A521402	1 x 250 µl

PCR Grade Water

PCR is an efficient and sensitive method that enables the detection of DNA of as little as one copy of a gene. This extreme sensitivity also leads to the amplification of any contaminating DNA that may be present in the reaction. Therefore, setting up a PCR requires highest standards in pipetting routines and the utmost purity of the utilised reagents. Since water takes the largest volume, we recommend that you consider the source and quality of your water.

Features

- Ultrapure H_2O
- Free of endonuclease, nicking and exonuclease activity
- Free of human DNA

PCR Grade Water	
Product number	
A360056	6 x 5 ml

$MgCl_2$

Mg^{2+} is required for polymerase activity. Low Mg^{2+} concentrations increase the fidelity but with too low Mg^{2+} concentrations the polymerase will not work. The Mg^{2+} concentration available in the reaction is dependent on several parameters e.g. the presence of chelators or the dNTP concentration. Therefore the Mg^{2+} concentration should be optimized..

Features

- Intended for optimization of PCR

25 mM $MgCl_2$	
Product number	
A308103	3 x 1.5 ml
A308110	10 x 1.5 ml
A308156	6 x 5 ml

Betaine Enhancer

Betaine Enhancer Solution is one of the most effective additives over a wide range of different templates, including GC-rich sequences and templates known to be extremely difficult to amplify. Betaine enhancer solution lowers the DNA melting temperature and has an enhancing effect on the polymerase.

Features

- Enhances amplification on GC-rich and difficult DNA targets
- Lowers the melting temperature

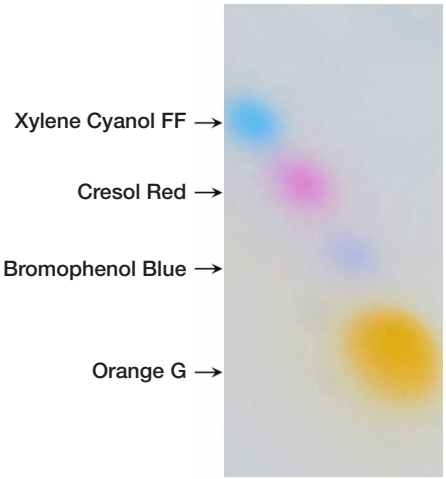
5x Betaine Enhancer Solution	
Product number	
A351104	5 x 1 ml

Loading buffers

Introduction

DNA loading buffers are used for loading DNA samples onto an agarose or SDS DNA gel for gel electrophoresis. DNA loading buffers contain a density agent and a coloured dye (tracking dye).

Loading buffers serve three main purposes: Firstly, they add density to the DNA samples, which allows the DNA to sink to the bottom of the well. Secondly, the tracking dye adds visibility to the DNA sample, which enables a visual control of the proper DNA sample loading. Thirdly, the different tracking dyes in the loading buffers run at characteristic positions on the gel, which allow you to monitor the migration of the DNA.



Features

- Ready-to-use buffers
- 5x formulation
- Four different tracking dyes available

Ampliqon offers four different loading buffers, which make it easy for you to find the optimal system for your specific task. Our loading buffers are formulated as 5x solutions. For a 10 µl loading volume add 2 µl 5x Loading Buffer to 8 µl of your DNA sample, mix well and load on a gel.

Loading Buffer

5x Loading Buffer Red	
Product number	
A608104	5 x 1 ml

5x Loading Buffer Blue	
Product number	
A608204	5 x 1 ml

5x Loading Buffer Orange	
Product number	
A608304	5 x 1 ml

5x Loading Buffer Cyan	
Product number	
A608404	5 x 1 ml

Position of dye fronts of the tracking dyes on a 1 % agarose gel

Loading Buffer:	Tracking dye:	Front migrates approximately at*:
Cyan	Xylene Cyanol FF	1000 – 1500 bp
Red	Cresol red	300 – 500 bp
Blue	Bromophenol blue	100 – 300 bp
Orange	Orange G	50 – 80 bp

*The position of the dyes is dependent on the type of agarose, the percentage of the gel and the buffer used.

Iqon DNA Ladders

Iqon ladders are convenient ready-to-use dsDNA ladders supplied in 0.5 ml packs. They span different size ranges and are mass calibrated for easy DNA quantification.

Iqon DNA ladders are available in three size ranges:

- Iqon Mini DNA Ladder, 100-500 bp
- Iqon Low DNA Ladder, 100-1000 bp
- Iqon PCR Ladder, 100-3 000 bp

Features

- Cost saving ladders
- Molecular range from 100 bp to 500, 1 000 or 3 000 bp.
- Clear and distinct bands
- 100 lanes

Iqon DNA Ladders

Iqon Mini DNA Ladder	
Product number	
A610441	1 x 0.5 ml

Iqon Low DNA Ladder	
Product number	
A610541	1 x 0.5 ml

Iqon PCR Ladder	
Product number	
A610641	1 x 0.5 ml

Iqon Mini DNA Ladder

bp	ng/band
500	8
300	8
100	8

Iqon Low DNA Ladder

bp	ng/band
1 000	5
700	5
500	12
300	9
100	9

Iqon PCR Ladder

bp	ng/band
3 000	5
1 500	5
1 000	5
700	12
500	6
300	6
100	6

DNA Ladders

DNA Ladders	
High Range DNA Ladder	
Product number	
A610141	1 x 0.5 ml
Low Range DNA Ladder	
Product number	
A610241	1 x 0.5 ml
PCR DNA Ladder	
Product number	
A610341	1 x 0.5 ml

DNA ladders are supplied in a loading buffer, which are ready to use on agarose and SDS DNA gels. DNA Ladder is suitable with both TBE and TAE electrophoresis systems.

