

PCR · INSTRUMENTS AND REAGENTS

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peqSTAR Thermocycler

Is this the best ever thermocycler? Excellent PCR results, shortest running times and the simplest operation – all fulfilled by the new peqSTAR thermocycler, the most advanced, high performing cyclor available.

Driven by exceptional German engineering, the peqSTAR is a modern thermocycler, ready to take on the challenges of PCR. Truly the new STAR for molecular biology.



QUICKEST RUNNING TIMES – GREATEST LIFE TIME

Six powerful Peltier elements with Long Life Technology cooled using a revolutionary cooling body, two high durability cooling fans with magnetic bearings and a highly engineered thermoplate that enables rapid temperature changes of up to 5 °C/s with no overshoot.

HIGHEST PRECISION – IN ALL AREAS

Six PT 1000 thermal probes matched with six control circuits provide constant feedback and temperature control of each of the six Peltier elements – assuring the tightest correlation of target and actual temperature across the entire thermoplate.



Fastest performance with no overshoot

Figure shows temperature measurement using calibrated, external thermal probes. Blue: peqSTAR 96 Universal
Grey: other leading system

PEQSTAR PC PROTOCOL EDITOR

Included with every system, free of charge, the peqSTAR PC Protocol Editor enables you to create, manage, edit and save PCR protocols before transferring to the peqSTAR by USB stick or by LAN network. A great way to manage and protect your precious programs.

SIMPLE TO USE – POWERFUL TO COMMAND

An integrated PC with a memory holding up to 1000 programs plus the ability for USB memory stick file sharing, LAN networking, password protected User Administration and a file management system, immediately familiar to users. With a sharp, clear TFT display and intuitive 'touch screen'

commands, just switch on the peqSTAR and you'll be ready to go.

BUILT IN QUALITY AND REPRODUCIBILITY – CERTIFIED

Proudly manufactured in Germany to the highest engineering specifications, certified under ISO 9001 and ISO 13485 quality regulations and accurately calibrated to NIST standards.



1000 program storage plus 4 USB ports

The peqSTAR can store up to 1000 programs on its internal memory and offers 4 USB ports for local program storage and exchange.



Constant self-diagnostic temperature display

What is the individual Peltier performance right now? Not a secret through the peqSTAR novel Real Time Diagnostic System.

peqSTAR 96 Universal

With its sleek design, the peqSTAR Universal 96, including the universal block system for both 0.2 ml and 0.5 ml tubes, plates and strips, sets the new standard for thermocycling with unmatched system performance, quality and capabilities.



Temperature control, stability across the block, speed, ease of use and reliability – all important factors to consider in owning and operating an effective thermocycler. And so with the peqSTAR, clearly demonstrated engineering performance matched with high performing PCR reactions.

GENERAL CHARACTERISTICS

- Six powerful Peltier elements with Long Life Technology
- Six control circuits with PT 1000 thermal probes
- Max. heating and cooling rate: 5 °C/s
- Block uniformity (at 72 °C): ± 0.25 °C
- Temperature range thermoblock: 4 to 105 °C
- Regulating accuracy: ± 0.1 °C
- Adjustable ramping: 0.1 to 2.0 °C/s
- Increment/decrement time: 0:01 to 9:59 minutes
- Increment/decrement temperature: 0.1 to 9.9 °C
- Temperature range heated lid: 70 to 120 °C
- Programmable lid locking
- 4 x USB, 1 x Ethernet port (MS Windows®)
- Dimensions (W x H x D): 29 x 31 x 36 cm
- Weight incl. block: 13 kg
- Power consumption: 850 VA
- Power supply: 90 – 260 V AC, 50 – 60 Hz



The fastest to reach uniformity and the tightest performance.

The peqSTAR reaches its ± 0.25 °C uniformity in just eight seconds – the best in class.



PRODUCT	DESCRIPTION	CAT. NO.
peqSTAR 96 Universal	with 96 well universal block and standard lid	95-95002
peqSTAR 96 HPL	with 96 well block and High Pressure Lid	95-95002-HPL
peqSTAR 384 HPL	with 384 well block and High Pressure Lid	95-950384-HPL
peqSTAR <i>in situ</i>	with <i>in situ</i> block for up to four microscope slides	95-950FLAT
Alternate blocks ¹⁾	96 well universal block with standard lid	95-95102
	96 well block with high pressure lid	95-95102-HPL
	384 well block with high pressure lid	95-951384-HPL
	<i>in situ</i> block with integrated buffer reservoir	95-951FLAT
Gradient Upgrade	Upgrade to Gradient System	95-9GRAD

¹⁾ Other options are available on request.

peqSTAR 96 Universal Gradient

The premier 96 well thermocycler, the peqSTAR 96 Universal Gradient offers all the features of the peqSTAR plus the smoothest, widest available gradient for fast, effective optimisation of PCR conditions.

The creation of a gradient – a steady slope of temperature across the twelve columns of a thermoblock – relies on highly effective heating control. The peqSTAR 96 Universal Gradient includes six Long Life Technology Peltier elements and six high quality PT 1000 temperature probes to offer a range of up to 39.8 °C across the 12 block columns.



