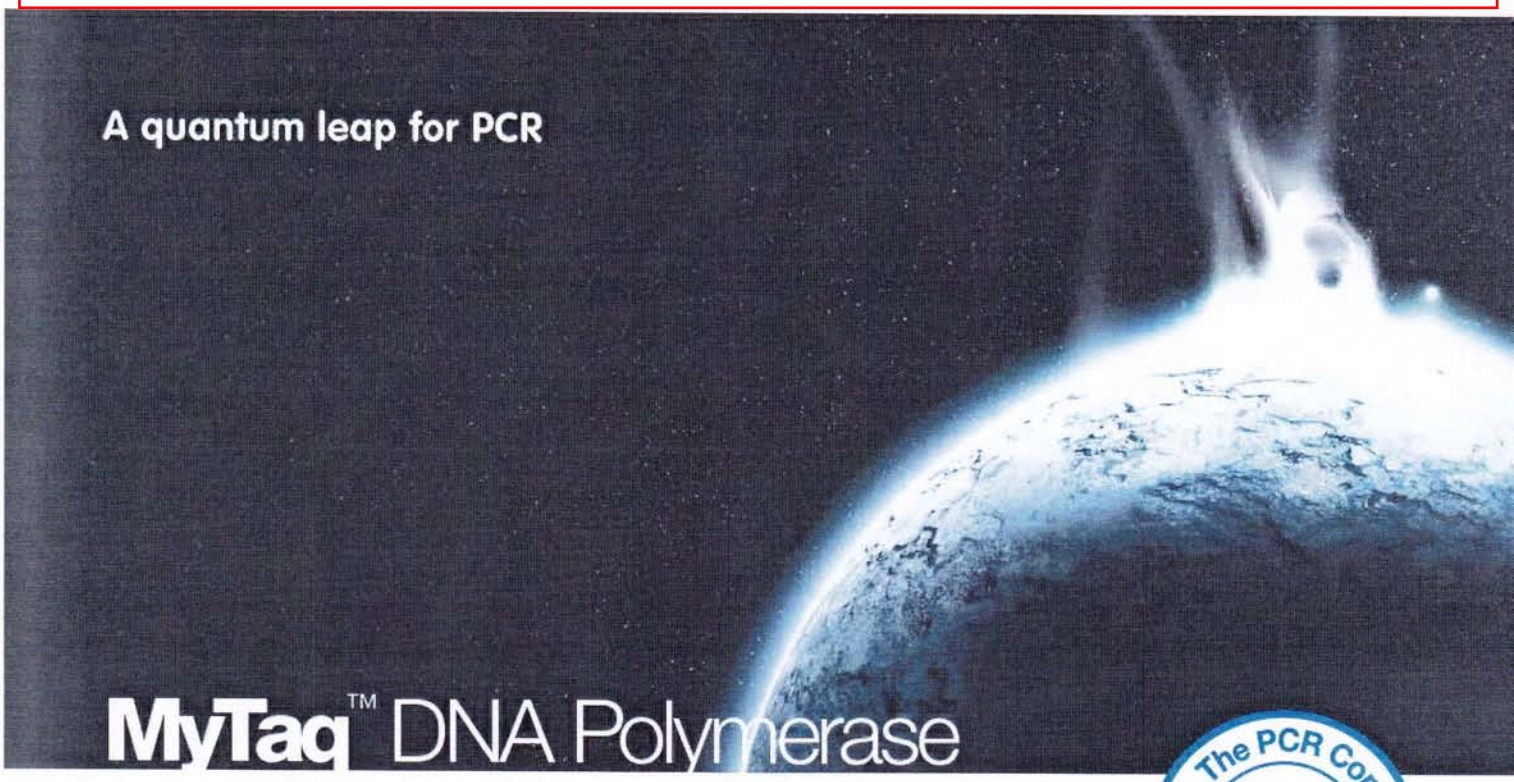

MyTaq™ DNA Polymerase

The PCR Company
BIOLINE
since 1992

- New generation polymerase with superior performance
- Novel buffer system, with ultra-pure dNTPs and $MgCl_2$
- Robust and high yield across a full range of templates
- Convenient all-in-one master mix
- Direct gel loading

The MyTaq™ product range is a new generation of very high performance PCR products developed by Bioline. Designed to deliver outstanding results on all templates, including complex genomic DNA templates, MyTaq is based on the latest technology in PCR enzyme preparation, engineered to increase affinity for DNA, resulting in significant improvements to yield, sensitivity and speed. The enzyme is supplied with an industry-leading novel buffer system, specifically formulated and validated for the unique properties of MyTaq, making it the perfect choice for all of your PCR assays.

