



PCR Enzyme Guide

Highly Sensitive and Efficient DNA Amplification



The Bioline PCR Enzyme Guide

Bioline produces one of the broadest portfolios of premium quality PCR Enzymes.

This PCR Enzyme Guide aims to simplify your polymerase selection process.

Each DNA Polymerase has different characteristics and for optimal results, it is crucial to choose the enzyme that suits your application. For your convenience and to achieve optimal PCR, many of our most popular PCR enzymes are also available in practical, ready-to-use 2x Mastermixes which contain polymerase, dNTPs, MgCl₂ and additional additives.

Polymerase Selection Table

| POLYMERASE | APPLICATIONS | SUITABLE TEMPLATE LENGTH | HEAT-ACTIVATED |
|--------------------------|--|--------------------------|----------------|
| ACCUZYME™ | Ultra-High Fidelity PCR for subsequent cloning | Up to 5Kb | NO |
| NEW ACCUZYME™ Red | Ultra-High Fidelity PCR with visual recognition | Up to 5Kb | NO |
| ACCUZYME™ Mix | Ultra-High Fidelity PCR and minimal handling | Up to 5Kb | NO |
| AccuSure™ | Hot-Start PCR with High-Fidelity | Up to 5Kb | YES |
| AccuSure™ Mix | High-Fidelity and minimal handling | Up to 5Kb | YES |
| NEW SAHARA™ | Low-Copy templates | Up to 5Kb | YES |
| IMMOLASE™ | Hot-Start PCR and Quantitative Assays | Up to 5Kb | YES |
| ImmoMix™ / ImmoMix™ Red | Hot-Start PCR and minimal handling | Up to 5Kb | YES |
| BIO-X-ACT™ Short | Problematic PCR Assays | Up to 5Kb | NO |
| BIO-X-ACT™ Short Mix | Problematic PCR Assays and minimal handling | Up to 5Kb | NO |
| BIO-X-ACT™ Long | Problematic long PCR Assays | 3 - 20Kb | NO |
| BIO-X-ACT™ Long Mix | Problematic long PCR Assays and minimal handling | 3 - 20Kb | NO |
| BIOLASE™ / BIOLASE™ Red | Highly Sensitive PCR with High Yields | Up to 5Kb | NO |
| BioMix™ / BioMix™ Red | Highly Sensitive PCR and minimal handling | Up to 5Kb | NO |
| MangoTaq™ | High-Throughput PCR | Up to 5Kb | NO |
| NEW MangoMix | High-Throughput PCR and minimal handling | Up to 5Kb | NO |
| Taq DNA Polymerase | Routine PCR | Up to 5Kb | NO |



| SENSITIVITY/LOW-COPY TEMPLATES | SPECIFICITY | FIDELITY | PROBLEM TEMPLATES | 3' END MODIFICATION | PAGE |
|--------------------------------|-------------|----------|-------------------|---------------------|------|
| * | * | *** | * | Blunt | 04 |
| * | * | *** | * | Blunt | 04 |
| * | * | *** | * | Blunt | 04 |
| * | ** | *** | * | Blunt | 09 |
| * | ** | *** | * | Blunt | 09 |
| *** | *** | ** | *** | Mix (3'-dA + Blunt) | 08 |
| ** | *** | | * | 3'-dA | 12 |
| ** | *** | | * | 3'-dA | 13 |
| *** | ** | ** | *** | Mix (3'-dA + Blunt) | 06 |
| *** | ** | ** | ** | Mix (3'-dA + Blunt) | 07 |
| ** | ** | ** | *** | Mix (3'-dA + Blunt) | 06 |
| ** | ** | ** | ** | Mix (3'-dA + Blunt) | 07 |
| ** | * | | * | 3'-dA | 10 |
| ** | * | | * | 3'-dA | 11 |
| ** | * | | * | 3'-dA | 15 |
| ** | * | | * | 3'-dA | 15 |
| ** | * | | * | 3'-dA | 14 |

ACCU Range for High Fidelity PCR

The ACCU range of polymerases from Bioline is based on ACCUZYME™ DNA Polymerase.

ACCUZYME is a thermostable enzyme possessing 5'-3' DNA polymerase and 3'-5' proof-reading exonuclease activities, offering extremely high fidelity (up to 47-fold higher fidelity than *Taq*).

ACCUZYME possesses very high PCR sensitivity and is ideally suited to low-copy target amplifications.

ACCUZYME features many properties in one polymerase and is considerably faster than conventional proof-reading polymerases.

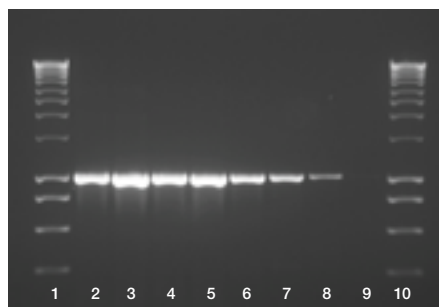
ACCUZYME™ DNA Polymerase

Features

- **High fidelity coupled with robust activity**
- **Very high PCR sensitivity, suited to low-copy assays**
- **Fast: As little as 30 seconds per Kb**
- **Processes fragments up to 5Kb**
- **Produces blunt ends**

Applications

- **Ultra-high fidelity PCR for subsequent cloning**



High Performance with ACCUZYME™

A serial dilution of template was performed to demonstrate the high performance of ACCUZYME, even at low DNA concentrations.