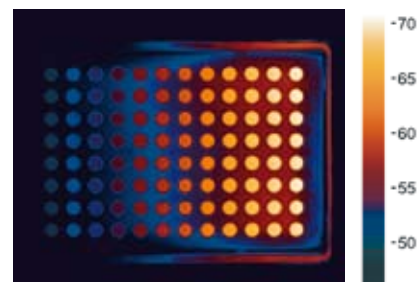
GENERAL CHARACTERISTICS

- Six powerful Peltier elements with Long Life Technology
- Six control circuits with PT 1000 thermal probes
- Max. heating and cooling rate: 5 °C/s
- Block uniformity (at 72 °C): ± 0.25 °C
- Temperature range thermoblock: 4 to 105 °C
- Regulating accuracy: ± 0.1 °C
- Adjustable ramping: 0.1 to 2.0 °C/s
- Increment/decrement time: 0:01 to 9:59 minutes
- Increment/decrement temperature: 0.1 to 9.9 °C

- Temperature range heated lid: 70 to 120 °C
- Programmable lid locking
- 4 x USB, 1 x Ethernet port (MS Windows®)
- Dimensions (W x H x D): 29 x 31 x 36 cm
- Weight incl. block: 13 kg
- Power consumption: 850 VA
- Power supply: 90 – 260 V AC, 50 – 60 Hz

GRADIENT FEATURES

- Max. gradient over 12 columns: 39.8 °C (± 19.9 °C)
- Temperature range, gradient: 35 to 105 °C
- Gradient accuracy: ± 0.1 °C



The perfect gradient, the perfect control.

Six control circuits for the most precise Peltier regulation giving a block temperature of extremely high stability and a temperature gradient of extraordinary linearity. (Infra-red image by IRCAM GmbH/Erlangen, using IRCAM Velox® 327k SM pro, temperature resolution 12 mK).



PRODUCT	DESCRIPTION	CAT. NO.
peqSTAR 96 Universal Gradient	with 96 well universal gradient block and standard lid	95-96002
peqSTAR 96 HPL Gradient	with 96 well gradient block and High Pressure Lid	95-96002-HPL
Alternate blocks ¹⁾	96 well universal gradient block and standard lid	95-96102
	96 well gradient block and High Pressure Lid	95-96102-HPL

¹⁾ Other options are available on request.

Primus 25 advanced®

The dependable personal cycler for quality PCR results, the Primus 25 advanced® is distinguished by efficient run times, excellent PCR performance and easy-to-use operation all in a conveniently compact footprint.



HIGHLIGHTS

- Universal block for up to 25 x 0.2 ml tubes or 13 x 0.5 ml tubes with flat caps
- Self-adjusting heated lid
- Small footprint (22.5 x 25 x 28 cm)
- Immensely flexible programming allowing for Touch-Down and Long-Range PCR
- Manufactured in Germany under ISO 9001 and ISO 13485 conditions
- Fully licensed for PCR

TECHNICAL INFORMATION

- Peltier element with Long Life Technology and PT 1000 high quality thermal probe
- Temperature range: 4 to 105 °C
- Regulating accuracy: ± 0.1 °C
- Block uniformity (at 72 °C): ± 0.7 °C
- Heating and cooling rate: 2 °C/s
- Max. program number: 90 (with up to 99 steps/program)
- Increment/decrement time: 0:01 to 9:59 minutes
- Increment/decrement temperature: 0.1 to 9.9 °C
- Block capacity: Universal block for 25 x 0.2 ml tubes or 13 x 0.5 ml tubes with flat caps

- Heatable self-adjusting lid
- Temperature range heated lid: 70 to 120 °C
- Interfaces: Centronics (parallel) and RS232 (serial)
- GLP report for complete recording of all runs
- Dimensions (W x H x D): 22.5 x 25 x 28 cm
- Weight incl. block: 6.3 kg
- Max. power consumption: 120 VA



PRODUCT	DESCRIPTION	CAT. NO.
Primus 25 advanced®	25 position thermocycler with universal block	95-4002

Technical Data for PEQLAB Thermocyclers

MODEL	PRIMUS 25 ADVANCED®	PEQSTAR 96	PEQSTAR 96 GRADIENT
PCR Licensing			
Licensed for PCR	Yes	Yes	Yes
Thermoblock			
Peltier elements per block	1	6	6
Temperature range	4 to 105 °C	4 to 105 °C	4 to 105 °C
Block uniformity at 72° C	± 0.7 °C	± 0.25 °C	± 0.25 °C
Regulating accuracy	± 0.1 °C	± 0.1 °C	± 0.1 °C
Maximum gradient range	–	–	39.8 °C (± 19.9 °C)
Minimum gradient range	–	–	1.0 °C
Temperature range, gradient	–	–	35 to 105 °C
Gradient accuracy	–	–	± 0.1 °C
Maximum heating/cooling rate	2 °C/s	5 °C/s	5 °C/s
Lid Heating			
Ability to disengage	Yes	Yes	Yes
Lid versions	Standard	Standard, High Pressure Lid ¹⁾	Standard, High Pressure Lid ¹⁾
Height adjustment	Automatic	Automatic	Automatic
Lid heating range	70 to 120 °C	70 to 120 °C	70 to 120 °C
Programmable lid locking	No	Yes	Yes
Programming			
Maximum programs	90	1000 ²⁾	1000 ²⁾
peqSTAR Protocol Editor ¹⁾ compatible	No	Yes	Yes
Real time diagnostic display	No	Yes	Yes
Touch screen controls	No	Yes	Yes
Increment/decrement time	0:01 to 9:59 Minutes	0:01 to 9:59 Minutes	0:01 to 9:59 Minutes
Increment/decrement temperature	0.1 to 9.9 °C	0.1 to 9.9 °C	0.1 to 9.9 °C
Ramp rate	Variable	Variable	Variable
Display running time	Yes	Yes	Yes
Alarm after program completion	Yes	Yes	Yes
Auto-restart on power failure	Yes	Yes	Yes
Networking			
Serial (for PC connection)	Yes	No	No
Parallel for printer	Yes	No	No
Ethernet connection	No	Yes	Yes
USB ports	No	4	4
Size and Weight			
Weight incl. block	6.3 kg	13 kg	13 kg
Dimensions (W x H x D)	225 x 250 x 280 mm	290 x 310 x 360 mm	290 x 310 x 360 mm
Power			
Maximum power consumption	120 VA	850 VA	850 VA
Voltage/current	220 - 240 V AC/50 - 60 Hz	90 - 260 V AC/50 - 60 Hz	90 - 260 V AC/50 - 60 Hz

