One *Taq* DNA Polymerase

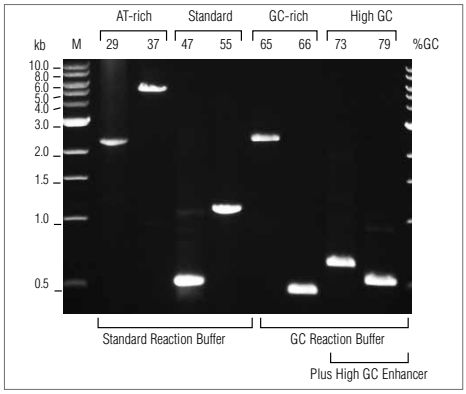
ENZYMES & KITS FOR PCR

NEW ENGLAND Biolabs®

One*Taq* DNA Polymerase

The *One* you've been waiting for!

Choose One*Taq* DNA Polymerase for all your amplification of standard, AT- and GC-rich templates, at a price-point that beats the competition. One*Taq* DNA Polymerase is an optimized blend of *Taq* and Deep Vent DNA polymerases for use with routine and difficult PCR experiments. The 3´– 5´ exonuclease activity of Deep Vent DNA Polymerase increases the fidelity and robust amplification of *Taq* DNA Polymerase. The One*Taq* Reaction Buffers and High GC Enhancer have been formulated for robust yields with minimal optimization, regardless of a template's GC content (see additional data on page 4).



Achieve robust amplification for standard, AT- and GC-rich templates with One*Taq* DNA Polymerase

Amplification of a selection of sequences with varying AT and GC content from human and C. elegans genomic DNA using OneTaq DNA Polymerase. GC content is indicated above gel. Marker M is the 1 kb DNA Ladder (NEB #N3232).

It's that easy to choose the right buffer for maximum performance:

One*Taq* DNA Polymerase is supplied with two 5× buffers (Standard and GC), as well as a High GC Enhancer solution to ensure maximum performance for routine, AT- or GC-rich amplicons.

AMPLICON % GC CONTENT	RECOMMENDED DEFAULT BUFFER	OPTIMIZATION NOTES
<50% GC	One*Taq* Standard Reaction Buffer	Adjust annealing temperature, primer/template concentration, etc., if needed.
50–65% GC	One*Taq* Standard Reaction Buffer	One*Taq* GC Reaction Buffer can be used to enhance performance of difficult amplicons.
>65% GC	One*Taq* GC Reaction Buffer	One*Taq* GC Reaction Buffer with 10–20% One*Taq* High GC Enhancer can be used to enhance performance of difficult amplicons.

Scan the QR code

to read our guidelines for PCR optimization with One*Taq* DNA Polymerases.

Advantages

- Exceptional performance in endpoint PCR across a wide range of templates (Standard, AT-and GC-rich)
- Robust yields with minimal optimization
- Convenient product formats (stand-alone enzyme, master mixes, and Quick-Load formats)

Details & Applications:

Details

Extension Rate	1 kb/min
Amplicon Size	≤ 6 kb
Fidelity	2X *Taq*
Units/50 µl rxn	1.25 units
Resulting Ends	3´ A/Blunt
3`→5´ Exonuclease Activity	Yes
5´→3´ Exonuclease Activity	Yes
Supplied Buffer	One*Taq* Std Rxn Buffer, One*Taq* GC Rxn Buffer
Supplied Enhancer	One*Taq* High GC Enhancer

Product Formats

Hot Start Available	Yes
- Activation Required	No
Master Mix Available	Yes
Direct Gel-loading Available	Yes
PCR Kit Available	No