Low Range DNA Ladder

Molecular range from 100 bp to 1 000 bp

Mass-calibrated bands from 20 to 100 ng for DNA quantification

High Range DNA Ladder

Molecular range from 200 bp to 12 000 bp

Mass-calibrated bands from 15 to 100 ng for DNA quantification

PCR DNA Ladder

Molecular range from 100 bp to 3 000 bp

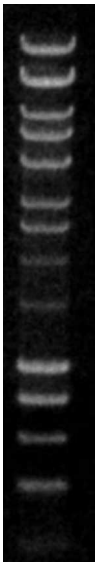
Mass-calibrated bands of 25 and 75 ng for DNA quantification

Extra bright 1 000 bp band serves as reference point

Low Range DNA Ladder

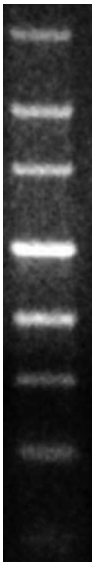
bp	ng/band
1 000	100
800	80
700	80
600	60
500	60
400	40
300	40
200	20
100	20

High Range DNA Ladder



bp	ng/band
12 000	60
8 000	80
6 000	60
5 000	50
4 000	40
3 000	30
2 500	25
2 000	20
1 500	15
1 000	100
800	80
600	60
400	40
200	20

PCR DNA Ladder



bp	ng/band
3 000	25
2 000	25
1 500	25
1 000	75
700	25
500	25
300	25
100	25

PureIT ExoZAP PCR CleanUp

PureIT ExoZAP PCR CleanUp is based on a balanced combination of a heat labile Exonuclease I (HL-ExoI) and a recombinant Shrimp Alkaline Phosphatase (rSAP).

Treatment of PCR products with PureIT ExoZAP removes residual primers, single-stranded DNA and dNTPs.

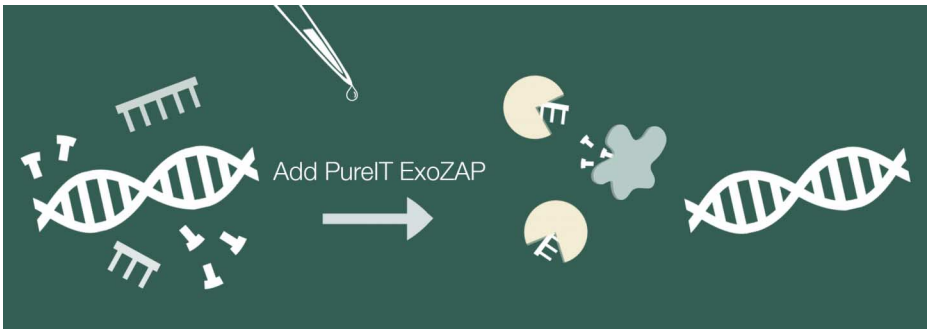
Treated samples are ready for downstream applications such as DNA sequencing and SNP analysis.

Features

- One-step protocol
- Improved DNA sequencing results
- Time-saving
- Fast – 5 minutes incubation time
- Also available as a two-step solution

PureIT ExoZAP

Product number	
A620601	100 reactions
A620603	500 reactions
A620606	2500 reactions
A620607	5000 reactions



Fast – 5 minutes incubation time
One-step scheme for PureIT ExoZAP. Enzymatic treatment of PCR products with PureIT ExoZAP degrades residual primers (ExoI) and dephosphorylates dNTPs (rSAP). After enzymatic treatment at 37 °C for minimum 2 minutes, the enzymatic activities are completely inactivated by heating at 80 °C for minimum 3 minutes.

G2 DNA/RNA Enhancer

G2 DNA/RNA Enhancer

0.1 mm G2 Enhancer Beads

Product number	
A420110	10 vials
A420150	50 vials
A420100	100 vials

1.4 mm G2 Enhancer Beads

Product number	
A421410	10 vials
A421450	50 vials
A421400	100 vials

Liquidised

Product number	
A420015	10 reactions
A420025	50 reactions
A420035	100 reactions

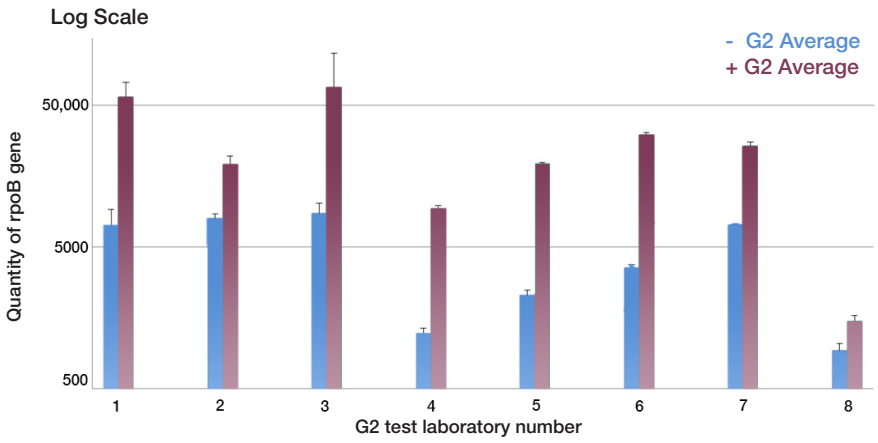
G2 DNA/RNA Enhancer is developed to increase the yield of microbial DNA during DNA extraction from difficult matrices for example clay and soil samples.

