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PCR

PCR with a smile

Life can be simple PCR too!

PCR is an invaluable tool in molecular biology research, and at the heart of this application is the DNA polymerase. At Vivantis Technologies, we believe that a successful PCR starts with quality Polymerases. You can choose from a premium selection of our polymerases, for standard PCR or Multiplex PCR, to Hot-Start PCR applications. It is our goal to make PCR a simple and easy process for researchers around the world. With Vivantis Technologies, PCR will be a walk in the park.

***Taq* DNA Polymerase**	Highly purified *Taq* for standard PCR applications	**Chromo *Taq* DNA Polymerase**
Max*Taq* DNA Polymerase	Modified and optimized *Taq* for difficult template and improve yield.	**Chromo Max*Taq* DNA Polymerase**
At*Taq* DNA Polymerase	Antibody based Hot-Start *Taq* for amplification with enhanced specificity and sensitivity.	**Chromo At*Taq* DNA Polymerase**
AtMax *Taq* DNA Polymerase	High fidelity antibody based Hot-Start *Taq* for long amplicon.	
***Pfu* DNA Polymerase**	High fidelity polymerase exhibits 3' to 5' proofreading properties.	**Chromo *Pfu* DNA Polymerase**

The Chromo DNA Polymerase series is a blend of polymerase with inert colour tracer dyes for easy visualization of the addition of polymerase to the reaction and serve as tracking dye during PCR.

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DNA AMPLIFICATION PRODUCT

Product Datasheet

Taq DNA Polymerase (recombinant)

Product No : PL1202
Quantity : 500u

Lot :
Expiry Date :
Concentration : 5u/µl
Supplied with : 2ml of 10X ViBuffer A
1ml of 10X ViBuffer S
1ml of 50mM $MgCl_2$

Store at - 20°C

info@vivantechnologies.com

Description:

Taq DNA Polymerase is a thermostable DNA polymerase. It is suitable for applications requiring high temperature synthesis of DNA. *Taq* DNA Polymerase catalyzes the polymerization of nucleotides into duplex DNA in the 5' to 3' direction with the presence of Mg^{2+} but maintains the 5' to 3' exonuclease activity.

Features:

- Thermostable enzyme of approximately 94kDa from *Thermus aquaticus*.
- Ultra pure recombinant protein.
- Replicates DNA at 74°C and exhibits a half-life 40 minutes at 95°C.
- Generates mostly 3' dA overhang PCR products which are suitable for TA cloning.

Unit Definition :

1u is defined as amount of enzyme that required to catalyze the incorporation of 10nmoles of dNTP into acid-insoluble material in 30 minutes at 74°C.

Reaction Buffer:

10X ViBuffer A (*without* $MgCl_2$):
500mM KCl, 100mM Tris-HCl (pH9.1 at 20°C) and 0.1% Triton™X-100. The buffer is optimized for use with 0.1-0.2mM of each dNTP.

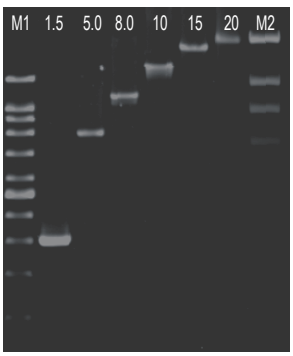
10X ViBuffer S:
160mM $(NH_4)_2SO_4$, 500mM Tris-HCl (pH 9.2 at 22°C), 17.5mM $MgCl_2$ and 0.1% Triton™X-100. The buffer is optimized for use with 0.35mM of each dNTP.

Storage Buffer:

20mM Tris-HCl (pH 8.0 at 22°C), 100mM KCl, 0.5% Tween™ 20, 0.5% Nonidet-P40, 0.1mM EDTA, 1mM DTT and 50% glycerol.

Quality Control:

All preparations are assayed for contaminating endonuclease, exonuclease, and non-specific DNase activities. Functionally tested in DNA amplification.