Applications

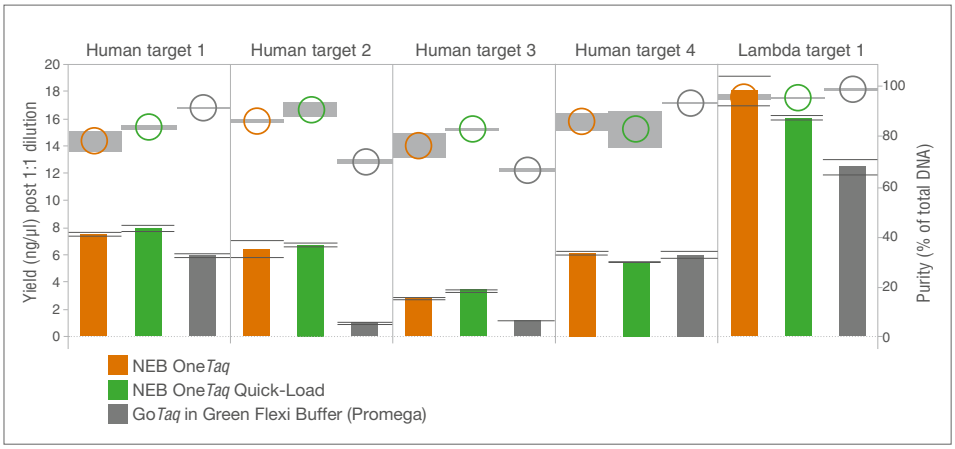
Routine PCR	Yes
SNP Detection	Yes
T/A, U/A Cloning	Yes
Colony PCR	Yes
High-Fidelity PCR	No

One*Taq* Quick-Load DNA Polymerase

Optimal for "standard" PCR and direct gel-loading

For direct and fast agarose gel-loading after "standard" PCRs such as genotyping or colony PCR etc., One*Taq* DNA Polymerase is also available in a Quick-Load format. It is supplied with a density and tracking dye containing 5× One*Taq* Quick-Load Reaction Buffer for direct gel loading in addition to the regular "colorless" 5× One*Taq* Reaction Buffer.

Convenient direct gel-loading feature of One*Taq* Quick-Load DNA Polymerase is not compromising on performance



Amplification of a variety of DNA targets demonstrates strong performance of the OneTaq Quick-Load DNA Polymerase. Product yield (bars, left axis) and purity (circles, right axis) were calculated via microfluidic analysis from triplicate reactions after 30 cycles of PCR. Standard deviation is indicated by error bars (yield) or shaded bands (purity). GoTaq was cycled according to manufacturer's recommendations.

TIPS

Use your One*Taq* PCR products in Sanger sequencing?

The dye in One*Taq* Quick-Load 2X Master Mix Buffer doesn't interfere with Sanger sequencing. Prepare your samples with the fast and easy Exo-CIP Rapid PCR Cleanup Kit (#E1050) and proceed directly to Sanger sequencing.

Convenient Master Mix Formulations

Faster set-up, less pipetting, less errors & contaminations

One*Taq* and One*Taq* Hot Start DNA Polymerases are also available in convenient Master Mix and Quick-Load Master Mix formats. Master Mix formulations include dNTPs, $MgCl_2$ and other buffers and stabilizers. The Quick-Load Master Mix formats allow for direct gel-loading. One*Taq* Master Mix formulations are optimally suited for faster reaction set-up with less pipetting steps – they increase the reliability of each PCR and reduce the risk of contamination.

ONE*TAQ* 2X MASTER MIXES	ART.-NR.	CONVENIENT	GEL-LOADING
with Standard Buffer	M0482S/L	•	
One*Taq* Quick-Load 2× Master Mix with Standard Buffer	M0486S/L/X	•	•

ONE*TAQ* HOT START 2X MASTER MIXES	ART.-NR.	CONVENIENT	GEL-LOADING
with Standard Buffer	M0484S/L	•	
with GC Buffer	M0485S/L	•	
One*Taq* Hot Start Quick-Load 2× Master Mix with Standard Buffer	M0488S/L	•	•
One*Taq* Hot Start Quick-Load 2× Master Mix with GC Buffer	M0489S/L	•	•

Robust PCR results you can trust!

Unparalled robustness on all tested templates!