Lanes 1 & 10: HyperLadder I
Lane 2: 0,5ng λ DNA
Lanes 3-9: 10-fold dilution series

ACCUZYME™ Red NEW

Features

- **Same high fidelity and robust activity as ACCUZYME™**
- **Direct loading onto agarose gels**
- **Easy visual recognition**

ACCUZYME™ Mix

Features

- **Convenient pre-mixed, pre-optimized 2x solution**
- **Same high fidelity and robust activity as ACCUZYME™**
- **Scalable: Set-Up 10µl, 25µl, or 50µl PCR Reactions**

ACCU Range

| DESCRIPTION | PACK SIZE | CAT NO. | PRICE |
|------------------------------|---------------|-----------|----------|
| ACCUZYME™ DNA Polymerase | 250 Units | BIO-21051 | \$95.00 |
| ACCUZYME™ DNA Polymerase | 500 Units | BIO-21052 | \$155.00 |
| ACCUZYME™ Red DNA Polymerase | 250 Units | BIO-21091 | \$99.00 |
| ACCUZYME™ Red DNA Polymerase | 500 Units | BIO-21092 | \$165.00 |
| ACCUZYME™ Mix, 2x | 100 Reactions | BIO-25027 | \$60.00 |
| ACCUZYME™ Mix, 2x | 500 Reactions | BIO-25028 | \$275.00 |

For Custom, Bulk and OEM services, please contact info@bioline.com

References:
Wolkow, T.D. & Enoch. *BMC Genetics* 4:6, (2003).
Chan Kwo Chion, C.K., Askew, S.E. & Leak, D.J. *Applied and environmental microbiology* 71(4), 1909-1914 (2005).
Mandola, M.V., Stoehlmacher, J., Muller-Weeks, S., Cesarone, G., Yu, M.C., Lenz, H.J. & Ladner, R.D. *Cancer Research* 63(11), 2898-2904 (2003).



Bioline has over 15 years expertise in the development of DNA polymerases and is a leading supplier of reagents to the scientific community. The use of our reagents is widely cited in scientific journals and our products are available in more than 30 nations worldwide.

At Bioline we continue to develop new polymerases, our most recent being SAHARA™ DNA Polymerase, designed specifically for low-copy templates.

Free samples of most of our Polymerases are available on request from your local Bioline facility.

BIO-X-ACT™ Range for Long or Difficult PCR

The BIO-X-ACT™ range of polymerases from Bioline is based on BIO-X-ACT DNA Polymerase.

Two versions of BIO-X-ACT DNA polymerase are available, for short and long fragments respectively, and are the polymerases of choice for difficult PCR applications that would otherwise fail. BIO-X-ACT DNA polymerases contain a proprietary complex of enzymes specifically designed for difficult/problematic PCR applications requiring high processivity and fidelity.

BIO-X-ACT Short and Long are ideal for direct cloning without the need to verify the sequence prior to expression. The reagents possess 5'-3' polymerase activity and 3'-5' proofreading activity, which, in combination with other properties, provides 17-fold higher fidelity than *Taq*.

BIO-X-ACT™ Range

| DESCRIPTION | PACK SIZE | CAT NO. | PRICE |
|---------------------------------|---------------|-----------|-------|
| BIO-X-ACT™ Long DNA Polymerase | 250 Units | BIO-21049 | \$180 |
| BIO-X-ACT™ Long DNA Polymerase | 500 Units | BIO-21050 | \$320 |
| BIO-X-ACT™ Short DNA Polymerase | 250 Units | BIO-21064 | \$180 |
| BIO-X-ACT™ Short DNA Polymerase | 500 Units | BIO-21065 | \$320 |
| BIO-X-ACT™ Long Mix, 2x | 100 Reactions | BIO-25023 | \$95 |
| BIO-X-ACT™ Long Mix, 2x | 500 Reactions | BIO-25024 | \$450 |
| BIO-X-ACT™ Short Mix, 2x | 100 Reactions | BIO-25025 | \$95 |
| BIO-X-ACT™ Short Mix, 2x | 500 Reactions | BIO-25026 | \$450 |
| SureBand PCR Optimization Kit* | 12 x 1ml | BIO-37088 | \$109 |

*Contains 12 Buffers and Enzyme (BIO-X-ACT Short)

BIO-X-ACT™ Short DNA Polymerase

BIO-X-ACT™ Short is recommended for short Genomic DNA fragments of up to 2Kb, or Lambda DNA fragments up to 5Kb. With Lambda DNA as template, the best performance is achieved within the 100bp to 3Kb range.