Amplification Using Vivantis *Taq* DNA Polymerase

Lane M1 : VC 1kb DNA Ladder
Lane 1.5kb : 1.5kb PCR product generated using 0.2mM dNTPs and 2.0u Vivantis *Taq* DNA Polymerase.
Lane 5kb and 8kb : 5kb and 8kb PCR products generated using 0.25mM dNTPs, 2.5u Vivantis *Taq* DNA Polymerase and 3% formamide.
Lane 10kb-20kb : 10kb,15kb and 20kb PCR products generated using 0.36mM dNTPs, 2.5u Vivantis *Taq* DNA Polymerase and 3% formamide.
Lane M2 : VC Lambda/*Hind*III Marker

0.5% TAE agarose gel, 5V/cm

SUGGESTED INITIAL PCR CONDITIONS FOR VARIOUS PCR PRODUCT SIZES WITH VIVANTIS DNA POLYMERASES (#PL1201 - 06 / #PL2201 - 06 / #PL3201 - 06 / #PL4201 - 06)

REACTION MIX (FINAL CONCENTRATION) :

Product Size	100bp - 5kb	5kb - 8kb	8kb - 20kb
dNTP Mix	100µM	200µM	300µM
ViBuffer (1X)	A	A	S
Ultrapure DMSO or formamide	-	3%	3%
DNA Polymerase	Refer to below Table (A)		
Primers : 0.2 - 1µM			
Template: Plasmid (0.02-0.2ng) Lambda (0.1- 150ng) Genomic (0.05-5µg)			

Product Size	100bp - 5kb	5kb - 8kb	8kb - 20kb
Denaturation	94°C, 2 min	94°C, 2 min	94°C, 2 min
Denaturation	94°C, 30 s	94°C, 12 s	94°C, 12 s
Annealing*	50 - 68°C, 30 s	50 - 68°C, 30 s	50 - 68°C, 30 s
Extension / 1kb	72°C, 30 s	72°C, 45 s	68°C, 1 min
Cycles	25 - 35	25 - 35	25 - 35
Final Extension	72°C, 7 min	72°C, 7 min	68°C, 7 min

*Primer dependent

TABLE (A) : RECOMMENDED UNITS FOR SPECIFIC VIVANTIS DNA POLYMERASES PER 50µL REACTION VOLUME :

Product Size	*Taq* (#PL1201 - 06)	Max *Taq* (#PL2201 - 06)	At *Taq* (#PL3201 - 06)	AtMax *Taq* (#PL4201 - 06)
0.1 - 5.0kb	2.0	2.0	2.0	2.0
5.0 - 8.0kb	2.5	2.0	2.5	2.0
8.0 - 20.0kb	2.5	2.0	2.5	2.0
>20.0kb	-	2.0	-	2.0

*This protocol is subjected to changes depending on the template DNA

Product Use Limitation
This product is for research purpose an *in vitro* use only

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DSPL1202_rev0_010311

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2X ViRed *Taq* Master Mix New!

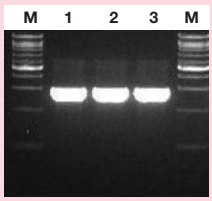
Features

- Suitable for all routine DNA amplification applications
- Stable at 4°C for 6 months, allowing immediate reaction setup without the time-consuming thawing of reagents
- Reduces set-up time and buffer-dye mixing
- Minimizes potential contamination by eliminating several pipeting steps
- Easy confirmation of complete mixing
- No additional loading dye needed – direct loading of final products onto gels
- Generates mostly 3'dA overhang PCR products which are suitable for TA cloning

Ordering information:

Catalogue No.	Description	Pack Size
CLMM01	2X ViRed *Taq* Master Mix	100 applications

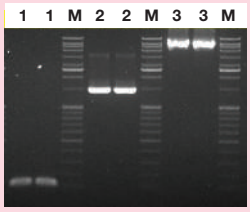
Amplification of 1.5kb DNA fragment from pTZ region DNA using Vivantis 2X ViRed *Taq* Master Mix



1.0 % TBE agarose gel

Lane M : VC 1kb DNA Ladder
Lane 1 : DNA amplification product generated with 1.25U of *Taq* DNA Polymerase
Lane 2 : DNA amplification product generated with 2X ViRed *Taq* Master Mix (stored at -20°C)
Lane 3 : DNA amplification product generated with 2X ViRed *Taq* Master Mix (after 20 freeze-thaw cycles)

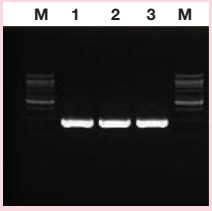
Efficiency analysis of Vivantis 2X ViRed *Taq* Master Mix – minimum & maximum base pair sizes of PCR products generated



1.0 % TBE agarose gel

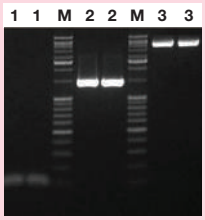
Lane M : VC DNA Ladder Mix
Lane 1 : DNA amplification product at 100bp generated with 2X ViRed *Taq* Master Mix
Lane 2 : DNA amplification product at 1.5kb generated with 2X ViRed *Taq* Master Mix
Lane 3 : DNA amplification product at 5kb generated with 2X ViRed *Taq* Master Mix