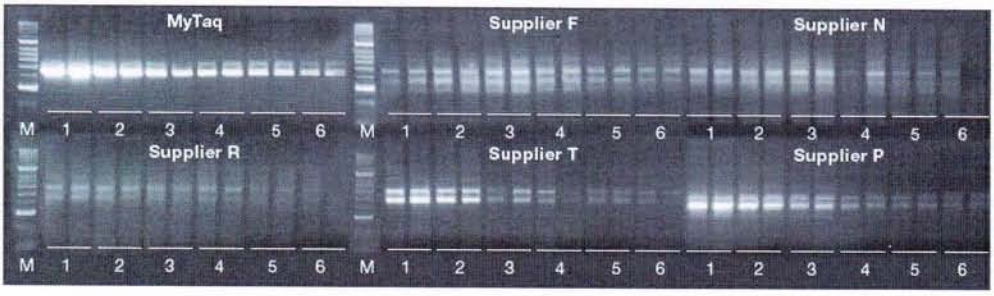

Fig. 1 Robust amplification of GC-rich human genomic DNA (61% GC content)
MyTaq was compared with DNA polymerases from other suppliers for the amplification of a 450bp fragment of the human *myc* gene. Decreasing amounts of human genomic DNA were used as a template (1µg, 200ng, 100ng, 50ng, 25ng and 12.5ng; lanes 1-6 respectively) in the PCR. The cycling was performed under the following conditions: 95°C for 5 min, followed by 30 cycles at 95°C for 30s, 60°C for 30s and 72°C for 50s. Marker is HyperLadder I (M) (Cat No. BIO-33025). MyTaq delivers higher yield and sensitivity as compared with all five competing products.

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MyTaq™ DNA Polymerase

MyTaq - Full range of templates
MyTaq is a high performance polymerase which exhibits more robust amplification than other commonly used polymerases (fig. 1). MyTaq offers higher yields over a full range of PCR templates, making it the ideal choice for most routine assays. This new enzyme from Bioline is supplied with the MyTaq buffer system, a proprietary formulation containing ultra-pure dNTPs, $MgCl_2$ and enhancers at optimal concentrations; removing the need for optimization and giving superior amplification.

MyTaq - For all applications
This new generation DNA polymerase from Bioline has been validated with a full range of templates and is perfectly suited for the following applications:

- High-throughput PCR
- Specific amplification of complex templates
- Robust amplification of GC-rich sequences
- Routine PCR applications
- TA cloning

MyTaq - For faster PCR reactions
The advanced formulation of MyTaq allows faster PCR reactions than other conventional polymerases, thus reducing the overall time from over an hour to less than thirty minutes and most importantly, without compromising PCR specificity or yield (fig. 2). Reducing the reaction time allows greater throughput and faster screening.

MyTaq - Direct gel loading
MyTaq is also supplied as MyTaq Red DNA Polymerase, which includes a 5x colored reaction buffer with an inert red dye. Following PCR, samples can be loaded directly onto the agarose gel without the need for a loading buffer, since the mix is of sufficiently high density to sink to the bottom of the well.

MyTaq - Premixes to simplify PCR set-up
MyTaq 2x Mix and MyTaq Red 2x Mix contain all the reagents (including stabilizers) necessary for setting up a trouble-free PCR reaction. These novel mixes, supplied conveniently in one tube, reduce the number of pipetting steps and facilitate greater efficiency, throughput and reproducibility.

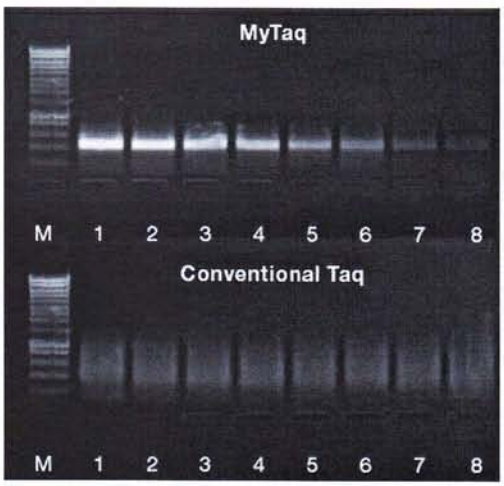

Fig. 2 Fast amplification of human genomic DNA (performed in 27.5 minutes) Comparative amplification of a 450bp fragment of the human *myc* gene (61% GC) was used to compare MyTaq with a conventional *Taq* DNA polymerase. The PCR was performed using both enzymes using decreasing amounts of human genomic DNA as template (200ng, 66ng, 10ng, 3ng, 1ng, 300pg, 100pg and 30pg; lanes 1-8 respectively) and under the following fast cycling conditions: 95°C for 3 min, followed by 30 cycles at 95°C for 15s, 60°C for 15s and 72°C for 15s. Marker is HyperLadder I (M) (Cat No. BIO-33025). MyTaq readily copes with faster reactions times, resulting in higher yield without the need for further optimization.

