

Bioneer

Healthier Future for
Humanity with
Genomic Technology

All about PCR

Selection chart of Bioneer’s PCR Kits

PreMix

Product	Application								
	Standard PCR	HotStart PCR	Prevent carryover contamination	PCR for gene cloning	PCR for TA cloning	High fidelity PCR	Long range PCR	GC rich PCR	Multiplex PCR
AccuPower®PCR PreMix	√				√				
AccuPower® PCR PreMix (with UDG)	√		√		√				
AccuPower® Taq PCR PreMix	√				√				
AccuPower® HotStart PCR PreMix	√	√			√			√	
AccuPower® HotStart PCR PreMix (with UDG)	√	√	√		√			√	
AccuPower® GoldHotStart Taq PCR PreMix	√	√			√			√	
AccuPower® PyroHotStart Taq PCR PreMix	√	√			√			√	
AccuPower® HotStart Pfu PCR PreMix	√	√		√		√		√	
AccuPower® ProFi Taq PCR PreMix	√			√	√	√	√		
AccuPower® Pfu PCR PreMix	√	√		√		√			
AccuPower® Multiplex PCR PreMix	√	√			√				√
AccuPower® Gold Multiplex PCR PreMix	√	√			√				√

Enzyme

Product		Application							
		Standard PCR	HotStart PCR	PCR for gene cloning	PCR for TA cloning	High fidelity PCR	Long range PCR	GC rich PCR	Multiplex PCR
DNA Polymerase	Top	√			√				
	Taq	√			√				
	Pfu	√		√		√			
	ProFi Taq	√		√	√	√	√		
HotStart DNA Polymerase	Top	√	√		√			√	√
	Taq	√	√		√			√	√



AccuPower® PCR PreMix

Standard PCR Kit with *Top* DNA polymerase

■ Description

AccuPower® PCR PreMix is a convenient lyophilized PCR master mix containing *Top* DNA polymerase, dNTPs, reaction buffer, tracking dye, and our patented stabilizer. AccuPower® PCR PreMix includes our super-processive “three times faster than regular *Taq*” *Top* DNA polymerase for faster nucleic acid amplification. *Top* DNA polymerase is engineered to be faster by the removal of the 5′-3′ exonuclease activity from *Thermus thermophilus* DNA polymerase. The result is an enzyme that is ideal for all applications where you would normally use *Taq*. Its Mastermix version, instead of dried format, is also available.

AccuPower® PCR PreMix is available with or without tracking dye, depending on your application. If purchased a product with tracking dye, final PCR product can be loaded on agarose gels directly without addition of loading buffer.

■ Features and Benefits

Sensitivity:

Sensitivity tests using both lambda DNA and human genomic DNA as template demonstrates equivalent or better sensitivity relative to competitor products.

Ease-of-Use:

All reaction components required for PCR, including DNA polymerase and dNTPs are contained within each tube in a lyophilized “PreMix” form. A user needs only to add template DNA, primers and distilled water. Reagents necessary for loading agarose gels for electrophoresis are already present in the reaction, and there is no need to add loading dye after PCR is completed.

Stability:

AccuPower® PCR PreMix maintains its stability long-term storage due to Bioneer’s unique stabilizer. AccuPower® PCR PreMix maintains full activity after treatment at 95°C for 90 min, whereas standard solution-type master mix will lose at least 1/2 their activity after this heat treatment.

Reproducibility:

AccuPower® PreMix is manufactured under strict ISO 9001 quality control conditions to ensure reproducible PCR performance.

■ Applications

- Conventional PCR
- Primer extension
- TA cloning
- Gene sequencing

■ Specifications

- Enzyme: *Top* DNA polymerase
- 5′ → 3′ exonuclease activity: No
- 3′ → 5′ exonuclease activity: No
- 3′ – A overhang: Yes
- Fragment size: ~ 10 kb

■ Experimental Data

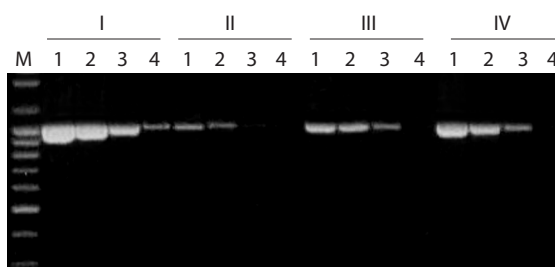


Figure 1. Comparison of sensitivity test for AccuPower® PCR PreMix and other suppliers' products using serially diluted human gDNA. Target gene: human insulin receptor gene.

Lane M: 100 bp DNA Ladder (Bioneer, Cat. no. D-1030)

Lane 1: Human gDNA 10 ng

Lane 2: Human gDNA 1 ng

Lane 3: Human gDNA 100 pg

Lane 4: Human gDNA 10 pg

I: AccuPower® PCR PreMix

II: Supplier A's *Taq* DNA polymerase

III: Supplier B's *Taq* DNA polymerase

IV: Supplier C's PCR PreMix



AccuPower® PCR PreMix (with UDG)

Containing UDG to prevent carryover/crossover contamination

Description

The polymerase chain reaction (PCR) can amplify a single molecule over a billion-fold. Thus, even minuscule amounts of contaminant can be amplified and lead to false positive results. Such contaminants are often products from previous PCR amplifications (carry-over contamination). Therefore, our researchers have developed methods to avoid such contamination. AccuPower® PCR PreMix (with UDG) is a ready-to-use master mix containing all components, except primers, for the amplification and detection of DNA in PCR. The master mix combines *Top* DNA polymerase with integrated UDG carryover prevention technology to provide optimal performance with a variety of PCR detection technologies.

Features and Benefits

Prevention of Carryover Contamination:

UDG and dUTP in the AccuPower® PCR PreMix (with UDG) prevent the re-amplification of carryover PCR products between reactions. dUTP is incorporated into any amplified DNA instead of dTTP, and the uracil is readily removed from single- or double-stranded DNA by UDG, preventing dU-containing DNA from serving as template in the ensuing PCRs. A UDG incubation step (37°C, 2 min) before PCR cycling eliminates any dU-containing contaminant from previous reactions. UDG is then inactivated at high temperatures during normal PCR cycling, thereby allowing the amplification of genuine target sequences only.

Ease-of-Use:

All reaction components required for PCR, including DNA polymerase and dNTPs are contained within each tube in a lyophilized "PreMix" form. A user needs only to add template DNA, primers and distilled water. Reagents necessary for loading agarose gels for electrophoresis are already present in the reaction, and there is no need to add loading dye after PCR is completed.

Reproducibility:

AccuPower® PreMix is manufactured under strict ISO 9001 quality control conditions to ensure reproducible PCR performance.

Applications

- Conventional PCR
- Primer extension
- TA cloning
- Gene sequencing
- Molecular diagnosis

Specifications

- Enzyme: *Top* DNA polymerase
- 5' → 3' exonuclease activity: No
- 3' → 5' exonuclease activity: No
- 3' – A overhang: Yes
- Fragment size: ~ 10 kb

Experimental Data

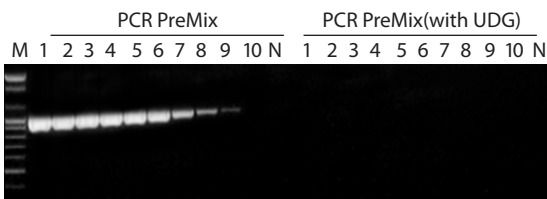


Figure 1. Efficiency of uracil DNA glycosylase using PCR products. (including uracil base)

Efficiency test of uracil DNA glycosylase was operated using serial diluted PCR products including uracil base. AccuPower® PCR PreMix was also tested for negative control. Reaction mixture was incubated at 37°C for 2 min, followed by 95°C for 5 min, 30 cycles of 20 sec at 95°C, 20 sec at 55°C, 30 sec at 72°C.