The primary function of G2 DNA/RNA Enhancer is to block the adsorption of DNA to e.g. clay particles and other DNA-particle complexes, such as faeces and activated charchoal.

Features

- Inhibition of DNA and RNA adsorption to clay particles
- Increased microbial DNA and RNA yield from clay
- No trace of endonuclease-, nicking-, exo nuclease- or RNase activity
- Patent EP2 443 251

G2 DNA/RNA Enhancer - 1.4 mm beads



Effect of adding G2 DNA/RNA Enhancer on DNA yield.
In low biomass clay sub-soils the addition G2 DNA/RNA Enhancer has a large effect on DNA yield. Using a commercial kit, intended for extraction of DNA from soil, the increase in DNA yield with G2 DNA/RNA Enhancer was up to 10-fold. Samples was tested by 8 different laboratories. 25 samples with and without G2 DNA/RNA Enhancer beads were extracted in each laboratory. All the samples were analysed using rpoB gene copy number. The triplicates DNA extracts were tested for significance using T-test.

Application chart

APPLICATION	Taq DNA Polymerase	Taq DNA Polymerase Glycerol Free	Taq DNA Polymerase RED	Taq OptiMix CLEAR Master Mix	Taq DNA Polymerase Master Mix	Taq DNA Polymerase Master Mix RED	TEMPase Hot Start DNA Polymerase	TEMPase Hot Start DNA Polymerase Glycerol Free	TEMPase Hot Start Master Mix A + C	TEMPase Hot Start Master Mix A + C BLUE	GC-rich DNA Target Kit	GC TEMPase Master Mix I + II	Multiplex TEMPase Master Mix	AQ90 High Fidelity DNA Polymerase	AQ90 High Fidelity DNA Polymerase Master Mix	AccuPOL DNA Polymerase	RealQ Plus Master Mix Green	RealQ Plus Master Mix for Probe
	STANDARD PCR						HOT START				SPECIAL PCR			HIGH FIDELITY			REAL-TIME	
Routine PCR	x		x	x	x	x	x		x	x								
High throughput	x	x	x	x	x	x	x	x	x	x								
Automation		x						x										
GC-rich DNA templates							x				x	x		x	x			
Multiplex PCR							x						x					
Sequencing														x	x	x		
Genotyping	x	x	x	x	x	x	x	x	x	x			x				x	x
Cloning	x						x							x	x	x		
Mutagenesis														x	x	x		
Freeze-drying		x						x										
Low abundance targets							x	x	x	x	x	x	x				x	x
Forensics													x					
DNA fingerprinting													x					
Colony PCR	x	x	x	x	x	x	x	x	x	x	x	x						
Gene expression							x	x	x	x	x	x						
Microbial/Pathogen detection							x	x	x	x	x	x	x				x	x
Quantification																	x	x
SNP analysis														x	x			x
NGS applications														x	x			

Technical chart

FEATURE	Taq DNA Polymerase	Taq DNA Polymerase Glycerol Free	Taq DNA Polymerase RED	Taq OptiMix CLEAR Master Mix	Taq DNA Polymerase Master Mix	Taq DNA Polymerase Master Mix RED	TEMPase Hot Start DNA Polymerase	TEMPase Hot Start DNA Polymerase Glycerol Free	TEMPase Hot Start Master Mix A + C	TEMPase Hot Start Master Mix A + C BLUE	GC-rich DNA Target Kit	GC TEMPase Master Mix I + II	Multiplex TEMPase Master Mix	AQ90 High Fidelity DNA Polymerase	AQ90 High Fidelity DNA Polymerase Master Mix	AccuPOL DNA Polymerase	RealQ Plus Master Mix Green	RealQ Plus Master Mix for Probe
	STANDARD PCR						HOT START				SPECIAL PCR			HIGH FIDELITY			REAL-TIME	
Direct gel loading						✓				✓								
Pipetting visualisation			✓			✓				✓								
Proofreading activity														✓	✓	✓		
dUTP incorporation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓
3'dA overhang	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓
TECHNICAL DATA																		
Fidelity versus Taq	1x						1x				< 1x	< 1x	1x	< 50x		16x	1x	1x
Amplicon size	≤ 5 kb						≤ 5 kb				≤ 5 kb			≤ 8.5 kb		≤ 3 kb	≤ 5 kb	
Elongation speed	35 - 100 nt/sec						35 - 100 nt/sec				35 - 100 nt/sec			25 nt/sec			35-100 nt/sec	
Processivity	60 nt						60 nt				60 nt					~20 nt	60 nt	
5'-3' exonuclease activity	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓
PERFORMANCE																		
Specificity	+	+	+	++	+	+	++	++	++	++	++	++	++	++	++	+	+++	+++
Sensitivity	+	+	+	+	+	+	++	++	++	++	++	++	++	+	+	+	+++	+++
Yield	++	++	++	++	++	++	++	++	++	++	++	++	+	+	+	+	+	+