¹⁾ Other options are available on request. ²⁾ This number can be expanded using PC or USB stick.

PCR Reagents

PCR REAGENTS

Who would have thought that a bacterium, discovered in 1966 in a hot spring in Yellowstone National Park, would become such a pivotal ingredient in the molecular biology revolution? From that Gram negative bacterium, *Thermus aquaticus*, came *Taq*, a thermostable DNA polymerase that survives the repeated melting and extension steps to enable the modern

PCR reaction we know today. *Taq*, with its great processivity rate is still the most widely used polymerase.

Manufactured in *E. coli*, peqGOLD *Taq* is both quality tested and PCR tested on a range of targets both per batch and at different time points to give you a product that is reliable and dependable.

Polymerases with 'Proofreading' capabilities result in PCR products with a significantly lower rate of read errors. Derived from archaeobacteria *Pyrococcus furiosus* and *Pyrococcus woesei*, *Pfu* and *Pwo* are increasingly used. With their 3' → 5' exonuclease activity, error correction occurs within the PCR reactions – the pay off being a lower processivity.



TAQ DNA POLYMERASES

peqGOLD *Taq* undergoes a full screen of PCR based quality control before shipping to ensure maximum reliability. *Taq* is available either on its own, containing 'red' loading dye or pre-mixed with dNTPS and buffer as 'Master Mix', ready for the addition of primers. Or to avoid non-specific products forming, our very popular 'Hot Start' version is on offer which prevents the *Taq* from working until activated in the first melting step. PEQLAB *Taq* is supplied with optimised buffers aimed at maximising yield (Y buffer) or specificity (S buffer).

PROOFREADING POLYMERASES

peqGOLD *Pwo* and *Pfu* DNA polymerases are offered in kits which contain reaction buffer and additional magnesium salts for reaction optimisation. Particularly useful in bacterial PCR, the *Pfu* polymerase is manufactured by expression in *E. coli* then purified 'ultra-pure' to avoid any bacterial contamination. Both *Pfu* and *Pwo* are suitable for use in 'bluntend' cloning.

QUANTITATIVE 'REAL TIME' PCR

The peqGOLD 'Real Time' kit is a cost effective, optimised kit for qPCR containing 'Hot-Start' *Taq* with a higher concentration of magnesium salts ready for the addition of primers, templates and probes or SYBR Green I.

dNTPs

We take the quality of our dNTPs very seriously. Synthetically manufactured and produced under ISO 9001 and ISO 14001 conditions, these dNTPS have a super-high stability (> 90 % active after 6 weeks at RT) and purity.



PCR Reagent Product Selection

dNTPs			
Product	Description	Application	Page
Solutions	peqGOLD dNTP Sets & dNTP Mixes	standard PCR	14
	peqGOLD dNTPs	single dNTPs for standard PCR	15
	peqGOLD dNTP Sets & dNTP Mixes	Long Range PCR	15
Powder	peqGOLD dNTP Sets	for preparing dNTP solutions	16
	peqGOLD dNTPs	single dNTPs for preparing solutions	16

Taq DNA POLYMERASE			
Product	Description	Application	Page
Kits	peqGOLD <i>Taq</i> & Hot <i>Taq</i> DNA polymerase	standard PCR	17
	peqGOLD Control <i>Taq</i> DNA polymerase	direct loading of gels	19
	peqGOLD Pure <i>Taq</i> DNA polymerase	amplification of bacterial DNA	19
	peqGOLD Mid & Long Range PCR system	PCR for products up to 12 and 40 KB	20
Master Mix	peqGOLD PCR Master Mix Y & 'Hot Start' Mix Y	standard PCR with high yield	21
	peqGOLD PCR Master Mix S & 'Hot Start' Mix S	standard PCR with high specificity	21

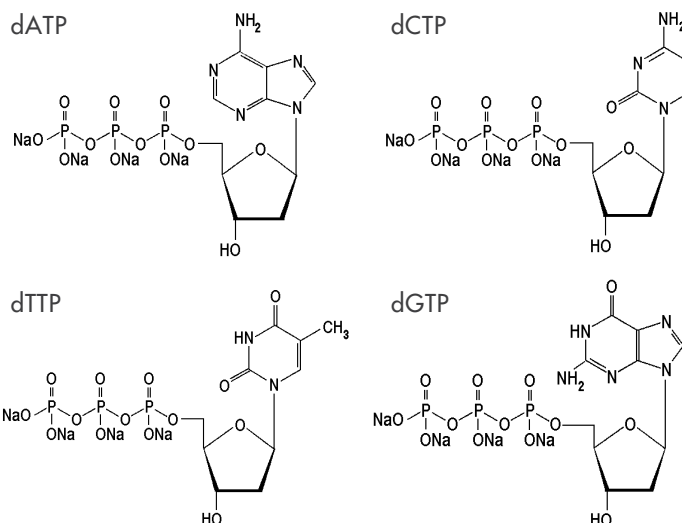
PROOFREADING POLYMERASES			
Product	Description	Application	Page
Kits	peqGOLD <i>Pwo</i> DNA polymerase	sequence-accurate DNA amplification	22
	peqGOLD 'Pure' <i>Pfu</i> DNA polymerase	sequence-accurate amplification of bacterial DNA	22