Features

- **Ideal for problematic templates**
- **Ideal for templates that fail with *Taq***
- **17-fold higher fidelity than *Taq***

Applications

- **For problematic templates of <5Kb.**

BIO-X-ACT™ Long DNA Polymerase

BIO-X-ACT™ Long is recommended for long Genomic DNA fragments of up to 20Kb, or Lambda DNA fragments up to 30Kb. With Lambda DNA as template, the best performance is achieved within the 2Kb to 20Kb range.

features

- **Protocols supplied with reagents**
- **Incorporates derivatized dNTPs**

Applications

- **For problematic templates of <20Kb.**



Long Range PCR with BIO-X-ACT Long

BIO-X-ACT Long is a polymerase ideally suited to the amplification of long DNA fragments. A 20Kb fragment of Lambda DNA was amplified using BIO-X-ACT Long DNA Polymerase. Lane 1: HyperLadder I (top band = 10Kb) Lane 2: Amplification of a 20Kb Lambda DNA fragment

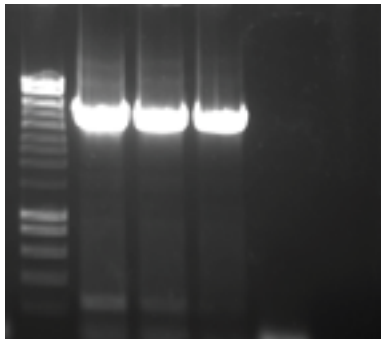


BIO-X-ACT™ Short & Long Mixes

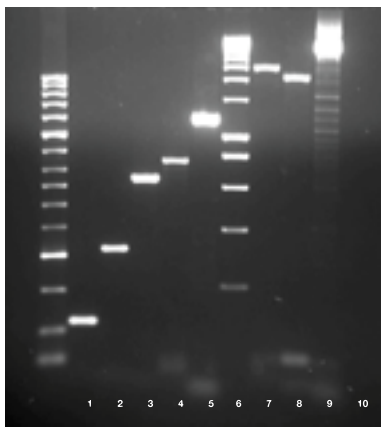
BIO-X-ACT™ Short and Long are available as convenient 2x Reaction Mixes to maximize experimental reproducibility and reduced handling. BIO-X-ACT Short Mix and Long Mix are complete, ready-to-use solutions which simply require the user to add water, template and primers. In order to achieve optimal reaction conditions, both mixes contain BIO-X-ACT (Short or Long) DNA polymerase, dNTPs, MgCl₂ and further additives.

Features

- **Reduced handling**
- **Less scope for contamination**



Template Dilutions
2-fold template dilutions of Lambda DNA, starting at 0.25ng, 5Kb amplicon using BIO-X-ACT



High Specificity achieved with problematic templates using BIO-X-ACT Short

BIO-X-ACT Short is a polymerase ideally suited for problematic templates requiring high fidelity. A range of fragments from Human genes were amplified, varying in length and GC content.

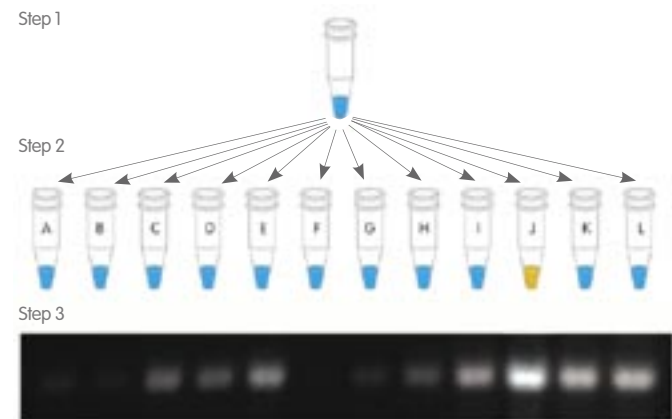
Lane 1: HyperLadder II
 Lane 2: 119bp and 43% GC product amplified from the human glucocerebrosidase gene
 Lane 3: 321bp and 37% GC product amplified from the Angiotensin Receptor II gene
 Lane 4: 626bp and 56% GC product amplified from the Rhodopsin gene
 Lane 5: 762bp and 33% GC product amplified from the β-Globin gene
 Lane 6: 1200bp and 54% GC product amplified from the alpha-1-antitrypsin gene
 Lane 7: HyperLadder I
 Lane 8: 2256bp and 52% GC product amplified from the p53 gene
 Lane 9: 2000bp and 32% GC product amplified from the Angiotensin Receptor II gene
 Lane 10: 6000bp and 51% GC product amplified from the alpha-1-antitrypsin gene

SureBand PCR Optimization Kit

SureBand PCR Optimization Kit facilitates successful PCR even with troublesome templates. SureBand consists of 12 ready-to-use 2x PCR Buffers (A-L), which are designed to rapidly determine the optimal conditions for all primer-template combinations. At least one of the 2x PCR Buffers will possess the optimal PCR conditions required to provide good results with your template. The Kit also contains a separate vial of BIO-X-ACT™ Short DNA Polymerase. The kit dramatically reduces the time needed to set up reactions, and allows the user to optimize key variables without the need to test each variable independently. The user is required to add only template, primers and water.

Features

- **Fast: Simplified and optimized PCR conditions for virtually any DNA template**
- **Easy: Extremely convenient to use - SureBand contains all the necessary components to perform successful PCR**
- **Time-Saving: Simply try your template in all of the 12 SureBand pre-mixes to establish which is best for your application**
- **Efficient: Contains pre-optimized buffer solutions for reproducible results**



A 234bp region of Human APoE gene (GC >66%) assayed with PCR Optimization buffers A-L.