Amplification of 1.5kb DNA fragment from pTZ region using Vivantis 2X At*Taq* Master Mix



Lane M : VC 1kb DNA Ladder
Lane 1 : DNA amplification product generated with 1.25U of At*Taq* DNA Polymerase
Lane 2 : DNA amplification product generated with 2X At*Taq* Master Mix (stored at -20°C)
Lane 3 : DNA amplification product generated with 2X At*Taq* Master Mix after 20 freeze-thaw cycles)

Efficiency anaysis of Vivantis 2X At*Taq* Master Mix - minimum and maximum base pair size of PCR product generated



Lane M : VC DNA Ladder Mix
Lane 1 : DNA amplification 100bp product generated with 2X At*Taq* Master Mix
Lane 2 : DNA amplification 1.5kb product generated with 2X At*Taq* Master Mix
Lane 3 : DNA amplification 5kb product generated with 2X At*Taq* Master Mix

2X At*Taq* Master Mix (Hot Start) New!

Features

- Saves time and reduces contamination due to reduced number of pipetting steps
- Stable at 4°C for 6 months, allowing immediate reaction setup without the time consuming thawing of reagents
- Suitable for all routine DNA amplification applications
- Amplification with enhanced specificity, sensitivity and yield
- Amplification with reduced artifacts, such as primer-dimer formation and mispriming in multiplex amplification

Ordering information:

Catalogue No.	Description	Pack Size
PLMM02	2X At*Taq* Master Mix	100 applications

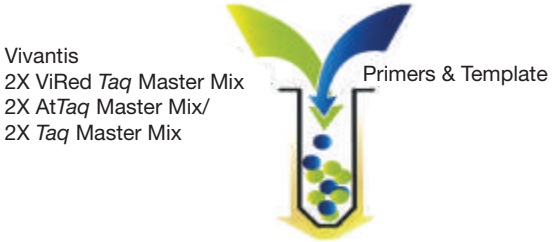
2X *Taq* Master Mix

Features

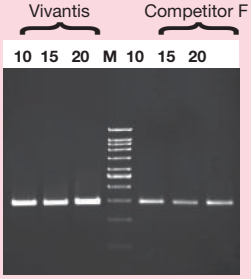
- Convenient: Ready to Use
- TA cloning Compatible: Generates 3'dA overhangs
- Saves time: Reduced number of pipetting steps
- Stable: Freeze-thaw up to 20 cycles
- Reproductive: Decreases contamination & error rate

Ordering information:

Catalogue No.	Description	Pack Size
PLMM01	2X *Taq* Master Mix	100 applications

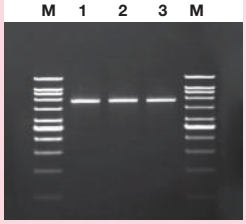


Comparison of Efficiency between Vivantis 2X *Taq* Master Mix with Supplier F after Freeze-thraw cycles



Lane M : VC 1kb DNA Ladder
Lane 1 : DNA amplification product generated with 2X *Taq* Master Mix (after 10 freeze-thaw cycles)
Lane 2 : DNA amplification product generated with 2X *Taq* Master Mix (after 15 freeze-thaw cycles)
Lane 3 : DNA amplification product generated with 2X *Taq* Master Mix (after 20 freeze-thaw cycles)

Amplification of 5Kb DNA Fragment from lambda DNA Using Vivantis 2X *Taq* Master Mix



Lane M : VC 1kb DNA Ladder
Lane 1 : DNA amplification product generate with 1.25u of *Taq* DNA Polymerase
Lane 2 : DNA amplification product generated with 2X *Taq* Master Mix (stored at -20°C)
Lane 3 : DNA amplification product generated with 2X *Taq* Master Mix (after 20 freeze-thaw cycles)

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DNA AMPLIFICATION PRODUCT

2X ViRed *Taq* Master Mix

Product Datasheet

Product No : CLMM01
Quantity : 100 reactions

Lot :
Expiry Date :
Supplied with : 4 x 625µl **2X ViRed *Taq* Master Mix***
3ml of Nuclease-free Water
1ml of 50mM $MgCl_2$

Store at -20°C

*2X ViRed *Taq* Master Mix consists of *Taq* DNA Polymerase, Vibuffer A, dNTPs, $MgCl_2$, inert red dye and stabilizers.

info@vivantechnologies.com

Description :

2X ViRed *Taq* Master Mix is an optimized ready-to-use 2X concentrated DNA amplification mixture premixed with red color tracking dye. The ViRed *Taq* Master Mix contains *Taq* DNA Polymerase, reaction buffer, dNTPs, $MgCl_2$, inert red dye and stabilizers needed for routine DNA amplification to obtain a wide range of PCR and DNA products up to 8kb. An inert red dye and stabilizers allows direct loading of final products onto gels for electrophoresis. The red color dye migrates at approximately 400bp on 1% agarose in 1X TBE Buffer.