X: recommended X: suitable +: high ++: very high +++: excellent

Standard PCR

Size in units	500	1 000	2 500	5 000
Taq DNA Polymerase 5 U/µl. *For routine PCR applications, which require high yield and reliable DNA amplification.*				
Without buffer				
	A110003	A110004	A110006	A110007
With 10x Ammonium Buffer and extra $MgCl_2$ (25 mM)				
15 mM $MgCl_2$	A111103	A111104	A111106	A111107
Mg^{2+} free	A111203	A111204	A111206	A111207
Tween free	A111403	A111404	A111406	A111407
Mg^{2+} free, Tween free	A111503	A111504	A111506	A111507
With 10x Standard Buffer and extra $MgCl_2$ (25 mM)				
15 mM $MgCl_2$	A112103	A112104	A112106	A112107
Mg^{2+} free	A112203	A112204	A112206	A112207
Triton free	A112403	A112404	A112406	A112407
Mg^{2+} free, Triton free	A112503	A112504	A112506	A112507
With 10x Combination Buffer and extra $MgCl_2$ (25 mM)				
15 mM $MgCl_2$	A113103	A113104	A113106	A113107
Mg^{2+} free	A113203	A113204	A113206	A113207
Tween free	A113403	A113404	A113406	A113407
Mg^{2+} free, Tween free	A113503	A113504	A113506	A113507
With two buffers of choice and extra $MgCl_2$ (25 mM)				
10x Ammonium Buffer (15 mM $MgCl_2$) + 10x Standard Buffer (15 mM $MgCl_2$)	A114103	A114104	A114106	A114107
10x Ammonium Buffer (15 mM $MgCl_2$) + 10x Combination Buffer (15 mM $MgCl_2$)	A115103	A115104	A115106	A115107
Taq DNA Polymerase RED 5 U/µl. *With inert red dye for the convenient identification of enzyme and confirmation of complete mixing. For routine PCR applications, which require high yield and reliable DNA amplification.*				
Without buffer				
	A200003	A200004	A200006	A200007
With 10x Ammonium Buffer and extra $MgCl_2$ (25 mM)				
15 mM $MgCl_2$	A201103	A201104	A201106	A201107
Mg^{2+} free	A201203	A201204	A201206	A201207
Tween free	A201403	A201404	A201406	A201407
Mg^{2+} free, Tween free	A201503	A201504	A201506	A201507
With 10x Standard Buffer and extra $MgCl_2$ (25 mM)				
15 mM $MgCl_2$	A202103	A202104	A202106	A202107
Mg^{2+} free	A202203	A202204	A202206	A202207
Triton free	A202403	A202404	A202406	A202407
Mg^{2+} free, Triton free	A202503	A202504	A202506	A202507
With 10x Combination Buffer and extra $MgCl_2$ (25 mM)				
15 mM $MgCl_2$	A203103	A203104	A203106	A203107
Mg^{2+} free	A203203	A203204	A203206	A203207
Tween free	A203403	A203404	A203406	A203407
Mg^{2+} free, Tween free	A203503	A203504	A203506	A203507
With two buffers of choice and extra $MgCl_2$ (25 mM)				
10x Ammonium Buffer (15 mM $MgCl_2$) + 10x Standard Buffer (15 mM $MgCl_2$)	A204103	A204104	A204106	A204107
10x Ammonium Buffer (15 mM $MgCl_2$) + 10x Combination Buffer (15 mM $MgCl_2$)	A205103	A205104	A205106	A205107
Volume				
Size in units	500	1 000	2 500	5 000
of enzyme 5 U/µl	1 x 100 µl	2 x 100 µl	5 x 100 µl	10 x 100 µl
of enzyme 1 U/µl	1 x 500 µl	2 x 500 µl	5 x 500 µl	10 x 500 µl
of each buffer if included	1 x 1.5 ml	2 x 1.5 ml	5 x 1.5 ml	3 x 5 ml
of $MgCl_2$ if included	1 x 1.5 ml	2 x 1.5 ml	5 x 1.5 ml	3 x 5 ml

Hot start PCR

Size in units	500	1 000	2 500	5 000
TEMPase Hot Start DNA Polymerase 5 U/µl. *For reaction set-up at room temperature, superior amplification and high specificity.*				
Without buffer				
	A220003	A220004	A220006	A220007
With 10x Ammonium Buffer and extra $MgCl_2$ (25 mM)				
15 mM $MgCl_2$	A221103	A221104	A221106	A221107
Mg^{2+} free	A221203	A221204	A221206	A221207
Tween free	A221403	A221404	A221406	A221407
Mg^{2+} free, Tween free	A221503	A221504	A221506	A221507
With 10x Combination Buffer and extra $MgCl_2$ (25 mM)				
15 mM $MgCl_2$	A223103	A223104	A223106	A223107
Mg^{2+} free	A223203	A223204	A223206	A223207
Tween free	A223403	A223404	A223406	A223407
Mg^{2+} free, Tween free	A223503	A223504	A223506	A223507
With two buffers and extra $MgCl_2$ (25 mM)				
10x Ammonium Buffer (15 mM $MgCl_2$) + 10x Combination Buffer (15 mM $MgCl_2$)	A225103	A225104	A225106	A225107
Volume				
Size in units	500	1 000	2 500	5 000
of enzyme 5 U/µl	1 x 100 µl	2 x 100 µl	5 x 100 µl	10 x 100 µl
of each buffer if included	1 x 1.5 ml	2 x 1.5 ml	5 x 1.5 ml	3 x 5 ml
of $MgCl_2$ if included	1 x 1.5 ml	2 x 1.5 ml	5 x 1.5 ml	3 x 5 ml