While One*Taq* DNA Polymerase works perfectly well on AT-rich DNA (see page 2), it's the challenging templates that unveil the true performance and quality of any PCR polymerase. Therefore, One*Taq* DNA Polymerase and its Hot Start counterpart have been stringently and systematically tested under selected demanding conditions. In the figure below, we demonstrate some examples of the convincing performance of One*Taq* on GC-rich templates.

Choose One*Taq* DNA Polymerase for all your templates regardless of GC-content to benefit from the unrivaled robustness and reliability, so you can always trust your results!

Recommendation

- Use One*Taq* DNA Polymerase for all your templates
- Benefit from unrivaled reliability and performance
- Obtain PCR results you can really trust
- Choose the One*Taq* format (e.g. convenient Master Mix) that suits you best
- Benefit from our low and fair prices

Better than the competition:

Polymerase	Additives	GC% 55	65	66	67	78	79
One*Taq*® DNA Polymerase (NEB)	None*	●	●	●	●	●	●
One*Taq* HotStart DNA Polymerase (NEB)	None*	●	●	●	●	●	●
Ampli*Taq* Gold™ 360 DNA Polymerase (Thermo Fisher)	None	●	·	●	·	·	·
	360 GC Enhancer	●	·	●	·	●	●
Dream*Taq*™ Hot Start DNA Polymerase (Thermo Fisher)	(Not provided)	●	·	·	·	·	·
FastStart™ *Taq* DNA Polymerase (Roche)	None	●	·	·	·	·	·
	GC-RICH solution	·	●	·	·	●	●
Go*Taq*® G2 Hot Start Polymerase (Promega)	(Not provided)	·	·	·	·	·	·
Go*Taq* Hot Start Polymerase (Promega)	(Not provided)	·	·	·	·	·	·
HotStar*Taq*® DNA Polymerase (Qiagen)	Q-Solution	·	·	·	·	·	·
	None	·	·	·	·	·	·
HotStar*Taq* Plus DNA Polymerase (Qiagen)	Q-Solution	·	·	·	·	·	·
	None	·	·	·	·	·	·
i*Taq*™ DNA polymerase (Bio-Rad)	(Not provided)	·	·	·	·	·	·
JumpStart™ *Taq* DNA Polymerase (Sigma)	None	·	·	·	·	·	·
Platinum™ II *Taq* Hot-Start DNA Polymerase (Thermo Fisher)	Platinum GC Enhancer	·	·	·	·	·	·
	None	·	·	·	·	·	·
Platinum *Taq* DNA Polymerse High Fidelity (Thermo Fisher)	(Not provided)	·	·	·	·	·	·
Platinum *Taq* DNA Polymerase (Thermo Fisher)	None	·	·	·	·	·	·
	KB Extender	·	·	·	·	·	·
Ex *Taq* DNA Polymerase, hot-start version (TaKaRa)	(Not provided)	·	·	·	·	·	·
Titanium® *Taq* DNA Polymerase (TaKaRa)	(Not provided)	·	·	·	·	·	·

* One*Taq* products are supplied with One*Taq* Standard Reaction Buffer and One*Taq* GC Reaction Buffer. The GC reaction buffer was used to amplify the targets shown in the table. For other products, amplification reactions were conducted both with and without GC enhancers (if provided).

Amplification of a selection of high GC human genomic DNA targets demonstrates OneTaq performance. All polymerases were cycled according to manufacturer's recommendations, including the use of additives to enhance the amplification of targets with high GC content. Yield (dot size) and purity (color) of reaction product were quantified from triplicate reactions on a Perkin Elmer LabChip. A large, dark green dot represents the highest yield and purity.

One*Taq* Hot Start DNA Polymerase

Room temperature reaction setup with no activation step

NEB's One*Taq* Hot Start utilizes aptamer technology. This unique modified oligonucleotide binds to the polymerase through non-covalent interactions, blocking polymerase activity at temperatures below 45°C. The polymerase is activated during normal cycling conditions, allowing reactions to be set up at room temperature. One*Taq* Hot Start DNA Polymerase does not require a separate high temperature incubation step to activate the enzyme. This ultimately shortens reaction times and increases ease of use.