The copy number of PCR products used to test is represented below.

Lane M: 100 bp DNA ladder (Bioneer Cat. no: D-1030)

Lane 1: 10 ¹¹ copy	Lane 2: 10 ¹⁰ copy	Lane 3: 10 ⁹ copy
Lane 4: 10 ⁸ copy	Lane 5: 10 ⁷ copy	Lane 6: 10 ⁶ copy
Lane 7: 10 ⁵ copy	Lane 8: 10 ⁴ copy	Lane 9: 10 ³ copy
Lane 10: 10 ² copy	Lane N: No template control	

AccuPower® Taq PCR PreMix

Standard PCR Kit with Taq DNA polymerase

■ Description

AccuPower® Taq PCR PreMix is a convenient lyophilized PCR premix containing Taq DNA polymerase, dNTPs, reaction buffer, tracking dye, and patented stabilizer and is pre-aliquoted into 8-tube PCR strips. The premix retains its activity for over a month at room temperature and is stable for two years in -20°C freezer. AccuPower® Taq PCR PreMix is available with or without a tracking dye, depending on application. If purchased with a tracking dye, the PCR products can be loaded on an agarose gel without adding loading buffer.

■ Features and Benefits

Flexible:

AccuPower® Taq PCR PreMix provides accurate amplification of target gene and is highly suitable for all PCR applications.

Sensitivity:

AccuPower® Taq PCR PreMix can detect small amount of human gDNA target with high sensitivity and high amplification efficiency.

Ease-of-Use:

All reaction components required for PCR, including DNA polymerase and dNTPs are contained within each tube in a lyophilized "PreMix" form. A user needs only to add template DNA, primers and distilled water. Reagents necessary for loading agarose gels for electrophoresis are already present in the reaction, and there is no need to add loading dye after PCR is completed.

Stability:

Stable for a month at room temperature and for 2 years in a -20°C freezer.

Reproducibility:

AccuPower® PreMix is manufactured under strict ISO 9001 quality control conditions to ensure reproducible PCR performance.

■ Applications

- Conventional PCR
- Primer extension
- TA cloning
- Gene sequencing

■ Specifications

- Enzyme: Taq DNA polymerase
- 5' → 3' exonuclease activity: Yes
- 3' → 5' exonuclease activity: No
- 3' – A overhang: Yes
- Fragment size: ~ 10 kb

■ Experimental Data

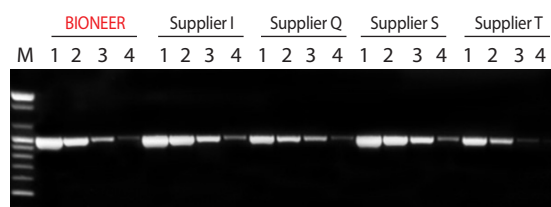


Figure 1. Comparison of PCR amplification efficiency between AccuPower® Taq PCR PreMix from Bioneer and other suppliers' PCR master mix.

Target gene: human insulin receptor gene.

The cycling conditions for AccuPower® Taq PCR PreMix were 95°C for 5 min, 30 cycles of 95°C for 20 sec, 55°C for 20 sec, and 72°C for 30 sec. PCR reactions using other suppliers' PCR master mix were performed according to each suppliers' protocol.

Lane M: 100 bp DNA Ladder (Bioneer, Cat.no. D-1030)

Lane 1: 10 ng human genomic DNA

Lane 2: 1 ng human genomic DNA

Lane 3: 100 pg human genomic DNA

Lane 4: 10 pg human genomic DNA



AccuPower® ProFi Taq PCR PreMix

Long PCR (up to 30 kb) and high fidelity PCR Kit

■ Description

AccuPower® ProFi Taq PCR PreMix is a convenient lyophilized PCR premix containing *ProFi Taq* DNA polymerase, reaction buffer, dNTPs, tracking dye, and a patented stabilizer. *ProFi Taq* DNA polymerase in the premix is a unique recombinant *Taq* DNA polymerase that offers enhanced amplification efficiency and higher fidelity for PCR. AccuPower® ProFi Taq PCR PreMix is applicable to any template DNA, and especially effective in amplifying long genomic DNA fragments around 20 kb. AccuPower® ProFi Taq PCR PreMix provides accurate long-range amplification of standard and amplification of low-copy target, and is highly suitable for all PCR applications.

■ Features and Benefits

Long Range PCR:

AccuPower® ProFi Taq PCR PreMix is especially effective in amplifying long human genomic DNA fragments around 20 kb and Lambda DNA up to 30 kb.

Sensitivity:

AccuPower® ProFi Taq PCR PreMix can detect small amount of human gDNA target with high sensitivity and high amplification efficiency.

Ease-of-Use:

All reaction components required for PCR, including DNA polymerase and dNTPs are contained within each tube in a lyophilized "PreMix" form. A user needs only to add template DNA, primers and distilled water. Reagents necessary for loading agarose gels for electrophoresis are already present in the reaction, and there is no need to add loading dye after PCR is completed.

Stability:

Stable for a month at room temperature and for 2 years in a -20°C freezer.

Reproducibility:

AccuPower® PreMix is manufactured under strict ISO 9001 quality control conditions to ensure reproducible PCR performance.

■ Applications

- Primer extension
- Long range amplification from gDNA
- High amplification efficiency
- Excellent performance on difficult templates
- Amplification of low-copy targets
- High yield and high sensitivity PCR

■ Specifications

- Enzyme: *ProFi Taq* DNA polymerase
- 5' → 3' exonuclease activity: Yes
- 3' → 5' exonuclease activity: Yes
- 3' – A overhang: Yes
- Fragment size: ~ 30 kb

■ Experimental Data

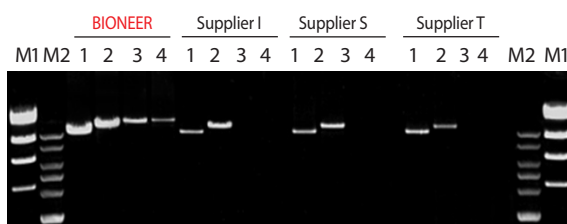


Figure 1. Comparison of PCR amplification of long targets between AccuPower® ProFi Taq PCR PreMix from Bioneer and other suppliers' PCR master mix.

The cycling conditions for AccuPower® ProFi Taq PCR PreMix were 95°C for 5 min, 32 cycles of 95°C for 20 sec and 68°C for 15 min. PCR reactions using other suppliers' PCR master mix were performed according to each suppliers' protocol. Human gDNA was used as a template for PCR amplification.

Lane M1: Lambda/*Hind* III marker (Bioneer, Cat. no. D-1050)

Lane M2: 1 kb DNA Ladder (Bioneer, Cat. no. D-1040)

Lane 1: 11 kb fragment

Lane 2: 13.5 kb fragment

Lane 3: 17.6 kb fragment

Lane 4: 21.4 kb fragment



AccuPower® Pfu PCR PreMix

High fidelity PCR Kit with Pfu DNA polymerase

■ Description

AccuPower® Pfu PCR PreMix is a lyophilized mixture of Pfu DNA polymerase, dNTPs and reaction buffer in a convenient premix format. AccuPower® offers easy set-up for every PCR application. Simply add template, primers and distilled water to the premix.

Bioneer's patented stabilizer maintains the activity of the premix for over a month when stored at room temperature (25°C) and for over 2 years in the freezer (-20°C).

■ Features and Benefits

High Fidelity:

AccuPower® Pfu PCR PreMix contains a high fidelity (error rate = 1.9×10^{-6}) enzyme that reduces errors during DNA amplification.

Sensitivity:

AccuPower® Pfu PCR PreMix can detect small amount of human gDNA target with high sensitivity and high amplification efficiency.