Step 1. Prepare MasterMix containing template DNA, primers, H₂O and thermostable polymerase.
 Step 2. Add 25µl of MasterMix to each of the 12 buffers supplied.
 Step 3. Results: buffer J is the most suitable for this application.

Hot-Start PCR with High Fidelity

For PCR applications that require heat activation for enhanced specificity, coupled with extremely high fidelity, our AccuSure™ DNA polymerases and SAHARA™ DNA polymerase are ideal.

AccuSure™ delivers 47-fold higher fidelity than *Taq* and extremely high specificity owing to its heat-activation. AccuSure is highly suited to challenging PCR assays in which background must be kept to a minimum.

AccuSure™ Mix is a convenient 2x Reaction Mix designed to maximize experiment reproducibility. AccuSure™ Mix is optimized and ready-to-use: the user needs only to add water, template and primers.

SAHARA™ DNA Polymerase NEW is the most recent addition to the Bioline range of DNA polymerases and has been specifically designed for low-copy assays.

SAHARA™ DNA Polymerase

NEW

Features

- Use SAHARA to obtain PCR results from your low-copy assays
- Hot-Start coupled with ultra-high specificity
- Very high PCR sensitivity

Applications

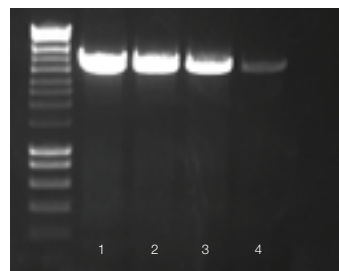
- Designed for low-copy or challenging PCR assays

SAHARA™ DNA polymerase is a Hot-Start high-performance proprietary complex of enzymes specifically designed for low copy assays which require both high processivity and high-fidelity. SAHARA is inactive at room temperature and therefore requires activation by heat treatment before PCR.

SAHARA DNA Polymerase is recommended for challenging Genomic DNA targets and is ideal for direct cloning without the need to verify the sequence prior to expression. SAHARA possesses 5'-3' polymerase activity and 3'-5' proofreading activity, which, in combination with other properties, provides 17-fold higher fidelity than *Taq*.

Designed for low-copy templates

The figures illustrate amplification from a variety of starting template concentrations



SAHARA 2-fold dilution of template 5Kb on lambda DNA:
Lane 1. 0.25ng
Lane 2. 0.125ng
Lane 3. 0.0625ng
Lane 4. 0.03125ng



SAHARA 2-fold dilution of template 800bp fragment of beta-actin gene using Human Genomic DNA.
Lane 1. 50ng
Lane 2. 25ng
Lane 3. 12.5ng
Lane 4. 6.25ng
Lane 5. 3.125ng
Lane 6. 1.5625ng
Lane 7. 0.78125ng
Lane 8. 0.390625ng

Hot-Start PCR

| DESCRIPTION | PACK SIZE | CAT NO. | PRICE |
|--------------------------|---------------|-----------|-----------|
| SAHARA™ DNA Polymerase | 250 Units | BIO-21088 | \$135.00 |
| SAHARA™ DNA Polymerase | 500 Units | BIO-21089 | \$250.00 |
| SAHARA™ DNA Polymerase | 2500 Units | BIO-21090 | \$1050.00 |
| AccuSure™ DNA Polymerase | 250 Units | BIO-21068 | \$150.00 |
| AccuSure™ DNA Polymerase | 500 Units | BIO-21069 | \$280.00 |
| AccuSure™ Mix, 2x | 100 Reactions | BIO-25029 | \$85.00 |
| AccuSure™ Mix, 2x | 500 Reactions | BIO-25030 | \$400.00 |

For Custom, Bulk and OEM services, please contact info@bioline.com

AccuSure™ DNA Polymerase

Features

- **Hot-Start coupled with high fidelity**
- **Very high specificity and PCR sensitivity**
- **Produces blunt ends**
- **DHPLC compatible (detergent-free)**

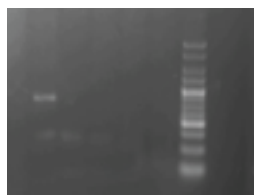
Applications

- **High-fidelity PCR applications leading to cloning**
- **PCR assays requiring blunt ending**

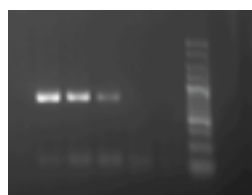
Where necessary, specificity and performance of AccuSure™ can be further improved with the use of 2x PolyMate Additive (not supplied), which is designed for GC or AT-rich DNA, “dirty” templates or sequences with difficult melting profiles.

AccuSure is optimized for use in a detergent-free system, making it ideally suited for direct loading of samples on to DHPLC columns.

Without heat-activation step



With heat-activation step



AccuSure Heat-Activation

AccuSure is a heat-activated polymerase exhibiting extremely high specificity. To illustrate the heat-activation property, a small fragment (175bp) was amplified from pGEM 3z f(+) using AccuSure. Two tests were conducted, one with heat-activation and one without heat-activation. Activity was observed only after a heat-activation step.

AccuSure™ Mix

Features

- **Convenient pre-mixed, pre-optimized solution**
- **Same high fidelity and robust activity as AccuSure™**

AccuSure™ Mix is a convenient pre-mixed, pre-optimized 2x Reaction Mix designed to maximize experiment reproducibility. AccuSure Mix contains AccuSure DNA Polymerase, ultra-pure dNTPs manufactured by Bioline and $MgCl_2$. The Mix is optimized and ready-to-use: the user adds only water, template and primers.