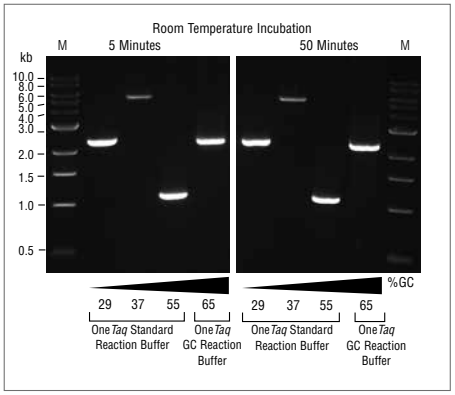
Recommended time for enzyme activation of commercially available Hot Start *Taq* products

MANUFACTURER	ENZYME	ACTIVATION STEP*	HOT START FORM
Thermo Fisher	Ampli*Taq* Gold 360	10`, 95°C	Modified
Thermo Fisher	Platinum *Taq*	30"–2', 94°C	Ab
Promega	Go *Taq* Hot Start	2', 94–95°C	Ab
Qiagen	HotStar *Taq*	15', 95°C	Modified
Roche	FastStart *Taq*	4', 95°C	Modified
Sigma	JumpStart *Taq*	1', 94°C	Ab
Thermo Fisher	Thermo-Start *Taq*	15', 95°C	Modified
NEB	One*Taq*	None	Aptamer

** May include initial denaturation step*

Advantages

- Allows room temperature reaction setup
- Does not require a separate activation step
- Compatible with standard *Taq* protocols



Extended room temperature incubation does not affect performance or specificity of One*Taq* Hot Start DNA Polymerase

Amplification of a selection of sequences with varying GC content from human and C.elegans genomic DNA using OneTaq Hot Start DNA Polymerase. The presence or absence of an extended room temperature incubation does not affect performance. GC content is indicated under gel. Marker M is the 1 kb DNA Ladder (#N3232).

PCR Selector

Use this tool to help select the right DNA polymerase for your PCR setup. Whether your amplicon is long, complex, GC-rich or present in a single copy, the PCR selection tool will identify the perfect DNA polymerase for your reaction.

PCRselector.neb.com

PCR Fidelity Estimator

Estimate the percentage of correct DNA copies (those without base substitution errors) per cycle of PCR for selected DNA polymerases.

PCRFidelityEstimator.neb.com

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Ordering Information

PRODUCTS	NEB #	SIZE
One*Taq* DNA Polymerase	M0480S/L/X	200/1,000/ 5,000 units
One*Taq* Quick-Load DNA Polymerase	M0509L/X	500/ 2,500 units
One*Taq* 2X Master Mix with Standard Buffer	M0482S/L	100/500 rxns
One*Taq* Quick-Load 2× Master Mix with Standard Buffer	M0486S/L/X	100/500/ 2,500 rxns
One*Taq* Hot Start DNA Polymerase	M0481S/L/X	200/1,000/ 5,000 units
One*Taq* Hot Start 2× Master Mix with Standard Buffer	M0484S/L	100/500 rxns
One*Taq* Hot Start 2× Master Mix with GC Buffer	M0485S/L	100/500 rxns
One*Taq* Hot Start Quick-Load 2× Master Mix with Standard Buffer	M0488S/L	100/500 rxns
One*Taq* Hot Start Quick-Load 2× Master Mix with GC Buffer	M0489S/L	100/500 rxns
One*Taq* RT-PCR Kit	E5310S	30 rxns
One*Taq* One-Step RT-PCR Kit	E5315S	30 rxns

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Tm Calculator

Use this tool when designing PCR reaction protocols to help determine the optimal annealing temperature for your amplicon. Simply input your DNA polymerase, primer concentration and your primer sequence and the Tm Calculator will guide you to successful reaction conditions.

TmCalculator.neb.com

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