QUANTITATIVE 'REAL TIME-PCR			
Product	Description	Application	Page
Master Mix	peqGOLD 'Hot Start' Mix Real Time	Real Time-PCR with SYBR® Green I or probes	23

URACIL-DNA-GLYCOSYLASE			
Product	Description	Application	Page
Kit	peqGOLD Uracil-DNA-Glycosylase (UDG)	Used to avoid PCR contamination	23

peqGOLD dNTP Sets and dNTP Mixes (Standard, Dissolved)

The quality of dNTPs is absolutely critical to the success of PCR reactions and the stable working of a busy molecular biology laboratory. That's why we take the quality of our dNTP sets and mixes so seriously.



Synthetic manufacturing and quality control takes place in accordance with the strict ISO 9001 and ISO 14001 guidelines and with HPLC quality criteria of over 99 % and validity tested in PCR, you can be confident that your decision to use peqGOLD dNTPs will be a wise one.

dNTP SETS

- Set contains one vial each of dATP, dCTP, dGTP and dTTP
- The concentration of each deoxynucleotide is 100 mM
- Offered in 3 quantities: 25 µmol, 100 µmol or 500 µmol of each deoxynucleotide

dNTP MIXES

- Premixed dATP, dCTP, dGTP and dTTP, ready to use
- The concentration of each deoxynucleotide is 10 mM
- Available in 3 quantities 2 µmol, 10 µmol and 50 µmol of each individual nucleotides, i.e. 8 µmol, 40 µmol and 200 µmol mixed dNTPs

HIGHEST QUALITY

- Synthetically manufactured
- Purity, measured by HPLC, > 99 %
- Super-high stability with > 90 % of peqGOLD dNTPs stable after 6 weeks storage at room temperature
- pH 7.5 to prevent hydrolysis of phosphate groups during long-term storage
- Manufacturing and quality control under ISO 9001 and ISO 14001

TESTED FREE FROM

- 5'-exonucleases
- 3'-exonucleases
- Non-specific endonucleases
- Phosphatase contaminants
- RNases

STABILITY

- At + 20 °C: minimum 7 weeks
- At - 20 °C: minimum 1 year

PRODUCT DETAILS

- dATP, C₁₀H₁₂N₅O₁₂P₃Na₄ × 3 H₂O, MW 634.2 g/mol
- dCTP, C₉H₁₂N₃O₁₃P₃Na₄ × 3 H₂O, MW 609.2 g/mol
- dGTP, C₁₀H₁₂N₅O₁₃P₃Na₄ × 3 H₂O, MW 649.2 g/mol
- dTTP, C₁₀H₁₄N₂O₁₄P₃Na₃ × 3 H₂O, MW 624.2 g/mol

PRODUCT	COMPONENTS	CONCENTRATION ¹	QUANTITY ¹	VOLUME	CAT. NO.
dNTP Sets (Standard)	dATP, dCTP, dGTP, dTTP – single	100 mM	25 µmol	250 µl ¹	20-2010
	dATP, dCTP, dGTP, dTTP – single	100 mM	100 µmol	1 ml ¹	20-2011
	dATP, dCTP, dGTP, dTTP – single	100 mM	500 µmol	5 x 1 ml ¹	20-2012
dNTP Mixes (Standard)	dATP, dCTP, dGTP, dTTP – mixture	10 mM	2 µmol	200 µl	20-3010
	dATP, dCTP, dGTP, dTTP – mixture	10 mM	10 µmol	1 ml	20-3011
	dATP, dCTP, dGTP, dTTP – mixture	10 mM	50 µmol	5 x 1 ml	20-3012

¹ each dNTP

peqGOLD Deoxynucleotide Triphosphate (Dissolved)

Individually packaged deoxynucleotide triphosphates manufactured to the highest quality levels.

- In solution and ready to use
- Synthetically manufactured
- Purity, measured by HPLC, > 99 %
- Super-high stability with > 90 % of peqGOLD dNTPs stable after 6 weeks storage at room temperature
- pH 7.5
- Manufacturing and quality control under ISO 9001 and ISO 14001

PRODUCT	DESCRIPTION	pH	QUANTITY	CAT. NO.
dATP	100 mM Solution	7.5	25 µmol	20-1010
	100 mM Solution	7.5	100 µmol	20-1011
	100 mM Solution	7.5	500 µmol	20-1012
dCTP	100 mM Solution	7.5	25 µmol	20-1020
	100 mM Solution	7.5	100 µmol	20-1021
	100 mM Solution	7.5	500 µmol	20-1022
dGTP	100 mM Solution	7.5	25 µmol	20-1030
	100 mM Solution	7.5	100 µmol	20-1031
	100 mM Solution	7.5	500 µmol	20-1032
dTTP	100 mM Solution	7.5	25 µmol	20-1040
	100 mM Solution	7.5	100 µmol	20-1041
	100 mM Solution	7.5	500 µmol	20-1042

peqGOLD dNTP Sets and dNTP Mixes (Long Range, Dissolved)