Glycerol Free Products

Size in units	500	1 000	2 500	5 000
Taq DNA Polymerase Glycerol Free 5 U/µl*. *For automation and freeze-drying. For routine PCR applications, which require high yield and reliable DNA amplification.*				
Without buffer				
	A100003	A100004	A100006	A100007
With 10x Ammonium Buffer and extra $MgCl_2$ (25 mM)				
15 mM $MgCl_2$	A101103	A101104	A101106	A101107
TEMPase Hot Start DNA Polymerase Glycerol Free 5 U/µl*. *For automation and freeze-drying, for reaction set-up at room temperature, superior amplification and high specificity.*				
Without buffer				
	A240003	A240004	A240006	A240007
With 10x Ammonium Buffer and extra $MgCl_2$ (25 mM)				
15 mM $MgCl_2$	A241103	A241104	A241106	A241107
Volume				
Size in units	500	1 000	2 500	5 000
of enzyme 5 U/µl	1 x 100 µl	2 x 100 µl	5 x 100 µl	10 x 100 µl
of each buffer if included	1 x 1.5 ml	2 x 1.5 ml	5 x 1.5 ml	3 x 5 ml
of $MgCl_2$ if included	1 x 1.5 ml	2 x 1.5 ml	5 x 1.5 ml	3 x 5 ml

Size in units	25 000	250 000	2 000 000
Taq DNA Polymerase Glycerol Free 50 U/µl. *For automation and freeze-drying. For routine PCR applications, which require high yield and reliable DNA amplification.*			
Without buffer			
	A490010	A490012	A490044
Volume			
Size in units	25 000	250 000	2 000 000
of enzyme 50 U/µl	1 x 0.5 ml	1 x 5 ml	8 x 5 ml

**Available with other buffer combinations, see page 60.*

Samples: Standalone Taq and TEMPase

Samples of Taq and TEMPase DNA Polymerases, 50 units:					
With 10x Ammonium Buffer, 10x Standard Buffer, 10x Combination Buffer and extra $MgCl_2$ (25 mM)					
	Taq 5 U/µl	Taq RED 5 U/µl	Taq 5 U/µl, Glycerol free	TEMPase 5 U/µl	TEMPase 5 U/µl, Glycerol free
15 mM $MgCl_2$	A116199	A206199	A106199	A226199	A246199
Mg^{2+} free	A116299	A206299	A106299	A226299	A246299
Detergent free	A116499	A206499	A106499	A226499	A246499
Mg^{2+} free, detergent free	A116599	A206599	A106599	A226599	A246599
Volume					
Size in units	50	50	50	50	50
of enzyme 5 U/µl	1 x 10 µl	1 x 10 µl	1 x 10 µl	1 x 10 µl	1 x 10 µl
of each buffer if included	1 x 1.5 ml	1 x 1.5 ml	1 x 1.5 ml	1 x 1.5 ml	1 x 1.5 ml
of $MgCl_2$ if included	1 x 1.5 ml	1 x 1.5 ml	1 x 1.5 ml	1 x 1.5 ml	1 x 1.5 ml

Standard PCR master mix

Size in 50 µl reactions	Sample 20	100	500	2 500	5 000	10 000
Taq OptiMix CLEAR. *For increased specificity*						
Taq OptiMix CLEAR 2x Master Mix						
1.5 mM $MgCl_2$ final concentration	A370599	A370501	A370503	A370506	A370507	-
Taq Master Mix. *Suitable for standard tests due to reduced set-up time and increased reproducibility.*						
Taq DNA Polymerase 2x Master Mix						
1.5 mM $MgCl_2$ final concentration	A140399	A140301	A140303	A140306	A140307	A140308
2 mM $MgCl_2$ final concentration	A150399	A150301	A150303	A150306	A150307	A150308
Taq DNA Polymerase 1.1x Master Mix						
1.5 mM $MgCl_2$ final concentration	A120399	A120301	A120303	A120306	A120307	A120308
2 mM $MgCl_2$ final concentration	A130399	A130301	A130303	A130306	A130307	A130308
Taq Master Mix RED. *For direct loading onto agarose gels. With inert red dye and stabilisers.*						
Taq DNA Polymerase 2x Master Mix RED						
1.5 mM $MgCl_2$ final concentration	A180399	A180301	A180303	A180306	A180307	A180308
2 mM $MgCl_2$ final concentration	A190399	A190301	A190303	A190306	A190307	A190308
Taq DNA Polymerase 1.1x Master Mix RED						
1.5 mM $MgCl_2$ final concentration	A160399	A160301	A160303	A160306	A160307	A160308
2 mM $MgCl_2$ final concentration	A170399	A170301	A170303	A170306	A170307	A170308
Volume						
Reactions of 50 µl	Sample 20	100	500	2 500	5 000	10 000
of 1.1x master mixes	1 x 0.9 ml	3 x 1.5 ml	15 x 1.5 ml	75 x 1.5 ml	45 x 5 ml	50 x 9 ml
of 2x master mixes	1 x 0.5 ml	2 x 1.25 ml	10 x 1.25 ml	50 x 1.25 ml	25 x 5 ml	28 x 9 ml