AccuSure™ Mix dramatically reduces the time needed to set up reactions, thereby reducing the risk of contamination. Greater reproducibility is ensured, by reducing the number of pipetting steps that can lead to pipetting errors. AccuSure Mix is supplied with an additional 50mM of $MgCl_2$ solution for optional optimization of reaction conditions.

Did you know that Bioline is one of the worlds few primary manufacturers of dNTPs?

Bioline dNTPs

- Ultra-Pure Quality
- Enzymatic Synthesis of dNTPs to eliminate PCR inhibitors
- Lithium salts formulation for improved dNTP stability and shelf-life

BIOLASE™ Highly Sensitive PCR

The BIOLASE™ range of polymerases is based on our ever-popular BIOLASE DNA Polymerase. BIOLASE is a highly purified thermostable *Taq* DNA polymerase offering very high yield over a wide range of templates, and is the ideal choice for most PCR assays. BIOLASE is a robust preparation and consistently delivers high yields with minimal background. BIOLASE possesses 5'-3' exonuclease activity and leaves an 'A' overhang such that the PCR product is suitable for effective integration into TA cloning vectors.

BIOLASE™ DNA Polymerase

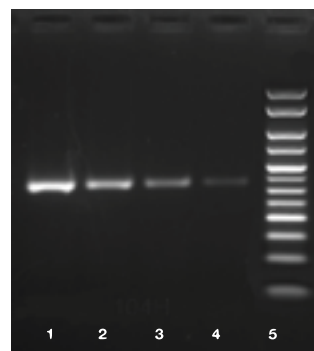
Features

- **Premium *Taq* polymerase for critical assays**
- **Consistent results**
- **Suited to a wide range of PCR applications**
- **Leaves an 'A' overhang**

Applications

- **Wide ranging reagent for critical assays**

BIOLASE™ is our best known Polymerase and is widely used by molecular biologists who have come to depend upon the robust performance of this reagent.



High Performance with BIOLASE

A 175bp fragment was amplified from pGEM 3z f(+) using BIOLASE DNA Polymerase.
Lane 1-4: 10-fold serial dilution of template. (starting concentration 25ng/μl).
Lane 5: HyperLadder V

BIOLASE Range

| DESCRIPTION | PACK SIZE | CAT NO. | PRICE |
|-----------------------------|---------------|-----------|-----------|
| BIOLASE™ DNA Polymerase | 500 Units | BIO-21042 | \$135.00 |
| BIOLASE™ DNA Polymerase | 2500 Units | BIO-21043 | \$550.00 |
| BIOLASE™ DNA Polymerase | 10,000 Units | BIO-21066 | \$1850.00 |
| BIOLASE™ PCR Kit | 500 Units | BIO-21070 | \$195.00 |
| BIOLASE™ Red DNA Polymerase | 500 Units | BIO-21044 | \$160.00 |
| BIOLASE™ Red DNA Polymerase | 2500 Units | BIO-21045 | \$700.00 |
| BioMix™, 2x | 100 Reactions | BIO-25011 | \$56.00 |
| BioMix™, 2x | 500 Reactions | BIO-25012 | \$248.00 |
| BioMix™ Red, 2x | 100 Reactions | BIO-25005 | \$59.00 |
| BioMix™ Red, 2x | 500 Reactions | BIO-25006 | \$261.00 |
| PolyMate Additive | 2 x 1.2ml | BIO-37041 | \$45.00 |

BIOLASE™ Red DNA Polymerase

Features

- **Same high performance as BIOLASE™ DNA Polymerase**
- **Direct loading onto agarose gels**
- **Easy visual recognition**

BIOLASE™ Red is a variant of our widely used BIOLASE and is suited to labs which have a preference for enzymes with a distinctive color for easy recognition.

For Custom, Bulk and OEM services, please contact info@bioline.com

References:
Berite Larsen, Norma M. Wills, Chad Nelson, John F. Atkins and Raymond F. Gesteland *PNAS* Vol. 97, Issue 4, 1683-1688, February 15, 2000.
Craig L. Bennett, Ritsuko Yoshioka, Hidenori Kiyosawa, David F. Barker, Pamela R. Fain, Ann O. Shigeoka, and Phillip F. Chance *The American Journal of Human Genetics*, volume 66 (2000), pages 461-468
RY Walder, D Landau, P Meyer, H Shalev, M Tsolia, *Nature Genetics*, 28th May 2002 DOI: 10.1038 /ng901



BIOLASE™ PCR Kit

Features

- Set of optimized components
- Contains ultra-pure dNTPs manufactured by Bioline

Applications

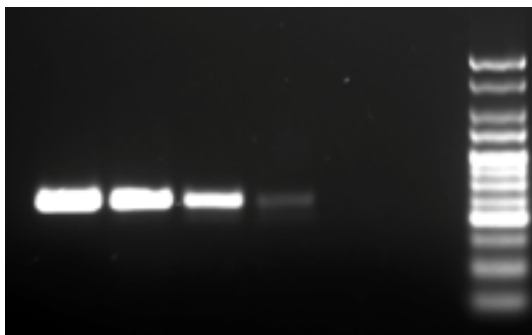
- Ideal for setting up new assays

The BIOLASE™ PCR Kit is ideal for labs wishing to purchase all the reagents necessary for PCR in one convenient package.