Ordering Information

PRODUCT	PACK SIZE	PRESENTATION	CAT NO.
MyTaq DNA Polymerase	500 Units	1 x 100µl	BIO-21105
MyTaq DNA Polymerase	2500 Units	2 x 250µl	BIO-21106
MyTaq DNA Polymerase	5000 Units	4 x 250µl	BIO-21107
MyTaq Red DNA Polymerase	500 Units	1 x 100µl	BIO-21108
MyTaq Red DNA Polymerase	2500 Units	2 x 250µl	BIO-21109
MyTaq Red DNA Polymerase	5000 Units	4 x 250µl	BIO-21110
MyTaq Mix, 2x	200 Reactions	4 x 1.25ml	BIO-25041
MyTaq Mix, 2x	1000 Reactions	20 x 1.25ml	BIO-25042
MyTaq Red Mix, 2x	200 Reactions	4 x 1.25ml	BIO-25043
MyTaq Red Mix, 2x	1000 Reactions	20 x 1.25ml	BIO-25044

PSDIST0910V1.2

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MyTaq™ DNA Polymerase

Shipping: On Dry/Blue Ice
Exp. Date: See vial
Batch No.: See vial
Concentration: 5U/µl

Catalog numbers
BIO-21105 : 500 Units
BIO-21106 : 2500 Units
BIO-21107 : 5000 Units

Store at –20°C

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Storage and stability:
The MyTaq is shipped on Dry/Blue Ice and can be stored for up to 12 months at -20°C, or up to 2 weeks at +4°C. Repeated freeze/thaw cycles should be avoided.

Safety precautions:
Harmful if swallowed. Irritating to eyes, respiratory system and skin. Please refer to the material safety data sheet for further information.

Unit definition:
One unit is defined as the amount of enzyme that incorporates 10nmoles of dNTPs into acid-insoluble form in 30 minutes at 72°C.

Notes:
This product insert is a declaration of analysis at the time of manufacture.
Research Use Only.

Description

MyTaq™ DNA Polymerase is a high performance PCR product that exhibits more robust amplification than other commonly used polymerases, delivering very high yield over a wide range of PCR templates and making it the ideal choice for most routine assays. This new enzyme preparation from Bioline is supplied with MyTaq Reaction Buffer system, an advanced formulation that saves time and delivers superior results, containing dNTPs, $MgCl_2$ and enhancers at optimal concentrations which eliminates the need for optimization.

Components

	500 Units	2500 Units	5000 Units
MyTaq DNA Polymerase	1 x 100µl	2 x 250µl	4 x 250µl
5x MyTaq Reaction Buffer	4 x 1ml	14 x 1.5ml	9 x 5ml

Standard MyTaq Protocol

The following protocol is for a standard 50µl reaction and can be used as a starting point for reaction optimization. All reactions should be set-up on ice.

PCR reaction set-up:

5x MyTaq Reaction Buffer	10µl
Template	as required
Primers 20µM each	1µl
MyTaq DNA Polymerase	0.25 - 1µl
Water (ddH_2O)	up to 50µl

PCR cycling conditions:

Step	Temperature	Time	Cycles
Initial denaturation	95°C	1min	1
Denaturation	95°C	15s	25-35
Annealing	55°C	15s	
Extension	72°C	10s	

* These steps may require optimization, please refer to the PCR optimization section if needed.

Important considerations and PCR optimization

The optimal conditions will vary from reaction to reaction and are dependent on the template/primers used.

5x MyTaq Reaction Buffer: The 5x MyTaq Reaction Buffer comprises 5mM dNTPs, 15mM $MgCl_2$, stabilizers and enhancers. The concentration of each component has been extensively optimized, reducing the need for further optimization. Additional PCR enhancers such as HiSpec, PolyMate or Betaine etc. are not recommended.

Primers: Forward and reverse primers are generally used at the final concentration of 0.2-0.6µM each. As a starting point we recommend, using 0.4µM as a final concentration (*i.e.* 20pmol of each primer per 50µl reaction volume). Too high a primer concentration can reduce the specificity of priming, resulting in non-specific products.

When designing primers we recommend using primer-design software such as Primer3 (http://frodo.wi.mit.edu/primer3) or visual OMP™ (http://dnasoftware.com) with monovalent and divalent cation concentrations of 10mM and 3mM respectively. Primers should have a melting temperature (Tm) of approximately 60°C

Template: The amount of template in the reaction depends mainly on the type of DNA used. For templates with low structural complexity, such as plasmid DNA, we recommend using 50pg-10ng DNA per 50µl reaction volume. For eukaryotic genomic DNA, we recommend a starting amount of 200ng DNA per 50µl reaction, this can be varied between 5ng-500ng. It is important to avoid using template re-suspended in EDTA-containing solutions (*e.g.* TE buffer) since EDTA chelates free Mg^{2+}.