Hot start PCR master mix and master mix BLUE

Size in 50 µl reactions	Sample 20	100	500	2 500	5 000	10 000
TEMPase Master Mix. *For reaction set-up at room temperature, superior amplification and high specificity. Recommended for detection of low copy number targets.*						
TEMPase DNA Polymerase 2x Master Mix A (With Ammonium Buffer)						
1.5 mM $MgCl_2$ final concentration	A230399	A230301	A230303	A230306	A230307	A230308
TEMPase DNA Polymerase 2x Master Mix C (With Combination Buffer)						
1.5 mM $MgCl_2$ final concentration	A230799	A230701	A230703	A230706	A230707	A230708
TEMPase Master Mix BLUE. *For direct loading to agarose gels. With inert blue dye and stabilisers.*						
TEMPase DNA Polymerase 2x Master Mix A BLUE						
1.5 mM $MgCl_2$ final concentration	A290499	A290401	A290403	A290406	A290407	A290408
TEMPase DNA Polymerase 2x Master Mix C BLUE						
1.5 mM $MgCl_2$ final concentration	A290899	A290801	A290803	A290806	A290807	A290808
Volume						
Reactions of 50 µl	Sample 20	100	500	2 500	5 000	10 000
of 2x master mixes	1 x 0.5 ml	2 x 1.25 ml	10 x 1.25 ml	50 x 1.25 ml	25 x 5 ml	28 x 9 ml

High fidelity PCR

Size in units	Sample 40	100	500	1 000	2 500
AQ90 High Fidelity DNA Polymerase 2 U/µl. *High fidelity proof-reading DNA Polymerase featuring robust amplification on AT-rich, GC-rich and long DNA targets.*					
With 10x AQ90 Buffer and extra $MgCl_2$ (25 mM)					
	A456699	A457401	A457403	A457404	A457406
Volume					
Size in units	Sample 40	100	500	1 000	2 500
of enzyme	1 x 20 µl	1 x 50 µl	1 x 250 µl	2 x 250 µl	5 x 250 µl
of each buffer if included	1 x 1.5 ml	1 x 1.5 ml	2 x 1.5 ml	4 x 1.5 ml	9 x 1.5 ml
of $MgCl_2$ if included	1 x 1.5 ml	1 x 1.5 ml	1 x 1.5 ml	2 x 1.5 ml	5 x 1.5 ml

Size in 50 µl reactions	Sample 20	100	500	2 500	5000
AQ90 High Fidelity DNA Polymerase 2x Master Mix. *High fidelity proof-reading DNA Polymerase featuring robust amplification on AT-rich, GC-rich and long DNA targets.*					
With 10x AQ90 Buffer and extra $MgCl_2$ (25 mM)					
	A470799	A470701	A470703	A470704	A470706
Volume					
Reactions of 50 µl	Sample 20	100	500	1 000	2 500
Volume of 2x Master Mix	1 x 50 µl	2 x 1.25 ml	10 x 1.25 ml	50 x 1.25 ml	25 x 5 ml

Size in units	Sample 50	250	500	1 000	2 500
AccuPOL DNA Polymerase 2.5 U/µl. *High fidelity proof-reading DNA polymerase, recommended for cloning, mutagenesis and blunt ends.*					
Without buffer					
	-	A210002	A210003	A210004	A210006
With 10x Ammonium Buffer and extra $MgCl_2$ (25 mM)					
15 mM $MgCl_2$	A211199	A211102	A211103	A211104	A211106
Mg^{2+} free	A211299	A211202	A211203	A211204	A211206
Tween free	A211499	A211402	A211403	A211404	A211406
Mg^{2+} free, Tween free	A211599	A211502	A211503	A211504	A211506
Volume					
Size in units	Sample 50	250	500	1 000	2 500
of enzyme	1 x 20 µl	1 x 100 µl	1 x 200 µl	2 x 200 µl	5 x 200 µl
of each buffer if included	1 x 1.5 ml	1 x 1.5 ml	1 x 1.5 ml	2 x 1.5 ml	5 x 1.5 ml
of $MgCl_2$ if included	1 x 1.5 ml	1 x 1.5 ml	1 x 1.5 ml	2 x 1.5 ml	5 x 1.5 ml

Multiplex PCR

Size in 50 µl reactions	Sample 20	100	500	2 500	5 000	10 000
Multiplex. *For multiplex PCR reaction set-up at room temperature. Allows you to apply multiple primer sets within a single tube.*						
Multiplex TEMPase 2x Master Mix						
3 mM $MgCl_2$ final concentration	A260399	A260301	A260303	A260306	A260307	A260308
Volume						
Reactions of 50 µl	Sample 20	100	500	2 500	5 000	10 000
of 2x master mixes	1 x 0.5 ml	2 x 1.25 ml	10 x 1.25 ml	50 x 1.25 ml	25 x 5 ml	28 x 9 ml