BioMix™ and BioMix™ Red

Features

- Pre-mixed, pre-optimized 2x solutions
- Reduced risk of contamination
- Reproducible results
- Additional red dye for Direct Gel Loading (BioMix™ Red)
- Scalable: Set-Up 10µl, 25µl, or 50µl Reactions



High consistent yield with BIOLASE
125bp product from plasmid, 2-fold template dilution 12.5ng starting conc.

PolyMate Additive

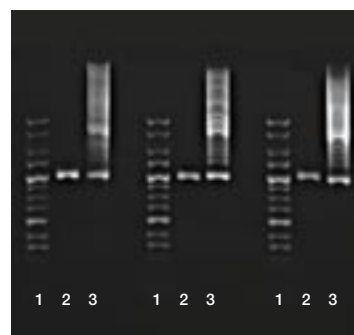
Features

- Dramatically improves specificity and yield
- Compatible with all commercially available thermostable DNA polymerases
- Ideal for "difficult" templates
- Reduces smearing and background

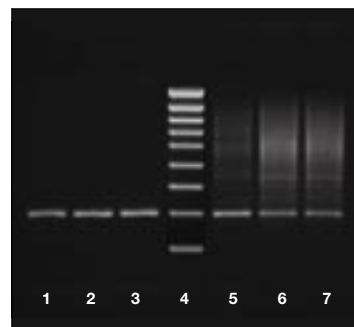
Applications

- To enhance the performance and specificity of any thermostable DNA polymerase in enzyme reactions

PolyMate is a special 2x additive for use in reactions involving any thermostable DNA polymerase, and is designed to dramatically improve reaction specificity. PolyMate provides an optimized composition of reagents, and is ideally suited to dirty/difficult templates with GC or AT-rich DNA, repetitive sequences or difficult melting profiles. PolyMate acts as a melting agent by allowing the DNA polymerase and oligonucleotides to have greater access to the template DNA. PolyMate does not contain magnesium, dNTPs, or buffer components.



PolyMate assayed with three different polymerases on a 201bp GC-Rich fragment >66% from Human TGF - β gene
Lane 1: HyperLadder II
Lane 2: Treated with PolyMate
Lane 3: Without PolyMate



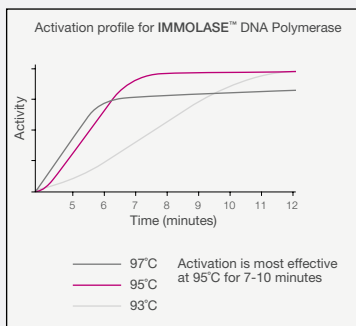
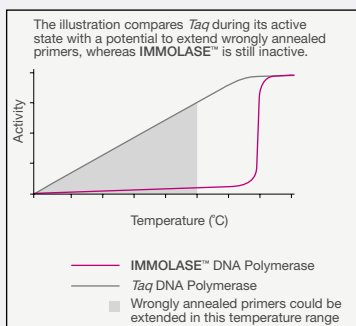
PCR of a 201bp GC-Rich fragment >66% from Human TGF - β gene
Lane 1-3: With PolyMate & 1.5mM, 2.0mM & 2.5mM MgCl₂ respectively
Lane 4: HyperLadder IV
Lane 5-7: Without PolyMate

Hot-Start PCR

IMMOLASE™ is a Hot-Start thermostable DNA polymerase, which provides improved specificity when compared to standard polymerases and can eliminate the presence of artefacts, such as primer-dimers and mis-primed products. IMMOLASE is inactive at room temperature and therefore requires activation by heat treatment for 7 minutes prior to PCR.

IMMOLASE is ideal for:

Multiplex PCR reactions, detection of low-copy target numbers or assays requiring low background and high yield.



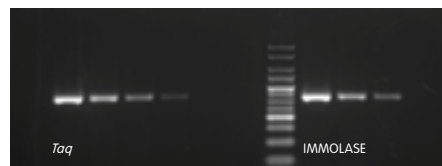
IMMOLASE™ DNA Polymerase

Features

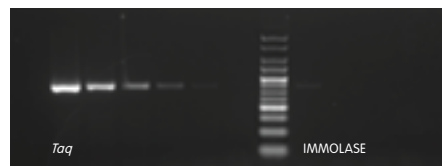
- **Hot-Start**
- **Highly suited to real-time assays**
- **Ultra-high specificity**
- **Leaves 'A' overhang**

Applications

- **PCR assays that require heat activation for enhanced specificity and reduced background**
- **Ideal for quantitative assays**



With Heat-Activation step



Without Heat-Activation step

IMMOLASE Heat-Activation

IMMOLASE is a heat-activated polymerase exhibiting extremely high specificity.

To illustrate the heat-activation property, a small fragment (125bp) was amplified from pGEM 3z f(+).

Two tests were conducted, one with heat-activation and one without heat-activation. *Taq* exhibited activity in both tests, whereas IMMOLASE only exhibited activity following a heat-activation step.