Initial Denaturation: An initial denaturation step of 1min at 95°C is recommended for non-complex templates such as plasmid DNA or cDNA. For more complex templates such as eukaryotic genomic DNA, longer initial denaturation times of up to 3mins are required in order to facilitate complete melting of the DNA.

Denaturation: Our protocol recommends a 15s cycling denaturation step at 95°C which is also suited to GC-rich templates, however for low GC content (40-45%) templates, the denaturation time can be decreased down to 5s.

Annealing temperature and time: The optimal annealing temperature is dependent upon the primer sequences and is usually 2 -5°C below the lower Tm of the pair. We recommend starting with a 55°C annealing temperature and, if necessary, to run a temperature gradient to determine the optimal annealing temperature. Depending on the reaction the annealing time can also be reduced to 5s.

Extension temperature and time: The extension step should be performed at 72°C. The extension time depends on the length of the amplicon and the complexity of the template. With low complexity template such as plasmid DNA, an extension time of 10s is sufficient for amplicons under 1kb or up to 5kb. For amplification of fragments over 1kb from high complexity template, such as eukaryotic genomic DNA, longer extension times are recommended. In order to find the fastest optimal condition, we suggest incrementing the extension time successively up to 30s/kb.

Troubleshooting Guide

Problem	Possible Cause	Recommendation
No PCR product	Missing component	- Check reaction set-up and volumes used
	Defective component	- Check the aspect and the concentrations of all components as well as the storage conditions. If necessary test each component individually in controlled reactions
	Enzyme concentration too low	- Increase enzyme quantity to up to 2U/50µl reaction
	Cycling conditions not optimal	- Decrease the annealing temperature - Run a temperature gradient to determine the optimal annealing temperature - Increase the extension time, especially if amplifying long target - Increase the number of cycles
	Difficult template	- Increase the denaturation time
Smearing or Non Specific products	Excessive cycling	- Decrease the number of cycles
	Extension time too long	- Decrease the extension time
	Annealing temperature too low	- Increase the annealing temperature
	Primer concentration too high	- Decrease primer concentration
	Extension during set-up	- Make sure all reactions are set-up on ice. Run reaction as quickly as possible
	Contamination	- Replace each component in order to find the possible source of contamination - Set-up the PCR reaction and analyze the PCR product in separated areas.

Technical Support

If the troubleshooting guide does not solve the difficulty you are experiencing, please contact your local distributor or our Technical Support with details of reaction setup, cycling conditions and relevant data.

Email: tech@bioline.com

Associated Products

Product Name	Pack Size	Cat. No.
Agarose	500g	BIO-41025
Agarose tablets	300g	BIO-41027
PCR water (DNase/RNase free)	10x 10ml	BIO-38080
HyperLadder™ I	200 Lanes	BIO-33025

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Listino Prezzi MyTaq™ Bioline

Cat No:	Q.tà	Descrizione	Prezzo €
BIO-21105	500 units	MyTaq DNA Polymerase	€ 115
BIO-21106	2500 units	MyTaq DNA Polymerase	€ 380
BIO-21107	5000 units	MyTaq DNA Polymerase	€ 675
BIO-21108	500 units	MyTaq Red DNA Polymerase	€ 115
BIO-21109	2500 units	MyTaq Red DNA Polymerase	€ 380
BIO-21110	5000 units	MyTaq Red DNA Polymerase	€ 675
BIO-21111	250 units	MyTaq HS DNA Polymerase	€ 115
BIO-21112	1000 units	MyTaq HS DNA Polymerase	€ 385
BIO-21113	2500 units	MyTaq HS DNA Polymerase	€ 875
BIO-21114	250 units	MyTaq HS Red DNA Polymerase	€ 115
BIO-21115	1000 units	MyTaq HS Red DNA Polymerase	€ 400
BIO-21116	2500 units	MyTaq HS Red DNA Polymerase	€ 875
BIO-25041	200 Reactions	MyTaq Mix, 2x	€ 100
BIO-25042	1000 Reactions	MyTaq Mix, 2x	€ 430
BIO-25043	200 Reactions	MyTaq Red Mix, 2x	€ 100
BIO-25044	1000 Reactions	MyTaq Red Mix, 2x	€ 430
BIO-25045	200 Reactions	MyTaq HS Mix, 2x	€ 155
BIO-25046	1000 Reactions	MyTaq HS Mix, 2x	€ 690
BIO-25047	200 Reactions	MyTaq HS Red Mix, 2x	€ 155
BIO-25048	1000 Reactions	MyTaq HS Red Mix, 2x	€ 690

MyTaq & **MyTaq HS** comes with the dNTPs and MgCl2 already in the Reaction Buffer.

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