GC-rich PCR

Size in 50 µl reactions	Sample 20	100	500	2 500	5 000	10 000
GC-rich. *Optimised to successfully amplify difficult GC-rich DNA targets.*						
GC TEMPase 2x Master Mix I						
1.5 mM $MgCl_2$ final concentration	A331799	A331701	A331703	A331706	A331707	A331708
GC TEMPase 2x Master Mix II						
1.5 mM $MgCl_2$ final concentration	A332799	A332701	A332703	A332706	A332707	A332708
Volume						
Reactions of 50 µl	Sample 20	100	500	2 500	5 000	10 000
of 2x master mixes	1 x 0.5 ml	2 x 1.25 ml	10 x 1.25 ml	50 x 1.25 ml	25 x 5 ml	28 x 9 ml

Real-time master mix

Size in 25 µl reactions	Sample 40	400	4 000
RealQ Plus 2x Master Mix. *Optimised all-in-one master mix for real-time PCR, well suited for quantification, detection of gene expression, SNP analysis, pathogen detection and multiplex PCR (for probe).*			
Green			
Without ROX	A323499	A323402	A323406
Low ROX	A324499	A324402	A324406
High ROX	A325499	A325402	A325406
For Probe			
Without ROX	A313499	A313402	A313406
Low ROX	A314499	A314402	A314406
High ROX	A315499	A315402	A315406
Volume			
Reactions of 25 µl	Sample 40	400	4 000
Volume of 2x Master Mix	1 x 0.5 ml	4 x 1.25 ml	40 x 1.25 ml

Nucleotides

dNTP Mix. dATP, dCTP, dGTP and dTTP equimolar mixed in one tube				
100 mM (25 mM of each dATP, dCTP, dGTP and dTTP)	A500004	A500007	-	-
40 mM (10 mM of each dATP, dCTP, dGTP and dTTP)	A502004	A502007	-	-
10 mM (2.5 mM of each dATP, dCTP, dGTP and dTTP)	-	-	A503004	A503007
Volume				
of dNTP Mix	2 x 0.5 ml	8 x 0.5 ml	2 x 1 ml	5 x 1 ml
dNTP Set. One tube of each dATP, dCTP, dGTP and dTTP, 100 mM each				
	A511104	A511107	A511109	A511120
Volume				
Volume of each dNTP in the set	1 x 0.25 ml	4 x 0.25 ml	20 x 0.25 ml	2 x 1 ml
Total number of tubes	4	16	80	8
Single dNTPs. One tube of one specific dNTP				
dATP, 100 mM				A521102
dCTP, 100 mM				A521202
dGTP, 100 mM				A521302
dTTP, 100 mM				A521402
dUTP, 100 mM				A521502
Volume				
Volume of dNTP				1 x 0.25 ml

Buffers

Buffers, special buffers and $MgCl_2$.			
Ammonium Buffer			
15 mM $MgCl_2$	A301103	A301110	A301156
Mg^{2+} free	A301203	A301210	A301256
Tween free	A301403	A301410	A301456
Mg^{2+} free, Tween free	A301503	A301510	A301556
Standard Buffer			
15 mM $MgCl_2$	A302103	A302110	A302156
Mg^{2+} free	A302203	A302210	A302256
Triton free	A302403	A302410	A302456
Mg^{2+} free, Triton free	A302503	A302510	A302556
Combination Buffer			
15 mM $MgCl_2$	A303103	A303110	A303156
Mg^{2+} free	A303203	A303210	A303256
Tween free	A303403	A303410	A303456
Mg^{2+} free, Tween free	A303503	A303510	A303556
5x PCR Buffer RED			
	A301803	-	-
4x GC Buffer I			
	A301703	A301710	A301756
4x GC Buffer II			
	A302703	A302710	A302756
$MgCl_2$, 25 mM			
	A308103	A308110	A308156
Volume			
Volume of buffers and $MgCl_2$	3 x 1.5 ml	10 x 1.5 ml	6 x 5 ml

PCR accessories

	Volume	
H_2O		
PCR Grade Water	6 x 5 ml	A360056
Enhancers		
Betaine Enhancer Solution 5 M	5 x 1 ml	A351104
Additives		
ROX Internal Reference Dye, 200 µM	3 x 0.2 ml	A351513
Loading buffers		
Loading Buffer Red	5 x 1 ml	A608104
Loading Buffer Blue	5 x 1 ml	A608204
Loading Buffer Orange	5 x 1 ml	A608304
Loading Buffer Cyan	5 x 1 ml	A608404
DNA ladders		
High Range DNA Ladder, 200-12 000 bp, 100 lanes,	1 x 0.5 ml	A610141
Low Range DNA Ladder, 100-1 000 bp, 100 lanes	1 x 0.5 ml	A610241
PCR DNA Ladder, 100-3 000 bp, 100 lanes	1 x 0.5 ml	A610341
Iqon Mini DNA Ladder, 100 – 500 bp, 100 lanes	1 x 0.5 ml	A610441
Iqon Low DNA Ladder, 100 – 1000 bp, 100 lanes	1 x 0.5 ml	A610541
Iqon PCR Ladder, 100 – 3000 bp, 100 lanes	1 x 0.5 ml	A610641

G2 DNA/RNA Enhancer

G2 DNA/RNA Enhancer. *For increased DNA and RNA extraction yield. Well suited for difficult matrices e.g. clay and wine*			
G2 Enhancer Beads			
G2 DNA/RNA Enhancer beads 0.1 mm	A420110	A420150	A420100
G2 DNA/RNA Enhancer beads 1.4 mm	A421410	A421450	A421400
G2 Enhancer Solution			
G2 DNA/RNA Enhancer Solution - Liquid	A420015	A420025	A420035
Volume/format			
Reaction of 500 µl	Sample 10	50	100
Format of G2 DNA/RNA Enhancer beads	10 vials	50 vials	100 vials
Volume of G2 DNA/RNA Enhancer Solution - Liquid	1 x 5 ml	5 x 5 ml	10 x 5 ml