Hot-Start PCR

| DESCRIPTION | PACK SIZE | CAT NO. | PRICE |
|--------------------------|---------------|-----------|-----------|
| IMMOLASE™ DNA Polymerase | 250 Units | BIO-21046 | \$130.00 |
| IMMOLASE™ DNA Polymerase | 500 Units | BIO-21047 | \$220.00 |
| IMMOLASE™ DNA Polymerase | 5000 Units | BIO-21048 | \$1800.00 |
| ImmoMix™, 2x | 100 Reactions | BIO-25019 | \$85.00 |
| ImmoMix™, 2x | 500 Reactions | BIO-25020 | \$400.00 |
| ImmoMix™ Red, 2x | 100 Reactions | BIO-25021 | \$87.00 |
| ImmoMix™ Red, 2x | 500 Reactions | BIO-25022 | \$410.00 |

For Custom, Bulk and OEM services, please contact info@bioline.com

References:
 Rose, S.D., Kim, D.H., Amarzguioui, M., Heidel, J.D., Collingwood, M.A., Davis, M.E., Rossi, J.J. & Behlke, M.A. *Nucleic Acids Research* 33(13): 4140-4156 (2005).
 Thongnoppakhun, W., Limwongse, C., Vareesangthip, K., Sirinavin, C., Bunditworapoom, D., Rungroj, N. & Yenchitsomanus, P.T. *BMC Medical Genetics* 5:2 (2004).
 Paracchini, S., Arredi, B., Chalk, R. & Tyler-Smith, C. *Nucleic Acids Research* 30(6), 2002.



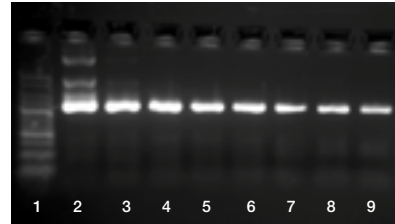
ImmoMix™ & ImmoMix™ Red

Features

- Ready-to-use 2x Reaction Mix
- Same high-specificity and performance as IMMOLASE
- Reduced risk of contamination
- Additional red dye for Direct Gel Loading (ImmoMix™ Red)

Applications

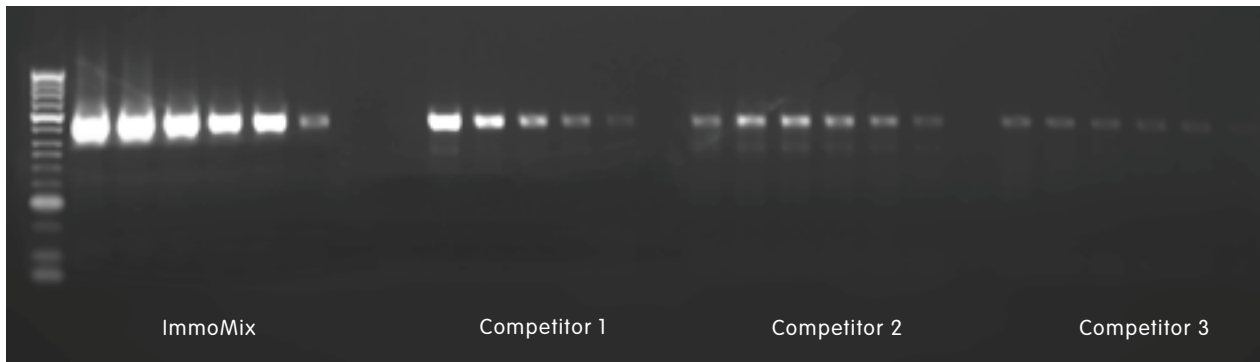
- Ideal for laboratories that require reagent conditions to be identical every time
- Suited to PCR assays which necessitate a minimum of preparative work



High Yield with IMMOLASE

Following serial dilution of template, a 200bp product was amplified from pGEM 3z f(+) using IMMOLASE.

- Lane 1: HyperLadder V
- Lane 2: Neat template (concentration 25ng/μl)
- Lane 3: 10⁻¹ dilution
- Lane 4: 10⁻² dilution
- Lane 5: 10⁻³ dilution
- Lane 6: 10⁻⁴ dilution
- Lane 7: 10⁻⁵ dilution
- Lane 8: 10⁻⁶ dilution
- Lane 9: 10⁻⁷ dilution



2-fold dilutions of Human Genomic template, starting at 50ng, Amplicon of approx 800bp using ImmoMix and three competitor products.

Cost-Effective PCR

Our *Taq* DNA polymerase and popular *MangoTaq™* DNA polymerase are ideal for users seeking polymerases for routine and cost-effective PCR. *MangoMix* in particular, offers the distinct advantage of being cost-effective and provides a reduced risk of user contamination.

Our reagents are also available in bulk amounts in any OEM configuration, hence bulk enquiries are welcome.

Since free samples of most of our products are available, we invite you to contact us for a sample to evaluate in your laboratory assays.