Long Range PCR:

AccuPower® Pfu PCR PreMix is especially effective in amplifying long human genomic DNA fragments around 15 kb.

Ease-of-Use:

All reaction components required for PCR, including DNA polymerase and dNTPs are contained within each tube in a lyophilized "PreMix" form. A user needs only to add template DNA, primers and distilled water. Reagents necessary for loading agarose gels for electrophoresis are already present in the reaction, and there is no need to add loading dye after PCR is completed.

Stability:

Stable for a month at room temperature and for 2 years in a -20°C freezer.

Reproducibility:

AccuPower® PreMix is manufactured under strict ISO 9001 quality control conditions to ensure reproducible PCR performance.

■ Applications

- Gene synthesis
- Gene cloning
- Conventional PCR
- Primer extension
- Site-directed mutagenesis
- High fidelity PCR

■ Specifications

- Enzyme: Pfu DNA polymerase
- 5' → 3' exonuclease activity: No
- 3' → 5' exonuclease activity: Yes
- 3'-A overhang: No
- Fragment size: ~ 15 kb

■ Experimental Data

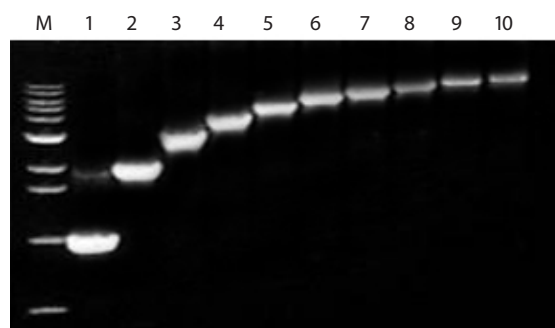


Figure 1. Amplification of lambda DNA of 1 kb to 10 kb with AccuPower® Pfu PCR PreMix.

Lane M: 1 kb DNA Ladder (Bioneer, Cat. no. D-1040)

Lane 1: 1 kb fragment	Lane 6: 6 kb fragment
Lane 2: 2 kb fragment	Lane 7: 7 kb fragment
Lane 3: 3 kb fragment	Lane 8: 8 kb fragment
Lane 4: 4 kb fragment	Lane 9: 9 kb fragment
Lane 5: 5 kb fragment	Lane 10: 10 kb fragment

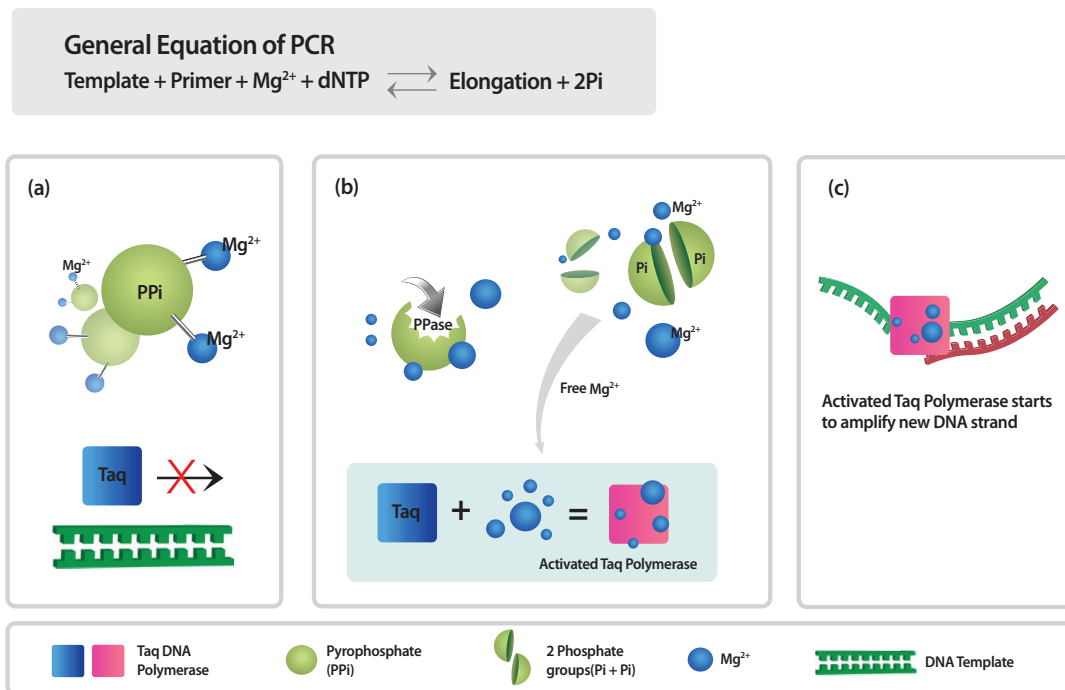
What is HotStart PCR?

HotStart PCR is a general way to obtain the greatest amount of desired PCR product by minimizing the non-specific amplification. There is a possibility to produce non-specific amplicon by mis-annealing at the first step of PCR because *Taq* DNA Polymerase has an activity even at room temperature. HotStart PCR technology allows *Taq* DNA Polymerase to have an activity only at a higher temperature and prevents non-specific amplification by mis-annealing at room temperature. HotStart PCR is accomplished by a method using antibody or enzyme.

Bioneer's *PyroHotStart*?

Apart from other companies using *Taq* antibody technology, Bioneer's HotStart PCR technology employs an enzyme, Pyrophosphatase (PPase), that eliminates Pyrophosphate (PPi) generated during HotStart PCR. Bioneer's enzyme-mediated HotStart PCR technology, *PyroHotStart* is superior in terms of the activity and for its long lasting effect.

Patented *PyroHotStart* method increases PCR specificity and efficiency by hydrolyzing PPi, a polymerase inhibitor generated in every PCR cycle and resolves problems in data analysis caused by non-specific amplification especially when using multiple primer sets in multiplex format.



PPi binds to Mg^{2+} ion with high affinity, which inhibits DNA Polymerase activity and reduces the generation of undesired products at zero cycle (a). At more than 70°C , PPase dissociates the binding of PPi and Mg^{2+} (b) and the dissociated Mg^{2+} ion reacts with DNA polymerase to proceed PCR (c).



AccuPower® HotStart PCR PreMix

Hotstart PCR Kit with *Top* DNA polymerase applied *PyroHotStart* technology

■ Description

AccuPower® HotStart PCR PreMix is a ready-to-use PCR master mix containing a thermostable DNA polymerase, thermostable pyrophosphatase, reaction buffer, dNTPs, tracking dye, and patented stabilizer.

Bioneer uses a unique Enzyme-mediated HotStart PCR, which improves PCR specificity and amplification efficiency by preventing the formation of mis-primed products and primer-dimers during the reaction setup process.

■ Features and Benefits

Specificity:

Pyrophosphate (PPi) has high affinity for Mg^{2+} ion, which is essential for PCR reaction. The binding of PPi to Mg^{2+} inhibits DNA polymerase activity. This prevents the formation of misprimed products and primer-dimers at low temperature. Pyrophosphatase is activated above 70°C and hydrolyzes PPi to Pi which then releases Mg^{2+} to activate DNA polymerase. Thus, it increases PCR efficiency and provides high PCR specificity.

Sensitivity:

AccuPower® HotStart PCR PreMix can detect small amount of human gDNA target with high sensitivity and high amplification efficiency.

Ease-of-Use:

Just add template and primers and start your PCR. dNTPs, buffer and enzyme are provided.

Stability:

Stable at room temperature for a month or for 2 years in a -20°C freezer.

Reproducibility:

AccuPower® PreMix is manufactured under strict ISO 9001 quality control conditions to ensure reproducible PCR performance.