PCR Clean-Up

PureIT ExoZAP. *One-step PCR clean-up*					
PureIT ExoZAP PCR CleanUp	A620699	A620601	A620603	A620606	A620607
Volume					
Reactions of 2 µl	Sample 10	100	500	2 500	5000
Volume of PureIT ExoZAP	1 x 0.02 µl	1 x 0.2 ml	1 x 1 ml	5 x 1 ml	10 x 1 ml

Custom-made laboratory reagents

Introducing custom-made reagents

Additional to our PCR enzyme production, Ampliqon also manufactures a wide range of custom-made laboratory reagents.

Delivery time maximum eight days

We produce more than 1 000 different custom-made laboratory reagents for hospitals, universities, life science institutions and industries. Our laboratory reagent production is based on flexible on-demand procedures that enable us to adjust our daily production of basic chemicals, biochemical and biological reagents to suit the individual requirements and specifications of our customers.

Our reagent production team has expert knowledge of a vast variety of buffer, media, acid, base and salt solutions, calibration and test solutions, solutions for colouring, fixation, preservation, cleaning and disinfection.

Danish customers

In Denmark Ampliqon exclusively supplies laboratory reagents through VWR International. Ordering and product enquiries are handled solely by VWR International, and we kindly refer you to the VWR customer service for order placement and purchasing information:

Email:
teamkemikalier.dk@avantorsciences.com
Phone: +45 4386 8788
Fax: +45 4386 8790

Customers from outside Denmark

Ampliqon also services reagent customers and distributors from outside Denmark and you can order Ampliqon labelled or private label reagents directly from Ampliqon.

For further information on how to purchase custom-made laboratory reagents from outside Denmark, please contact our customer service:

Email: reagent@ampliqon.com
Phone: +45 7020 1169
Fax: +45 7020 1179

PRACTICAL INFORMATION

Price list

Our current PCR enzyme price list is issued as a separate document. To receive a copy please send an email to: enzyme@ampliqon.com

Sample policy

Samples are available in connection with orders only

We offer a limited quantity only

Sample size

20 reactions for master mixes

50 units for enzymes

40 reactions for RealQ Plus master mixes

Order placement

Kindly place your order by email.

Email: enzyme@ampliqon.com

Order confirmation and shipping notification

If you place your order between Monday and Thursday, you will receive our order confirmation and shipping notification within 24 hours.

If you place your order on a Friday, you will receive our order confirmation and shipping notification on the following Monday.

Shipping procedures

PCR enzymes are shipped on dry ice

International shipment by air freight / courier

Shipment in Denmark by road freight

Shipping fee depends on shipping agent, destination and weight

Packaging and fees

We charge a fee for packaging and dry ice. Your packaging fee depends on order quantity, weight and destination.

Contact Ampliqon

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IBAN (EUR): DK9008940003003123
IBAN (USD): DK6808940003003131

GENERAL TERMS AND CONDITIONS OF SALE AND DELIVERY

These terms and conditions cover all Ampliqon PCR enzyme sales and product support.

Prices

Prices are quoted in our current price list. The list is issued as a separate document. VAT is not included in list prices.

Buyers from outside Denmark with a valid VAT number are exempt from Danish VAT.

Fees for packaging and dry ice are charged separately in invoice and depend on the total weight of shipment and shipping destination.

Delivery

Delivery in Denmark by truck (DAP).

International delivery if possible by courier freight (DAP) otherwise by air freight (CPT).

Ampliqon does not accept return of PCR enzyme shipments, packaging and the like, and buyer bears all expenses in case of unclaimed goods.

Payment

Prepayment is requested prior to shipping, unless other payment terms have been agreed. Buyer bears expenses involved in settlement of invoice.

Use

Buyer is solely responsible for the use and handling of purchased products.

Our PCR enzymes based on Taq are patent free, and use is unrestricted.

Ampliqon recommends that Ampliqon PCR enzymes are handled by skilled laboratory staff. Our PCR products are non-hazardous.

Product support

Ampliqon offers unlimited and free-of-charge product and technical support.

Buyer is kindly asked to put questions and make technical enquiries by email at enzyme@ampliqon.com.

Buyer is solely responsible for his or her laboratory set-up and results and for the application of product advice rendered by the Ampliqon support team.

Complaint

Ampliqon is responsible for good production and documentation practices as well as quality control of batch and proper product handling and packaging.

Ampliqon thoroughly investigates any product complaint and offers replacement shipment free of charge, if your product should prove to have been damaged in our care.

Buyer must provide Ampliqon with a product set-up log or similar as documentation of complaint.

Liability

Ampliqon is not liable for any mishandling or misuse of Ampliqon PCR enzyme products in buyer's possession.

Ampliqon is not liable for operational loss, consequential damage or any indirect loss at buyer's place.

If product liability is imposed upon Ampliqon against other holder than buyer due to buyer's use, including resale and distribution, Ampliqon must be indemnified by buyer.

Litigation

If any dispute between buyer and Ampliqon occurs and amicable settlement fails, such dispute shall be settled by the Danish courts.

AMPLIQON

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