Features:

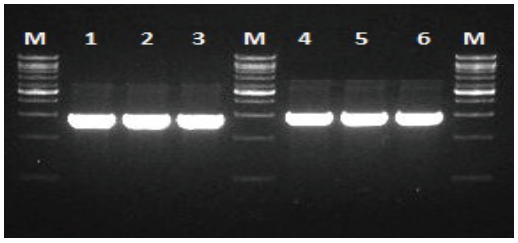
- Suitable for all routine DNA amplification applications
- Reduces set-up time and buffer-dye mixing
- Minimizes potential contamination by eliminating several pipetting steps
- Easy confirmation of complete mixing
- No additional loading dye needed – direct loading of final products onto gels

Storage and Stability:

- Stable at -20°C for 18 months or at 4°C for 6 months if properly stored
- Stable for 20 freeze-thaw cycles. To avoid frequent freeze-thaw, keeping small aliquots at -20°C is recommended
- For daily use, keeping aliquots at 4°C is recommended

Quality Control:

All preparations are assayed for contaminating endonuclease, exonuclease, and non-specific DNase activities. Functionally tested in DNA amplification.



Amplification of 1.5kb DNA fragment from pTZ DNA region using 2X ViRed *Taq* Master Mix in a 50µl reaction mixture (1.0% TBE agarose gel).

Lane M : VC 1kb DNA Ladder
Lane 1 : DNA amplification product generated with 1.25u of *Taq* DNA Polymerase
Lane 2 : DNA amplification product generated with 2X ViRed *Taq* Master Mix (store at -20°C)
Lane 3 : DNA amplification product generated with 2X ViRed *Taq* Master Mix (after 20 freeze-thaw cycles)
Lane M : VC 1kb DNA Ladder
Lane 4 : DNA amplification product generated with 1.25u of *Taq* DNA Polymerase
Lane 5 : DNA amplification product generated with 2X *Taq* Master Mix (store at -20°C)
Lane 6 : DNA amplification product generated with 2X *Taq* Master Mix (after 20 freeze-thaw cycles)

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DSCLMM01_rev0_201016

RECOMMENDED PROTOCOL FOR 2X ViRed *Taq* Master Mix:

Gently mix all solutions after thawing. Spin down briefly and keep on ice.
Add the following components in a 0.2ml thin walled PCR tube on ice.

For 50µl reaction volume:

Reagent:	Volume	Final Concentration
2X ViRed *Taq* Master Mix	25µl	*1X
$MgCl_2$ (50mM)	Refer to Table (A)	**For more than 1.5mM $MgCl_2$
Primers (Fwd / Rev)	Variable	0.1 - 1 µM each
DNA Template	Variable	0.02 - 5µg
Water, nuclease-free	Adjust final volume to 50µl	

*2X ViRed *Taq* Master Mix contains a fixed final $MgCl_2$ concentration of 1.5mM. However, higher concentration may be achieved by adding additional $MgCl_2$. Please refer to Table (A) if higher $MgCl_2$ concentration is preferred.
Note : Smaller reaction volume may be achieved provided that the same final concentration of each reaction component is maintained.

CYCLING CONDITIONS (100bp-5kb)		
Denaturation	94°C for 2 minutes	
Denaturation	94°C for 30 seconds	25 - 35 cycles
Annealing	50 - 68°C for 30 seconds	
Extension / 1kb	72°C for 30 seconds	
Final Extension	72°C for 7 minutes	

This protocol may change depending on the template DNA and primers used.

Table (A) : For more than 1.5mM final $MgCl_2$ concentration

Volume of $MgCl_2$ (50mM) stock to add into 50µl reaction mixture (µl)	Final $MgCl_2$ concentration (mM)
0.5	2.0
1.0	2.5
1.5	3.0
2.0	3.5
2.5	4.0

Product Use Limitation
This product is for research purpose and *in vitro* use only

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