■ Applications

- High specificity PCR
- High sensitivity PCR
- gDNA template PCR
- Low - copy target PCR
- Multiple primer pairs PCR
- cDNA template PCR

■ Specifications

- Enzyme: *Top* DNA polymerase
- 5' → 3' exonuclease activity: No
- 3' → 5' exonuclease activity: No
- 3' – A overhang: Yes
- Fragment size: ~ 12 kb

■ Experimental Data

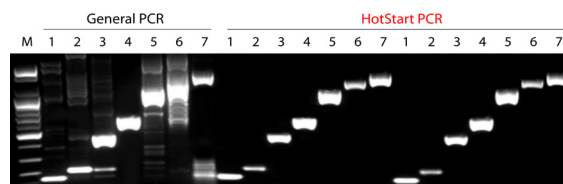


Figure 1. Specificity comparison between AccuPower® PCR PreMix and AccuPower® HotStart PCR PreMix.

Lane M: 100 bp DNA Ladder (Bioneer, Cat. no. D-1030)

Lane 1: P75/P73 primer set (139 bp)

Lane 2: P55/P53 primer set (211 bp)

Lane 3: P55/P63 primer set (447 bp)

Lane 4: P75/P83 primer set (618 bp)

Lane 5: P55/P73 primer ser (1082 bp)

Lane 6: P65/P83 primer set (1296 bp)

Lane 7: P55/P83 primer set (1561 bp)

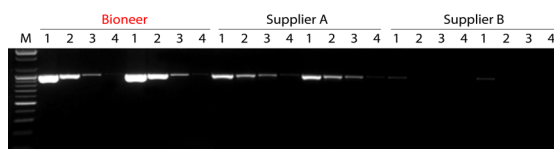


Figure 2. Comparison of PCR amplification sensitivity between AccuPower® HotStart PCR PreMix from Bioneer and other suppliers' HotStart PCR kit.

Lane M: 100 bp DNA ladder (Bioneer, Cat. no D-1030)

Lane 1: Human gDNA 10 ng

Lane 2: Human gDNA 1 ng

Lane 3: Human gDNA 100 pg

Lane 4: Human gDNA 10 pg



AccuPower® HotStart PCR PreMix (with UDG)

Containing UDG to prevent carryover/crossover contamination

Description

Due to the powerful amplification ability of PCR technique, even minuscule amounts of contaminant can be amplified, which leads to a false positive results. Such contaminants are often products from previous PCR amplifications (carryover contamination). Therefore, methods to avoid such contamination have been developed. *AccuPower®* HotStart PCR PreMix (with UDG) is a ready-to-use master mix designed to prevent carryover contamination or crossover contamination by containing UDG (uracil DNA glycosylase). Also, employing enzyme-mediated HotStart PCR technology provides highly specific DNA amplification.

Features and Benefits

Prevention of Carryover Contamination:

UDG and dUTP in the *AccuPower®* HotStart PCR PreMix (with UDG) prevent the re-amplification of carryover PCR products between reactions. dUTP is incorporated into any amplified DNA instead of dTTP, and the uracil is readily removed from single- or double-stranded DNA by UDG, preventing dU-containing DNA from serving as template in the ensuing PCRs. A UDG incubation step (37°C, 2 min) before PCR cycling destroys any dU-containing contaminant from previous reactions. UDG is then inactivated at high temperatures during normal PCR cycling, thereby allowing the amplification of genuine target sequences only.

Specificity:

Enzyme-mediated HotStart PCR technology (*PyroHotStart*) prevents the formation of mis-primed products and primer-dimers during the reaction setup process, which improves PCR specificity and amplification efficiency.

Ease-of-Use:

Just add template and primers, and start your PCR. All reaction components required for PCR, including DNA polymerase and dNTPs. Reagents necessary for loading agarose gels for electrophoresis are already present in the reaction.

Reproducibility:

AccuPower® PreMix is manufactured under strict ISO 9001 quality control conditions to ensure reproducible PCR performance.

Applications

- gDNA template PCR
- Low copy target PCR
- Multiple primer pairs PCR
- cDNA template PCR
- Molecular diagnosis

Specifications

- Enzyme: *Top* DNA polymerase
- 5' → 3' exonuclease activity: No
- 3' → 5' exonuclease activity: No
- 3' – A overhang: Yes
- Fragment size: ~ 12 kb

Experimental Data

	HotStart PCR PreMix									HotStart PCR PreMix(with UDG)								
M	1	2	3	4	5	6	7	8	N	1	2	3	4	5	6	7	8	N

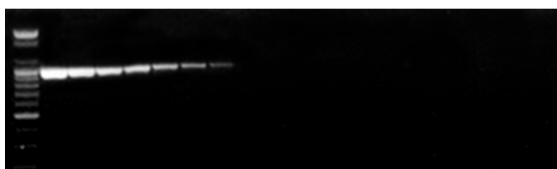


Figure 1. Efficiency of uracil DNA glycosylase using PCR product (including uracil base).

Efficiency test of uracil DNA glycosylase was operated using serial diluted PCR products including uracil base. *AccuPower®* HotStart PCR PreMix was also tested for negative control. Reaction mixture was incubated at 37°C for 2 min followed by 95°C for 5 min, 30 cycles of 20 sec at 95°C, 20 sec at 55°C, 30 sec at 72°C. *AccuPower®* HotStart PCR PreMix(with UDG) contains dUTP besides dATP, dGTP, dCTP and dTTP.

Lane M: 100 bp DNA ladder (Bioneer Cat. no: D-1030)

Lane 1: 10¹¹ copy Lane 2: 10¹⁰ copy

Lane 3: 10⁹ copy Lane 4: 10⁸ copy

Lane 5: 10⁷ copy Lane 6: 10⁶ copy

Lane 7: 10⁵ copy Lane 8: 10⁴ copy

Lane N: No template control



AccuPower® PyroHotStart Taq PCR PreMix

Hotstart PCR Kit with *Taq* DNA polymerase applied *PyroHotStart* technology

■ Description

AccuPower® PyroHotStart Taq PCR PreMix is a ready-to-use HotStart PCR master mix containing a thermostable DNA polymerase, a thermostable pyrophosphatase, reaction buffer, dNTPs, tracking dye, and patented stabilizer. Bioneer uses a unique enzyme-mediated HotStart PCR, which provides robust and reliable results. This prevents the formation of mis-primed products and primer-dimers during the reaction setup process, and improves PCR specificity and amplification efficiency.

■ Features and Benefits

Specificity:

Pyrophosphate (PPI) has high affinity for Mg^{2+} ion, which is essential for PCR reaction. The binding of PPI to Mg^{2+} inhibits DNA polymerase activity. This prevents the formation of misprimed products and primer-dimers at low temperature. Pyrophosphatase is activated above 70°C and hydrolyzes PPI to Pi which then releases Mg^{2+} to activate DNA polymerase. Thus, it increases PCR efficiency and provides high PCR specificity.

Sensitivity:

AccuPower® PyroHotStart Taq PCR PreMix can detect small amount of human gDNA target with high sensitivity and high amplification efficiency.

Ease-of-Use:

All reaction components required for PCR, including thermostable DNA polymerase and dNTPs, are contained within each tube as a lyophilized "PreMix" form. A user needs only to add template DNA, primers and distilled water. Reagents necessary for loading onto agarose gels for electrophoresis are also added in the PreMix, and there is no need to add loading dye after PCR is completed.

Stability:

Stable at room temperature for a month or for 2 years in a -20°C freezer.

Reproducibility:

AccuPower® PreMix is manufactured under strict ISO 9001 quality control conditions to ensure reproducible PCR performance.