Taq DNA Polymerase

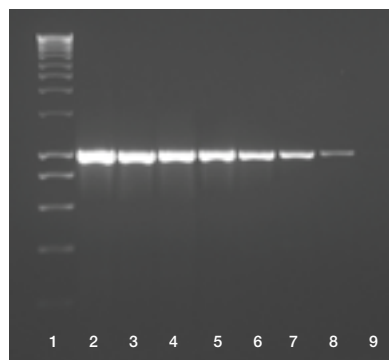
Features

- **Cost effective *Taq* for routine PCR**
- **Purified *Taq* DNA polymerase**

Applications

- **Suited to a wide range of PCR assays**

Taq DNA Polymerase is a thermostable DNA polymerase, which can withstand prolonged incubation at high temperatures without a significant loss of activity. *Taq* is purified from *Thermus Aquaticus* and is used in a wide range of molecular biology protocols. *Taq* reaction products contain 3' adenosine overhangs and are ready for TA cloning.



High Performance with *Taq*

A serial dilution of template was performed to demonstrate the high performance of *Taq*, even at low DNA concentrations.

Lane 1: HyperLadder I

Lane 2: 0.5ng λ DNA

Lanes 3-9: 10-fold dilution series

Cost-Effective PCR

| DESCRIPTION | PACK SIZE | CAT NO. | PRICE |
|---------------------------------|----------------|-----------|-----------|
| <i>Taq</i> DNA Polymerase | 1000 Units | BIO-21085 | \$125.00 |
| <i>Taq</i> DNA Polymerase | 2000 Units | BIO-21086 | \$215.00 |
| <i>Taq</i> DNA Polymerase | 10,000 Units | BIO-21087 | \$995.00 |
| <i>MangoTaq™</i> DNA Polymerase | 2000 Units | BIO-21082 | \$285.00 |
| <i>MangoTaq™</i> DNA Polymerase | 5000 Units | BIO-21078 | \$600.00 |
| <i>MangoTaq™</i> DNA Polymerase | 20,000 Units | BIO-21079 | \$1900.00 |
| <i>MangoMix</i> , 2x | 250 Reactions | BIO-25033 | \$110.00 |
| <i>MangoMix</i> , 2x | 1000 Reactions | BIO-25034 | \$395.00 |

For Custom, Bulk and OEM services, please contact info@bioline.com



MangoTaq™ DNA Polymerase

Features

- **Low-cost Taq formulation for Direct Gel Loading**
- **Reaction Buffer contains inert red and orange dyes**
- **Leaves 'A' overhang**
- **High-throughput PCR applications**
- **Supplied at 1u/μl**

Applications

- **Suited to a wide range of PCR assays**

MangoTaq™ DNA Polymerase is a formulation of Taq DNA Polymerase, and is supplied with a colored 10x Reaction Buffer which contains two inert dyes. The Red and Orange dyes separate during gel electrophoresis and provide quick reference points for monitoring the mobility of the DNA samples in the gel.

MangoTaq offers consistent results across a wide range of DNA templates and also leaves an 'A' overhang such that the PCR product is suitable for effective integration into TA cloning vectors. MangoTaq is an ideal choice for high-throughput applications, since it combines a lower concentration of Taq, with inert-colored dyes, to facilitate easy recognition.



TBE Buffer (5, 10, 15 and 20 μl)



Red and orange dyes after electrophoresis.

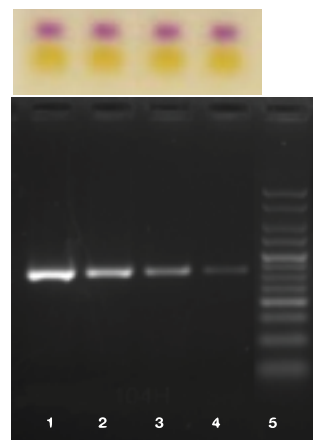
Differing volumes of the amplification reactions subjected to electrophoresis.

MangoMix NEW

Features

- **Pre-mixed, pre-optimized solutions**
- **Same high performance as MangoTaq™**
- **Reduced risk of contamination**
- **MangoMix contains inert red and orange dyes:**

MangoMix is a complete, ready-to-use 2x Reaction Mix containing MangoTaq™ DNA polymerase, developed for PCR assays of many common genomic and cDNA templates. The 2x Mix simply requires the user to add water, template and primers. MangoMix dramatically reduces the time required to set up reactions, thereby minimizing the risk of contamination. Greater reproducibility is ensured by reducing the number of pipetting steps that can lead to errors.



High Performance with MangoMix

A 175bp fragment was amplified from pGEM 3z f(+) using MangoMix
Lane 1-4: 10-fold serial dilution of template.
(starting concentration 25ng/μl).
Lane 5: HyperLadder V



info@bioline.com
www.bioline.com

USA

Bioline USA Inc
PMB 311
28 South Main Street
Randolph MA 02368
Toll Free: 888 257 5155
Tel: 781 830 0360
Fax: 781 830 0205

United Kingdom

Bioline Ltd
16 The Edge Business Centre
Humber Road
London NW2 6EW
United Kingdom
Tel: +44 (0)20 8830 5300
Fax: +44 (0)20 8452 2822

Germany

Bioline GmbH
Im Biotechnologiepark TGZ 2
D-14943 Luckenwalde
Tel: +49 (0)3371 681 229
Fax: +49 (0)3371 681 244

Australia

Bioline (Aust) Pty Ltd
PO Box 122
Alexandria NSW 1435
Australia
Tel: +61 (0)2 9209 4180
Fax: +61 (0)2 9209 4763