Designed for the successful PCR amplification of long DNA fragments, Long Range dNTP solutions reduce the risk of pre-mature abortion of PCR reactions.

dNTP SETS

- One vial each of dATP, dCTP, dGTP and dTTP
- The concentration of each deoxynucleotide is 100 mM
- Offered in 3 quantities: 25 µmol, 100 µmol or 500 µmol of each deoxynucleotide

dNTP MIXES

- Premixed dATP, dCTP, dGTP and dTTP and ready to use
- The concentration of each deoxynucleotide is 10 mM
- Available in 3 quantities: 2 µmol, 10 µmol and 50 µmol of each individual nucleotides, i.e. 8 µmol, 40 µmol and 200 µmol dNTPs

PRODUCT	COMPONENTS	CONCENTRATION ¹	QUANTITY ¹	VOLUME	CAT. NO.
dNTP Sets	dATP, dCTP, dGTP, dTTP – single	100 mM	25 µmol	250 µl ¹	20-2110
'Long Range'	dATP, dCTP, dGTP, dTTP – single	100 mM	100 µmol	1 ml ¹	20-2111
	dATP, dCTP, dGTP, dTTP – single	100 mM	500 µmol	5 x 1 ml ¹	20-2112
dNTP Mixes	dATP, dCTP, dGTP, dTTP – mixture	10 mM	2 µmol	200 µl	20-3110
'Long Range'	dATP, dCTP, dGTP, dTTP – mixture	10 mM	10 µmol	1 ml	20-3111
	dATP, dCTP, dGTP, dTTP – mixture	10 mM	50 µmol	5 x 1 ml	20-3112

¹ each dNTP

peqGOLD Deoxynucleotide Triphosphate Sets (Powder)

Define your own concentrations and choose your own buffers with sets of four peqGOLD Deoxy-nucleotide triphosphates in powder form. Synthetically manufactured and competitively priced, these kits offer the highest level of value and user flexibility.

- Synthetically manufactured
- Purity, measured by HPLC, > 99 %
- Super-high stability with > 90 % of peqGOLD dNTPs stable after 6 weeks storage at room temperature
- Each set contains the four powdered Deoxynucleotide-5-triphosphates dATP, dCTP, dGTP and dTTP
- Available in quantities of 100 mg, 250 mg and 1000 mg corresponding approximately to 0.16 mmol, 0.40 mmol and 1.59 mmol of each nucleotide respectively

PRODUCT	COMPONENTS	QUANTITY ¹	CAT. NO.
dNTP Sets	dATP, dCTP, dGTP, dTTP – single, undissolved	100 mg	20-2410
	dATP, dCTP, dGTP, dTTP – single, undissolved	250 mg	20-2411
	dATP, dCTP, dGTP, dTTP – single, undissolved	1000 mg	20-2412

¹ each dNTP

peqGOLD Deoxynucleotide Triphosphate (Powder)

High quality, individual deoxynucleotide triphosphates supplied as tetranatrium salts in powder form.

- Synthetically manufactured
- Purity, measured by HPLC, > 99 %
- Super-high stability with > 90 % of peqGOLD dNTPs stable after 6 weeks storage at room temperature
- Available in 100 mg, 250 mg or 1000 mg quantities

PRODUCT	DESCRIPTION	QUANTITY		CAT. NO.
dATP	Salt, undissolved	100 mg approx.	0.16 mmol	20-1013
		250 mg approx.	0.39 mmol	20-1014
		1000 mg approx.	1.58 mmol	20-1015
dCTP	Salt, undissolved	100 mg approx.	0.19 mmol	20-1023
		250 mg approx.	0.41 mmol	20-1024
		1000 mg approx.	1.64 mmol	20-1025
dGTP	Salt, undissolved	100 mg approx.	0.15 mmol	20-1033
		250 mg approx.	0.38 mmol	20-1034
		1000 mg approx.	1.54 mmol	20-1035
dTTP	Salt, undissolved	100 mg approx.	0.16 mmol	20-1043
		250 mg approx.	0.40 mmol	20-1044
		1000 mg approx.	1.60 mmol	20-1045

peqGOLD Taq & Hot Taq DNA Polymerase

Thermostable polymerase for standard PCR applications

Available with dNTPs and as 'Hot Start' format

Supplied with Y and S buffer for maximal yield or specificity



DESCRIPTION

peqGOLD Taq DNA polymerase is a highly processive 5'→3' polymerase with no 3'→5' exonuclease (proof-reading) activity.

At 72 °C and around pH 9 conditions, peqGOLD Taq reaches its highest level of activity, capable of amplifying a standard 1 kb strand of DNA in approximately 30 seconds.

To hold back the Taq's activity while preparing your sample, 'Hot Start' Taq is designed to remain inactive until heated to over 70 °C during the first PCR cycle. Once the solution is heated up, the Taq jumps into action!

peqGOLD Taq is supplied with buffers Y and S for maximal yield and sensitivity along with Enhancer Solution P which modifies the denaturing characteristics of DNA to improve amplification of difficult templates.

QUALITY CONTROL

- Tested free from endonucleases
- Tested free from primer contamination
- Positive PCR performance

APPLICATIONS

- Routine and multiplex PCR
- Real-Time-PCR
- T/A cloning
- DNA labelling with biotin, digoxigenin or radioactive nucleotides
- Sequencing of double or single stranded DNA

UNIT DEFINITION

One unit is defined as the amount of enzyme required to incorporate 10 nmoles of dNTP into acid-insoluble material in 30 min at 74 °C.