■ Applications

- High specific PCR
- High sensitive PCR
- Low-copy target PCR
- Multiple primer pairs PCR
- cDNA template PCR
- TA cloning

■ Specifications

- Enzyme: *Taq* DNA polymerase
- 5' → 3' exonuclease activity: Yes
- 3' → 5' exonuclease activity: No
- 3'-A overhang: Yes
- Fragment size: ~ 5 kb (Human genomic DNA)

■ Experimental Data

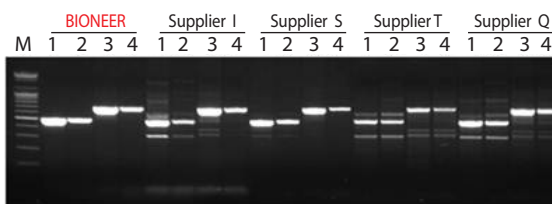


Figure 1. Comparison of PCR amplification specificity between *AccuPower® PyroHotStart Taq* PCR PreMix from Bioneer and other suppliers' HotStart PCR master mix. PCR reactions were performed according to each suppliers' protocol.

Target: Human PrP gene

The PrP gene was amplified from human gDNA with two different primer sets, separately. This data shows that *AccuPower® PyroHotStart Taq* PCR PreMix has higher amplification efficiency and specificity than other suppliers' HotStart PCR master mix.

Lane M: 100 bp DNA Ladder (Bioneer, Cat. no. D-1030)

Lane 1: 100 ng DNA, PrP primer set (500 bp)

Lane 2: 10 ng DNA, PrP primer set (500 bp)

Lane 3: 100 ng DNA, PrP primer set (705 bp)

Lane 4: 10 ng DNA, PrP primer set (705 bp)



AccuPower® GoldHotStart Taq PCR PreMix

High specific Hotstart PCR Kit with GoldHotstart Taq DNA polymerase

■ Description

AccuPower® GoldHotstart Taq PCR PreMix is a convenient lyophilized PCR master mix containing GoldHotstart Taq DNA polymerase, dNTPs, reaction buffer, tracking dye, and patented stabilizer. GoldHotstart Taq DNA polymerase is inhibited at lower temperature, but is activated at during the start of PCR. This prevents the formation of misprimed products, as well as primer-dimers, during the reaction set up process resulting in improved specificity. Its master mix version, instead of dried format, is also available.

■ Features and Benefits

Specificity:

A Non-specific signal is dramatically eliminated by using hotstart technology.

Sensitivity:

AccuPower® GoldHotstart Taq PCR PreMix can detect small amount of human gDNA target with high sensitivity and high amplification efficiency.

Ease-of-Use:

All reaction components required for PCR, including thermostable DNA polymerase and dNTPs, are contained within each tube as a lyophilized "PreMix" form. A user needs only to add template DNA, primers and distilled water. Reagents necessary for loading onto agarose gels for electrophoresis are also added in the PreMix, and there is no need to add loading dye after PCR is completed.

Stability:

Stable at room temperature for a month, or for 2 years in a -20°C freezer.

Reproducibility:

AccuPower® PreMix is manufactured under strict ISO 9001 quality control conditions to ensure reproducible PCR performance.

■ Applications

- High specificity PCR
- High sensitivity PCR
- gDNA template PCR
- Low-copy target PCR
- Multiple primer pairs PCR
- cDNA template PCR
- TA cloning

■ Specifications

- Enzyme: GoldHotStart Taq DNA polymerase
- 5' → 3' exonuclease activity: Yes
- 3' → 5' exonuclease activity: No
- 3' – A overhang: Yes
- Fragment size: ~ 5 kb (human genomic DNA)

■ Experimental Data

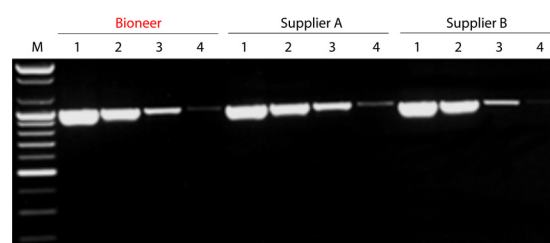


Figure 1. Comparison of PCR amplification efficiency between AccuPower® GoldHotStart Taq PCR PreMix from Bioneer and other suppliers' HotStart PCR master mix.

Target : Human insulin receptor gene.

The cycling conditions for AccuPower® GoldHotStart Taq PCR PreMix were 95°C for 5 min, 30 cycles of 95°C for 30 sec, 55°C for 30 sec and 72°C for 30 sec. PCR reactions using other suppliers' PCR master mix were performed according to each suppliers' protocol.

Lane M: 100 bp DNA Ladder (Bioneer, Cat. no. D-1030)

Lane 1: 10 ng of human gDNA

Lane 2: 1 ng of human gDNA

Lane 3: 100 pg of human gDNA

Lane 4: 10 pg of human gDNA



AccuPower® HotStart Pfu PCR PreMix

High fidelity Hotstart PCR Kit applied *PyroHotStart* PCR technology

■ Description

AccuPower® HotStart Pfu PCR PreMix is a ready-to-use lyophilized master mix containing a thermostable DNA polymerase, a thermostable pyrophosphatase, reaction buffer, dNTPs, tracking dye, and patented stabilizer. AccuPower® HotStart Pfu PCR PreMix uses a unique enzyme-mediated HotStart PCR method that provides high sensitivity and high specificity by reducing pre-PCR mis-priming, primer dimers, artifacts, and other non-specific amplification. Also Pfu DNA polymerase has proof-reading activity, which provides high fidelity.

■ Features and Benefits

High Fidelity:

Proof-reading activity of Pfu DNA polymerase reduces errors and increases fidelity in PCR reaction.

High Specificity:

Pyrophosphate (PPi) has high affinity for Mg^{2+} ion, which is essential for PCR reaction. The binding of PPi to Mg^{2+} inhibits DNA polymerase activity. This prevents the formation of misprimed products and primer-dimers at low temperature. Pyrophosphatase is activated above 70°C and hydrolyzes PPi to Pi which then releases Mg^{2+} to activate DNA polymerase. Thus, it increases PCR efficiency and provides high PCR specificity.

Ease-of-Use:

Just add template and primers and start your PCR. All reaction components required for PCR, including DNA polymerase and dNTPs. Reagents necessary for loading agarose gels for electrophoresis are already present in the reaction.

Reproducibility:

AccuPower® PreMix is manufactured under strict ISO 9001 quality control conditions to ensure reproducible PCR performance.

■ Applications

- Gene cloning with blunt ends
- Site-directed mutagenesis
- High fidelity amplification
- High specificity PCR
- cDNA amplification

■ Specifications

- Enzyme: Pfu DNA polymerase
- 5' → 3' exonuclease activity: No
- 3' → 5' exonuclease activity: Yes
- 3' – A overhang: No
- Fragment size: ~ 5 kb

■ Experimental Data

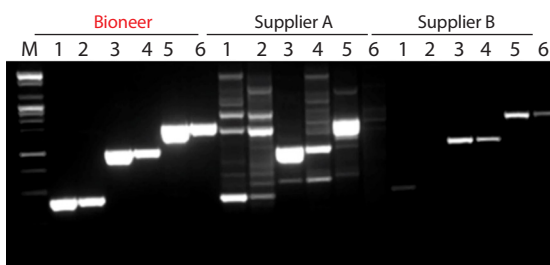


Figure 1. Comparison of PCR amplification specificity between AccuPower® HotStart Pfu PCR PreMix from Bioneer and other suppliers' Pfu DNA polymerase.

Three different primer-template systems were amplified under the same conditions. The cycling conditions were 95°C for 5 min, 35 cycles of 95°C for 30 sec, 62°C for 30 sec, and 72°C for 1 min 30 sec, and 72°C for 5 min for final extension.

Lane M: 100 bp DNA Ladder (Bioneer, Cat. no. D-1030)

Lane 1: 100 ng DNA, ApoE primer set (268 bp)

Lane 2: 10 ng DNA, ApoE primer set (268 bp)

Lane 3: 100 ng DNA, PrP primer set (500 bp)

Lane 4: 10 ng DNA, PrP primer set (500 bp)

Lane 5: 100 ng DNA, PrP primer set (705 bp)

Lane 6: 10 ng DNA, PrP primer set (705 bp)



AccuPower® Multiplex PCR PreMix

Multiplex PCR Kit detecting up to 20 targets simultaneously in a single tube

■ Description

AccuPower® Multiplex PCR PreMix is an innovative item to obtain 20 PCR products with only a single reaction in a tube, by performing a multiplex PCR that can detect up to 20 target genes at a time. It is supplied as a single-use lyophilized premix, containing all the components required for PCR such as dNTP, reaction buffer and HotStart *Top* DNA polymerase that amplifies only a target sequence. AccuPower® Multiplex PCR PreMix is also applicable to molecular diagnostic genotyping assays and semi-quantitative gene expression tests using cDNA.

■ Features and Benefits

Multiplex PCR:

Up to 20 different target genes from human genomic DNA can be amplified in a single tube.

Specificity:

Antibody-based HotStart *Top* Polymerase amplifies only a target gene by preventing the formation of misprimed products and primer-dimers.

Ease-of-Use:

All reaction components required for PCR, including thermostable DNA polymerase and dNTPs are contained within each tube and in a lyophilized "PreMix" form. The user needs only to add template DNA, primers and distilled water to perform up to 20-plex PCR. Reagents necessary for agarose gel electrophoresis are already present in the reaction, and there is no need to add loading dye after PCR is completed.

Reproducibility:

AccuPower® PreMix is manufactured under strict ISO 9001 quality control conditions to ensure reproducible PCR performance.

■ Applications

- STR analysis
- Molecular diagnostic analysis
- Genotyping assay
- Qualitative, semi-qualitative gene expression assay
- Mutant screening
- Transgenic organism analysis

■ Specifications

- Enzyme: HotStart *Top* DNA polymerase
- 5' -> 3' exonuclease activity: No
- 3' -> 5' exonuclease activity: No
- 3' - A overhang: Yes
- Fragment size: ~1 kb

■ Experimental Data

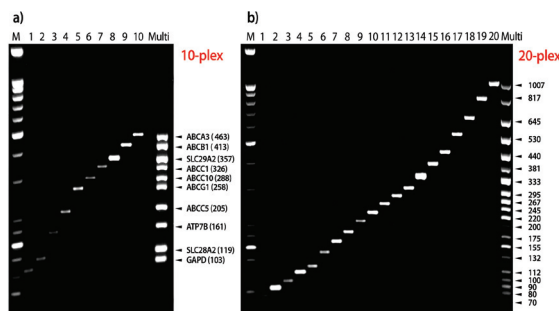


Figure 1. Single PCR and multiplex PCR using AccuPower® Multiplex PCR PreMix.

Each lane from left to right indicates the single and multiplex PCR product using AccuPower® Multiplex PCR PreMix.

a) 10-plex multiplex PCR

b) 20-plex multiplex PCR

M: 25/100 bp Mixed DNA Ladder (Bioneer, Cat. no. D-1020)



AccuPower® Gold Multiplex PCR PreMix

Multiplex PCR Kit applied *PyroHotStart* technology detects up to 20 targets simultaneously in a single tube

■ Description

AccuPower® Gold Multiplex PCR PreMix can amplify up to 20 target genes in a single tube. AccuPower® Gold Multiplex PCR PreMix contains Bioneer's unique enzyme-mediated HotStart technology with Pyrophosphatase (PPase) and Pyrophosphate (PPi) for efficient suppression of non-specific products and enhanced amplification specificity. AccuPower® Gold Multiplex PCR PreMix can be used for a variety of applications including genotyping assays or molecular diagnostics, and can also be used for cDNA-based semi-quantitative assays.

■ Features and Benefits

Multiplex:

Up to 20 different target genes from human genomic DNA can be amplified in a single tube.

Specificity:

Pyrophosphate (PPi) has high affinity for Mg^{2+} ion, which is essential for PCR reaction. The binding of PPi to Mg^{2+} inhibits DNA polymerase activity. This prevents the formation of misprimed products and primer-dimers at low temperature. Pyrophosphatase is activated above 70°C and hydrolyzes PPi to Pi which then releases Mg^{2+} to activate DNA polymerase. Thus, it increases PCR efficiency and provides high PCR specificity.

Ease-of-Use:

All reaction components required for PCR, including thermostable DNA polymerase and dNTPs are contained within each tube and in a lyophilized "PreMix" form. The user needs only to add template DNA, primers and distilled water to perform up to 20-plex PCR. Reagents necessary for agarose gel electrophoresis are already present in the reaction, and there is no need to add loading dye after PCR is completed.

Reproducibility:

AccuPower® PreMix is manufactured under strict ISO 9001 quality control conditions to ensure reproducible PCR performance.

■ Applications

Target	Application
Human and Animal	STR analysis for determining genetic profiles in forensic cases
	Molecular diagnostic analysis
	Genotyping assay
	Qualitative and semi-qualitative gene expression assay
	Mutant screening
	Transgenic organism analysis
Plant	STR analysis
	Detection of pathogens/bacterial infection
	Transgenic organism analysis
	Qualitative and semi-qualitative gene expression assay

■ Specifications

- Enzyme: *Top* DNA polymerase
- 5' → 3' exonuclease activity: No
- 3' → 5' exonuclease activity: No
- 3' – A overhang: Yes
- Fragment size: ~ 1 kb

■ Experimental Data

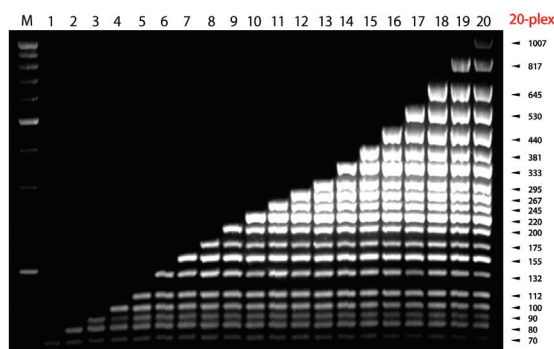


Figure 1. High specificity of AccuPower® Gold Multiplex PCR PreMix. Each lane from left to right represents the progressive number of primer sets (1 – 20) included in single AccuPower® Gold Multiplex PCR PreMix reactions.

Rxn. Condition: 95°C for 10 min, followed by 35 cycles of 30 sec at 95°C, 30 sec at 57°C, 60 sec at 72°C

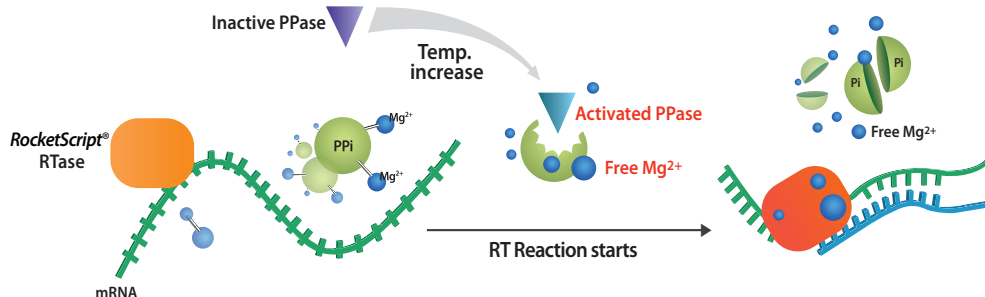
M: 25/100 bp Mixed DNA Ladder (Bioneer, Cat. no. D-1020)

What is *Dual-HotStart*™ Technology?

Dual-HotStart™ technology is a method to detect existence of target RNA from complex mixture of RNA samples with high sensitivity and specificity. This technology utilizes Bioneer's patented enzyme-mediated hotstart method (*PyroHotStart*) for reverse transcription and antibody-based hotstart method for PCR amplification. *Dual-HotStart*™ eliminates non-specific cDNA synthesis as well as non-specific DNA amplification, and enables the most sensitive one-step RT-PCR, multiplex RT-PCR and RT-qPCR assays.