PRODUCT INCLUDES

- Taq DNA or 'Hot Start' Taq polymerase at a concentration of 5 u/μl
- Dilution buffer
- 10 x reaction buffer Y for high yields: 200 mM Tris-HCl (pH 8.55), 160 mM (NH₄)₂SO₄, 0.1 % Tween 20 and 20 mM MgCl₂
- 10 x reaction buffer S for high specificity: 100 mM Tris-HCl (pH 8.8), 500 mM KCl, 0.1 % Tween 20 and 15 mM MgCl₂
- Enhancer solution P modifies the denaturing characteristics of DNA and thereby improves the amplification of difficult templates

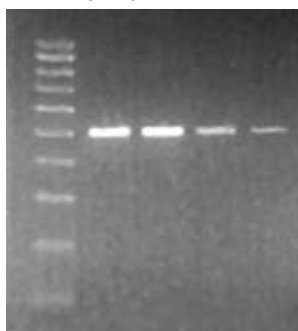
PRODUCT	DESCRIPTION	QUANTITY	CAT. NO.
Taq DNA Polymerase	Thermo stable DNA Polymerase	100 u	01-1010
		250 u	01-1020
		4 x 250 u	01-1030
Taq 'all inclusive'	Thermo stable DNA Polymerase incl. dNTP Mix	250 u	01-1000
		4 x 250 u	01-1001
Hot Taq DNA Polymerase	Thermo stable 'Hot Start' DNA Polymerase	100 u	01-8110
		250 u	01-8120
		4 x 250 u	01-8130

peqGOLD PCR Performance

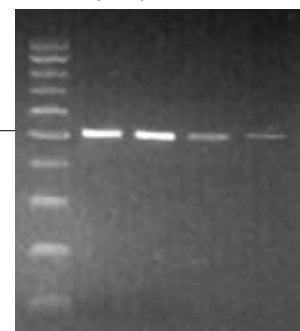
Examples of performance data using PEQLAB PCR and electrophoresis products.

PCR amplification with PEQGOLD Taq DNA polymerase

1. Altering enzyme concentration



2. Altering template concentration



Performance testing by reducing the amount of *Taq* and DNA template per reaction demonstrates the high quality and performance of peqGOLD *Taq*. Samples run on a 1 % gel made from peqGOLD Universal Agarose. Apart from the altered enzyme and template, all reactions under standard conditions were performed in 50 µl reaction volumes.

Figure 1. M: 100 bp DNA leaders; 1: 1 u *Taq*; 2: 0.5 u *Taq*; 3: 0.25 u *Taq*; 4: 0.125 u *Taq*; 5: 10 pg Template; 6: 1 pg Template; 7: 0.1 pg Template; 8: 0.01 pg Template. (Template 1 to 8: DNA; Template quantity 1 to 4: 1 pg; Enzyme quantity of 5 to 8: 0.5 u).

INSTRUMENTS AND PRODUCTS USED IN THESE STUDIES

- peqSTAR Universal Gradient Cycler
Cat No. 95-96002
- peqGOLD *Taq*
Cat No. 01-1010
- peqGOLD Universal Agarose
Cat. No. 35-1010
- peqGOLD 100bp ladder
Cat. No. 25-2010
- PerfectBlue Electrophoresis System
Cat. No. 40-1214

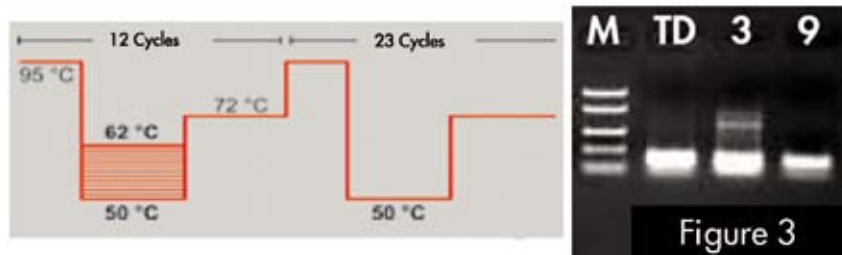
PCR optimisation by means of Gradient PCR in the peqSTAR 96 Universal Gradient



Example of the use the peqSTAR's gradient feature – altering the annealing temperature across the block to optimize the best performance conditions.

Figure 2. Amplification of a 120 bp long TNF gene sequence out of hgDNA by means of gradient PCR (annealing temperature TA: 58 °C ± 12 °C)

Touch Down PCR using the peqSTAR Universal Gradient



A method to avoid amplifying nonspecific sequences, 'Touch Down' PCR programs have an incremental decrease in temperature of the annealing step in each cycle. The program start from a position of very high primer binding specificity thereby out competes non-specific priming.

Figure 3. Amplification of the described TNF gene sequence by means of 'Touch down' PCR. Optimum annealing temperature of 62 °C is decreased in the first 12 PCR cycles per cycle by 1 °C. 5 µl each from the 'Touch down' PCR reactions 3 and 9 run on a 1 % gel.

peqGOLD Control Taq DNA Polymerase

An ingenious blend of peqGOLD 'Standard' Taq and an inert red dye makes for quick PCR set-up and avoids the need for additional dyes for electrophoresis.