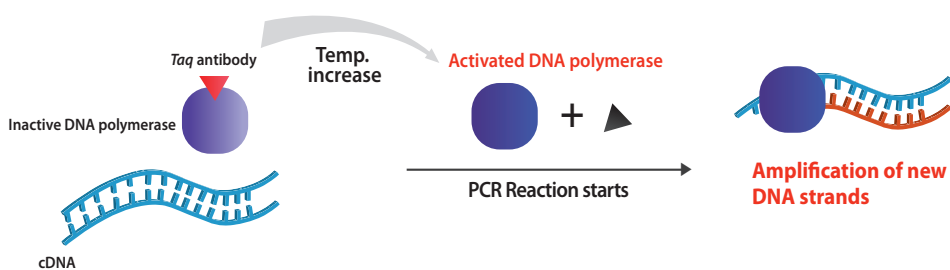
Bioneer's *Dual-HotStart*™ Technology

Dual-HotStart™ Technology



1st hotstart reaction: Hotstart RT

PyroHotStart removes non-specific background of cDNA synthesis by eliminating the chance of non-specific primer binding and self-priming of extracted RNA. *RocketScript*™ Reverse Transcriptase has thermostable activity (>50°C) that is core element for hotstart reaction at the cDNA synthesis step.



2nd hotstart reaction: Hotstart PCR & qPCR

Antibody-based hotstart applied PCR is able to obtain the highly specific product by activating the DNA polymerase at certain temperature.



AccuPower® Dual-HotStart™ RT-PCR PreMix

High Specificity and High Sensitivity one-step RT-PCR Kit with *RocketScript™* RTase and HotStart *Taq* DNA polymerase

Description

AccuPower® Dual-HotStart™ RT-PCR PreMix amplifies only a target gene specifically due to *Dual-HotStart™* technology applied to both reverse transcription and PCR reaction. cDNA synthesis of your selective RNA will be performed with high sensitivity from a small amount of template RNA. Successive PCR amplification of synthesized cDNA also occurs via a one-step reaction with cDNA synthesis. This one-step RT-PCR product is easily generated with excellent sensitivity for a wide range of applications, including several types of virus tests and gene expression analysis experiments.

Features and Benefits

Specificity:

Accurate target gene is amplified by using our premier *Dual-HotStart™* RT-PCR reaction which utilizes *Pyro-HotStart* RT reaction and HotStart PCR.

Sensitivity:

Low detection limit with the smallest amount of your target template RNA, even in highly concentrated sample.

Applicable to Various Template RNAs:

RocketScript™ RTase included in this kit achieves RT reaction in unusually high temperature up to 70°C. So it is possible to adopt various template RNAs even if they have a complex secondary structure.

Ease-of-Use:

All reaction components required for RT-PCR, including thermostable DNA polymerase, *RocketScript™* RTase, and dNTPs are contained within each tube and in a lyophilized "PreMix" form. The user needs only to add template RNA, primers and distilled water into the tube. Reagents necessary for agarose gel electrophoresis are already present in the reaction, and there is no need to add loading dye after PCR is completed.

Reproducibility:

AccuPower® PreMix is manufactured under strict ISO 9001 quality control conditions to ensure reproducible PCR performance.

Applications

- Gene expression profiling
- Target RNA quantification
- Microbial detection
- Viral/bacterial pathogen load determination

Specifications

- Enzyme: *RocketScript™* RTase, HotStart *Taq* DNA polymerase
- 5' → 3' exonuclease activity: Yes
- 3' → 5' exonuclease activity: No
- 3' – A overhang: Yes
- RNase H activity: Yes
- Fragment size: ~ 3 kb

Experimental Data

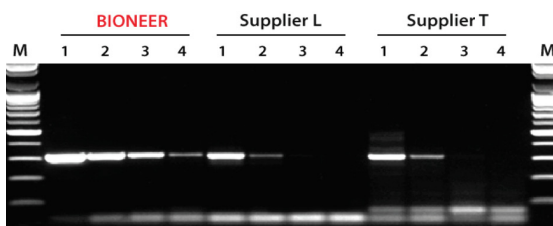


Figure 1. Comparison of PCR amplification sensitivity between AccuPower® Dual-HotStart™ RT-PCR PreMix from Bioneer and other suppliers' Hotstart RT-PCR kits.

Target: human PGK1

Lane M: 100 bp DNA Ladder (Bioneer, Cat. no. D-1030)

Lane 1: 10 ng of human RNA

Lane 2: 1 ng of human RNA

Lane 3: 100 pg of human RNA

Lane 4: 10 pg of human RNA



AccuPower® Dual-HotStart™ RT-PCR PreMix (with UDG)

High Specificity and High Sensitivity one-step RT-PCR Kit containing UDG to prevent carryover/crossover contamination

Description

AccuPower® Dual-HotStart™ RT-PCR PreMix (with UDG) is a ready-to-use master mix designed to prevent carryover contamination or crossover contamination by containing UDG (uracil DNA glycosylase). Also, Dual-HotStart™ technology applied to the kit enables highly specific DNA amplification. cDNA synthesis of your selective RNA will be performed with high sensitivity from a small amount of template RNA. Successive PCR amplification of synthesized cDNA also occurs via a one-step reaction with cDNA synthesis.

Features and Benefits

Prevention of Carryover Contamination:

UDG and dUTP in the AccuPower® HotStart PCR PreMix (with UDG) prevent the re-amplification of carryover PCR products between reactions. dUTP is incorporated into any amplified DNA instead of dTTP, and the uracil is readily removed from single- or double-stranded DNA by UDG, preventing dU-containing DNA from serving as template in the ensuing PCRs. A UDG incubation step (37°C, 2 min) before PCR cycling destroys any dU-containing contaminant from previous reactions. UDG is then inactivated at high temperatures during normal PCR cycling, thereby allowing the amplification of genuine target sequences only.

Specificity:

Accurate target gene is amplified by using our premier Dual-HotStart™ RT-PCR reaction which utilizes Pyro-HotStart RT reaction and HotStart PCR.

Sensitivity:

Low detection limit with the smallest amount of your target template RNA, even in highly concentrated sample.

Applicable to Various Template RNAs:

RocketScript™ RTase included in this kit achieves RT reaction in unusually high temperature up to 70°C. So it is possible to adopt various template RNAs even if they have a complex secondary structure.

Ease-of-Use:

All reaction components required for RT-PCR, including thermostable DNA polymerase, RocketScript™ RTase, and dNTPs are contained within each tube and in a lyophilized "PreMix" form. The user needs only to add template RNA, primers and distilled water into the tube. Reagents necessary for agarose gel electrophoresis are already present in the reaction, and there is no need to add loading dye after PCR is completed.

Reproducibility:

AccuPower® PreMix is manufactured under strict ISO 9001 quality control conditions to ensure reproducible PCR performance.

Applications

- Gene expression profiling
- Target RNA quantification
- Microbial detection
- Viral/bacterial pathogen load determination

Specifications

- Enzyme: RocketScript™ RTase, HotStart Taq DNA polymerase
- 5' → 3' exonuclease activity: Yes
- 3' → 5' exonuclease activity: No
- 3' – A overhang: Yes
- RNase H activity: Yes
- Fragment size: ~ 3 kb

Experimental Data

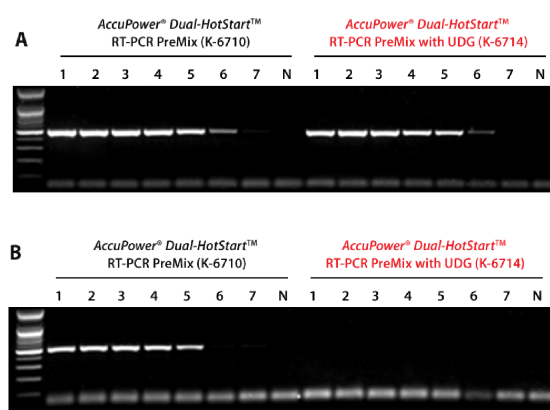


Figure 1. Comparison of amplification quality using PCR products (not including uracil base or including uracil base) between AccuPower® Dual-HotStart™ RT-PCR PreMix and AccuPower® Dual-HotStart™ RT-PCR PreMix (with UDG).