PRODUCT INCLUDES

- Taq DNA polymerase in a concentration of 5 u/μl
- Dilution buffer
- 10 x reaction buffer Y for high yields
- 10 x reaction buffer S for high specificity
- Enhancer solution P

UNIT DEFINITION

One unit is defined as the amount of enzyme required to incorporate 10 nmoles of dNTP into acid-insoluble material in 30 min at 74 °C.

Some applications for which these products can be used are protected in certain countries by patent law. Because your purchase does not include the acquisition of licenses for use within the scope of applications protected by patent law, the acquisition of relevant licenses may be necessary depending on the application and on the country of application.

PRODUCT	DESCRIPTION	QUANTITY	CAT. NO.
'Control' Taq DNA Polymerase	Thermo stable DNA Polymerase with red dye	100 u	01-2110
		250 u	01-2120
		4 x 250 u	01-2130

peqGOLD Pure Taq DNA Polymerase

peqGOLD 'Pure' Taq DNA polymerase is a highly purified version of peqGOLD Taq, certified completely free of contaminating *E. coli* DNA, making it well suited for sensitive experiments using bacterial templates or random primers.

APPLICATIONS

Sensitive PCR reactions using bacterial templates or random primers.

PRODUCT INCLUDES

- 'Pure' Taq DNA polymerase in a concentration of 5 u/μl
- 10 x reaction buffer Y for high yields
- 10 x reaction buffer S for high specificity
- Enhancer Solution P, Dilution buffer and 25 mM MgCl₂

QUALITY CONTROL

- Tested free from contaminating bacterial DNA
- Tested free from exo- and endo-nucleases

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PRODUCT	DESCRIPTION	QUANTITY	CAT. NO.
'Pure' Taq DNA Polymerase	Thermo stable DNA Polymerase free from DNA	100 u	01-9110
		250 u	01-9120
		4 x 250 u	01-9130

peqGOLD Mid and Long Range PCR System

PCR products of up to 12 kb and up to 40 kb can be achieved with the high performance peqGOLD-'Mid' and 'Long Range' PCR Systems respectively, suitable for both genomic and episomal templates.



PRODUCT HIGHLIGHTS

- Long PCR results – up to 40 kb
- High yields of amplified fragments
- Lower error rate than standard *Taq*
- PCR products suitable for blunt end and TA cloning

APPLICATIONS

In place of standard *Taq* DNA polymerase for PCR amplifications when longer fragments and larger amounts are desirable, including sequencing, mapping and λ -phage or cosmid studies.

PRODUCT INCLUDES

- 5 units/ μ l 'Mid' or 'Long Range' *Taq* supplied
- Dilution buffer: 20 mM Tris-HCl (pH 8.0), 100 mM KCl, 0.2 mM EDTA, 5.5 % Glycerin, 0.5 % Tween 20, 0.5 % Nonidet P40 and 250 μ g/ml Gelatine
- 10 x reaction buffer: 500 mM of Tris-HCl (pH 9.1), 140 mM $(\text{NH}_4)_2\text{SO}_4$ and 17.5 mM MgCl_2 ('Mid' Kit) or 22.5 mM MgCl_2 ('Long' Kit)
- 25 mM MgCl_2 for the optimisation of the enzyme activity
- Long Range kit also includes DMSO and 10 % Tween 20

QUALITY CONTROL

- Tested free of nucleases
- Tested positive for PCR performance

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PRODUCT	DESCRIPTION	QUANTITY	CAT. NO.
'Mid Range' PCR System	Amplification of fragments up to 12 kb	100 μ	02-2010
		250 μ	02-2020
		2 x 250 μ	02-2030
		10 x 250 μ	02-2040
'Long Range' PCR System	Amplification of fragments up to 40 kb	100 μ	02-3010
		250 μ	02-3020
		2 x 250 μ	02-3030
		10 x 250 μ	02-3040

peqGOLD PCR Master Mix Y & Hot Start Mix Y

Premixed and ready to go *Taq* DNA Polymerase, dNTPs and reaction buffer Y

Optimised Y buffer for higher yields

Also available in Hot Start format

APPLICATIONS

- Routine and multiplex PCR
- Real-Time-PCR
- T/A cloning
- DNA labelling with biotin, digoxigenin or radioactive nucleotides
- Sequencing of double or single stranded DNA

PRODUCT INCLUDES

- 2 x concentrated PCR Master Mix Y containing 1.25 u *Taq* DNA or Hot Start¹ *Taq* polymerase per 25 µl, 0.4 mM dNTPs, 40 mM of Tris-HCl (pH 8.55 at 25 °C), 32 mM (NH₄)₂SO₄, 0.02 % Tween 20 and 4 mM MgCl₂
- 25 mM MgCl₂ for optimisation
- Distilled water

PRODUCT	DESCRIPTION	QUANTITY	CAT. NO.
PCR Master Mix Y	Ready to go mix for high yield PCR	5 x 1.25 ml	01-1310
		20 x 1.25 ml	01-1320
Hot Start Mix Y	Mix for high yield Hot Start PCRs	5 x 1.25 ml	01-1510
		20 x 1.25 ml	01-1520

peqGOLD PCR Master Mix S & Hot Start Mix S

Premixed and ready to go *Taq* DNA Polymerase, dNTPs and reaction buffer S

Optimised S buffer for higher specificity

Also available in Hot Start format

APPLICATIONS

- Routine and multiplex PCR
- Real-Time-PCR
- T/A cloning
- DNA labelling with biotin, digoxigenin or radioactive nucleotides
- Sequencing of double or single stranded DNA

PRODUCT INCLUDES

- 2 x concentrated PCR Master Mix S containing 1.25 u *Taq* or 'Hot Start' DNA polymerase per 25 µl, 0.4 mM dNTPs, 20 mM of Tris-HCl (pH 8.8 at 25 °C), 100 mM KCl, 0.02 % Tween 20 and 3 mM MgCl₂
- 25 mM MgCl₂ for optimisation
- Distilled water

PRODUCT	DESCRIPTION	QUANTITY	CAT. NO.
PCR Master Mix S	Ready to go mix for high specificity PCR	5 x 1.25 ml	01-1410
		20 x 1.25 ml	01-1420
Hot Start Mix S	Mix for high specificity Hot Start PCRs	5 x 1.25 ml	01-1610
		20 x 1.25 ml	01-1620

peqGOLD *Pwo* DNA Polymerase

Originally isolated from the thermophilic archaebacteria, *Pyrococcus woesei*, peqGOLD *Pwo* DNA Polymerase exhibits high levels of 3'→5' exonuclease (proofreading) activity and 5'→3' processivity for use when high levels of PCR accuracy are essential.

Furthermore, recombinant peqGOLD *Pwo* exhibits very high thermal stability and will generate PCR products without overhanging ends, making it suitable for 'blunt end' cloning experiments.

APPLICATIONS

- High accuracy PCR
- 'Blunt end' cloning

PRODUCT INCLUDES

- *Pwo* DNA polymerase in a concentration of 1 u/μl
- 10 x PCR buffer with 20 mM MgSO₄
- 10 x PCR buffer without MgSO₄
- Dilution buffer and 25 mM MgSO₄

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PRODUCT	DESCRIPTION	QUANTITY	CAT. NO.
<i>Pwo</i> DNA Polymerase	Thermo stable DNA Polymerase	100 u	01-5010
		5 x 100 u	01-5020

peqGOLD Pure *Pfu* DNA Polymerase

Originally isolated from *Pyrococcus furiosus*, peqGOLD 'Pure' *Pfu* DNA Polymerase is a highly purified recombinant enzyme with strong proofreading 3'→5' exonuclease capabilities.

Certified free from contaminating bacterial DNA, peqGOLD 'Pure' *Pfu* is highly suitable for use with bacterial templates and random primers.

As with *Pwo*, *Pfu* also is highly stable at high temperatures and can generate blunt ends suitable for cloning.

APPLICATIONS

- High accuracy PCR
- Use with bacterial templates
- 'Blunt end' cloning

PRODUCT INCLUDES

- Pure *Pfu* DNA polymerase in a concentration of 5 u/μl
- 10 x PCR buffer with 20 mM MgSO₄
- 10 x PCR buffer without MgSO₄
- Dilution buffer and 25 mM MgSO₄

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PRODUCT	DESCRIPTION	QUANTITY	CAT. NO.
Pure <i>Pfu</i> DNA Polymerase	Thermo stable DNA Polymerase	100 u	01-5110
		5 x 100 u	01-5120

peqGOLD Hot Start Mix Real Time

Optimised for 'Real Time' PCR, the peqGOLD Hot Start Mix 'Real Time' is supplied with a higher concentration of MgCl₂ for most efficient amplification of a broad range of template concentrations.

Supplied ready to use, this kit only requires the addition of primers, template and probes or SYBR® Green prior to amplification.

APPLICATIONS

Real time PCR reactions including the quantification of DNA templates by means of SYBR® Green I or probes.

This master-mix composition reduces the risk of contamination, saves time in preparation and ensures a high consistency and reproducibility of amplification results.

PRODUCT INCLUDES

- 2 x concentrated Hot Start Mix 'Real Time' containing 1.25 u

'Hot' Taq DNA polymerase per 25 µl, 0.4 mM dNTPs, 40 mM Tris-HCl (pH 8.55 at 25 °C), 32 mM (NH₄)₂SO₄, 0.02 % Tween 20 and 8 mM MgCl₂

- Distilled H₂O
- 25 mM MgCl₂

QUALITY CONTROL

- Tested free from exo- and endonuclease contamination

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PRODUCT	DESCRIPTION	QUANTITY	CAT. NO.
Hot Start Mix 'Real Time'	Mix for 'Real Time' PCRs	5 x 1.25 ml 20 x 1.25 ml	01-1910 01-1920

peqGOLD Uracil-DNA-Glycosylase (UDG)

E.coli uracil DNA Glycosylase (UDG) catalyses the hydrolysis of the n-glycosidic bond between uracil and deoxyribose.

If uracil has been incorporated into the DNA strand, the UDG will produce pyrimidine free sites. Single stranded and double stranded DNA greater than six bases are affected in this way, however RNA and shorter DNA lengths are not affected.

RANGE OF APPLICATION

- Used in conjunction with dUTP to avoid PCR contamination
- Used to hydrolyse DNA incorporated with dUTP instead of dTTP

DETAILS

- Uracil DNA Glycosylase (UDG) in a concentration of 10 to 40 u/µl
- 10 x reaction buffer:
200 mM Tris-HCl (pH 8.0 at 25 °C),
10 mM EDTA

ACTIVITY DEFINITION

A unit is the enzyme quantity which catalyses the release of 60 pmol uracil/min from uracil containing DNA.

NOTE

- To inactivate UDG, heat for 10 minutes at 95 °C
- At temperatures under 55 °C its activity is partly restored

PRODUCT	DESCRIPTION	QUANTITY	CAT. NO.
UDG	Uracil-DNA-Glycosylase	200 u 5 x 200 u	04-1090 04-1091