A: PCR products (not including uracil base)

B: PCR products (including uracil base)

Lane 1: 10⁸ Lane 2: 10⁷ Lane 3: 10⁶
Lane 4: 10⁵ Lane 5: 10⁴ Lane 6: 10³
Lane 7: 10² Lane N: NTC

● **Top DNA Polymerase**

Enzyme for everyday PCR, faster than *Taq* DNA Polymerase, and TA Cloning compatible

Features and Benefits

High Yields :

Three times more processive than standard *Taq* DNA Polymerase.

High Performance:

Amplifies fragments up to 10 kb.

Stable Reaction:

Optimized reaction buffer enhances PCR performance.

Reproducibility:

Bioneer's product is produced under strict quality control and provides accurate and reproducible results.

● **Taq DNA Polymerase**

Versatile DNA polymerase for everyday routine PCR

Features and Benefits

Improved Yield & Sensitivity:

Perform PCR with high yield and high sensitivity using Bioneer *Taq* DNA polymerase.

Versatility:

Use for a wide range of DNA amplifications including Real-Time PCR using *TaqMan* probe or SYBR Green.

Stable Reaction:

Optimized reaction buffer enhances PCR performance.

Reproducibility:

Bioneer's product is produced under strict quality control and provides accurate and reproducible results.

● **Pfu DNA Polymerase**

Enzyme for high fidelity PCR with DNA proofreading

Features and Benefits

High Fidelity PCR:

3' → 5' exonuclease (proofreading) activity.

Thermostability:

Retaining 94-99% of the activity after one hour incubation at 95°C.

No Terminal Transferase Activity:

Devoid of terminal transferase activity, it generates blunt-ended PCR products.

Reproducibility:

Bioneer's product is produced under strict quality control and provides accurate and reproducible results.

● **ProFi Taq DNA polymerase**

Enzyme for highly efficient long-range PCR

Features and Benefits

Long PCR:

ProFi Taq is especially effective in amplifying human genomic DNA fragments around 20 kb and Lambda DNA up to 30 kb.

Flexible:

ProFi Taq provides accurate long-range PCR of standard and low-copy targets for all applications.

Reproducibility :

Bioneer's product is produced under strict quality control and provides accurate and reproducible results.

● **HotStart DNA Polymerase**

Unique enzyme-mediated HotStart DNA Polymerase

Features and Benefits

High Sensitivity & High Specificity:

Prevent the formation of mis-primed products and primer-dimers during the reaction setup process by inhibiting activity of DNA polymerase at room temperature.

Improve Product Yields:

Yield of target DNA is increased due to high sensitivity and specificity

Reproducibility:

Bioneer's product is produced under strict quality control and provides accurate and reproducible results.

● **HotStart Taq DNA Polymerase**

Antibody-based HotStart Taq DNA polymerase

Features and Benefits

High Sensitivity & High Specificity:

Prevent the formation of mis-primed products and primer-dimers during the reaction setup process by inhibiting activity of DNA polymerase at room temperature.

Improve Product Yields:

Yield of target DNA is increased due to high sensitivity and specificity.

TA Cloning Compatible:

PCR products amplified with HotStart Taq DNA polymerase have 3'-A overhang and can be used for TA cloning.

Reproducibility:

Bioneer's product is produced under strict quality control and provides accurate and reproducible results.

Ordering Information

PreMix Type

Cat. no	Product Name
K-2012	<i>AccuPower</i> [®] PCR PreMix, 96 tubes, 20 µl reaction
K-2013	<i>AccuPower</i> [®] PCR PreMix, 96 tubes, 50 µl reaction
K-2012-1	<i>AccuPower</i> [®] PCR PreMix(with UDG), 96 tubes, 20 µl reaction
K-2601	<i>AccuPower</i> [®] <i>Taq</i> PCR PreMix, 96 tubes, 20 µl reaction
K-2603	<i>AccuPower</i> [®] <i>Taq</i> PCR PreMix, 96 tubes, 50 µl reaction
K-2022	<i>AccuPower</i> [®] <i>Pfu</i> PCR PreMix, 96 tubes, 20 µl reaction
K-2023	<i>AccuPower</i> [®] <i>Pfu</i> PCR PreMix, 96 tubes, 50 µl reaction
K-2631	<i>AccuPower</i> [®] <i>ProFi Taq</i> PCR PreMix, 96 tubes, 20 µl reaction
K-2633	<i>AccuPower</i> [®] <i>ProFi Taq</i> PCR PreMix, 96 tubes, 50 µl reaction
K-5050	<i>AccuPower</i> [®] HotStart PreMix, 96 tubes, 20 µl reaction
K-5052	<i>AccuPower</i> [®] HotStart PreMix, 96 tubes, 50 µl reaction
K-5051-1	<i>AccuPower</i> [®] HotStart PreMix(with UDG), 96 tubes, 20 µl reaction
K-2611	<i>AccuPower</i> [®] <i>PyroHotStart Taq</i> PreMix, 96 tubes, 20 µl reaction
K-2613	<i>AccuPower</i> [®] <i>PyroHotStart Taq</i> PreMix, 96 tubes, 50 µl reaction
K-2621	<i>AccuPower</i> [®] <i>GoldHotStart Taq</i> PreMix, 96 tubes, 20 µl reaction
K-2623	<i>AccuPower</i> [®] <i>GoldHotStart Taq</i> PreMix, 96 tubes, 50 µl reaction
K-2301	<i>AccuPower</i> [®] HotStart <i>Pfu</i> PreMix, 96 tubes, 20 µl reaction
K-2302	<i>AccuPower</i> [®] HotStart <i>Pfu</i> PreMix, 96 tubes, 50 µl reaction
K-2111	<i>AccuPower</i> [®] Multiplex PCR PreMix, 96 tubes, 20 µl reaction
K-2112	<i>AccuPower</i> [®] Multiplex PCR PreMix, 96 tubes, 50 µl reaction
K-2115	<i>AccuPower</i> [®] Gold Multiplex PCR PreMix, 96 tubes, 20 µl reaction
K-2117	<i>AccuPower</i> [®] Gold Multiplex PCR PreMix, 96 tubes, 50 µl reaction
K-6710	<i>AccuPower</i> [®] <i>Dual-HotStart</i> [™] RT-PCR PreMix, 96 tubes, 20 µl reaction
K-6711	<i>AccuPower</i> [®] <i>Dual-HotStart</i> [™] RT-PCR PreMix, 96 tubes, 50 µl reaction
K-6714	<i>AccuPower</i> [®] <i>Dual-HotStart</i> [™] RT-PCR PreMix(with UDG), 96 tubes, 20 µl reaction
K-6715	<i>AccuPower</i> [®] <i>Dual-HotStart</i> [™] RT-PCR PreMix(with UDG), 96 tubes, 50 µl reaction

Enzyme Type

Cat. no	Product Name
E-3100	<i>Top</i> DNA Polymerase 500 Units
E-2011	<i>Taq</i> DNA Polymerase 500 Units
E-2015	<i>Pfu</i> DNA Polymerase 500 Units
E-2201	<i>ProFi Taq</i> DNA Polymerase 250 Units
E-3150	HotStart DNA Polymerase 250 Units
E-2017	HotStart <i>Taq</i> DNA Polymerase 250 Units

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