AMPLIQON
PCR ENZYMES & REAGENTS

15 MIN HOT START

Advion Interchim scientific

DryTech TEMPase 5x Master Mix Clear

2 mM $MgCl_2$ final concentration

Cat. No.: A747203
500 reactions
Reaction size 25 µl

A747203

MADE IN **DENMARK**

-	Foil bag 5300610-0500 with:	
Content	DryTech TEMPase 5x Master Mix 2 mM $MgCl_2$ final conc.	5x DryTech Buffer Clear
	1 x 4 tubes	2 x 1.3 ml
ID No.	5300600-0125	5100400-1300
Cap colour	Blue	Black

Key Features

- Lyophilized TEMPase Hot Start DNA polymerase Master Mix
- Highly stable at room temperature
- Shipping at ambient temperature
- Storage at room temperature
- Reduced CO_2 impact
- For amplification up to 4 kb

DryTech TEMPase 5x Master Mix Clear is lyophilized for storage at room temperature and shipping at ambient temperature. The lyophilized DryTech TEMPase 5x Master Mix is easily reconstituted with the 5x DryTech Buffer Clear included in the kit.

The reconstituted DryTech TEMPase 5x Master Mix Clear is a ready-to-use 5x reaction mix with everything needed to perform PCR; Ampliqon TEMPase Hot Start DNA polymerase, optimized NH_4^+ PCR buffer system, dNTPs and magnesium chloride present. Each reaction requires 5 µl of the 5x Master Mix. Simply add primers, template and water to a total reaction volume of 25 µl to successfully carry out PCR.

DryTech TEMPase 5x Master Mix Clear is a cost saving choice as it can be shipped at ambient temperature without the presence of dry ice. Furthermore, the reduced electricity consumption and greenhouse gas emission leave an improved CO_2 imprint.

Recommended Shipping, Storage and Stability

- Shipping at ambient temperature.
- The lyophilized 5x master mix and the 5x DryTech Buffers are stable at room temperature (≤ 25 °C) for 12 months from date of receipt.
- The reconstituted master mix is stable for 6 months at -20 °C or for 3 months at +4 °C.

Quality Control

TEMPase Hot Start DNA Polymerase is tested for contaminating activities, with no traces of endonuclease activity, nicking activity or exonuclease activity.

Protocol

This protocol serves as a guideline to ensure optimal PCR results when using DryTech TEMPase 5x Master Mix Clear. Optimal reaction conditions such as incubation times, temperatures, and amount of template DNA may vary and must be determined individually.

DryTech TEMPase 5x Master Mix must be reconstituted using the 5x DryTech Clear Buffer provided in the kit.

1. Reconstitute each vial of DryTech TEMPase 5x Master Mix with 625 µl of 5x DryTech Buffer Clear. Vortex for 30 seconds then incubate at RT for 1 min and finally vortex again until fully dissolved.

Important: After reconstitution the DryTech TEMPase 5x Master Mix Clear should be stored at -20 °C or +4 °C.

2. Thaw the reconstituted DryTech TEMPase 5x Master Mix Clear and primers. **It is important to thaw the solutions completely and mix thoroughly before use to avoid localized concentrations of salts**.

3. Prepare a reaction mix. Table 1 shows the reaction set up for a final volume of 25 µL. If desired, the reaction size may be scaled down. Use 5 µl of the DryTech TEMPase 5x Master Mix in a final volume of 25 µl.

Table 1. Reaction components (reaction mix and template DNA)

Component	Vol./reaction*	Final concentration*
DryTech 5x MM	5 µl	1x
25 mM $MgCl_2$	0 µl (0 – 2 µl)	2 mM (2 – 4 mM)
Primer A (10 µM)	0.5 µl (0.25 – 2.5 µl)	0.2 µM (0.1 – 1.0 µM)
Primer B (10 µM)	0.5 µl (0.25 – 2.5 µl)	0.2 µM (0.1 – 1.0 µM)
PCR-grade H_2O	X µl	-
Template DNA	X µl	Genomic DNA: 50 ng (10 – 500 ng) Plasmid DNA: 0.5 ng (0.1 – 1 ng) Bacterial DNA: 5 ng (1 – 10 ng)
TOTAL volume	25 µl	-

* Suggested starting conditions; theoretically used conditions in brackets

4. Mix the reaction mix thoroughly and dispense appropriate volumes into reaction tubes. Mix gently, e.g. by pipetting the reaction mix up and down a few times.

5. Add template DNA to the individual tubes containing the reaction mix.

6. Program the thermal cycler according to the manufacturer´s instructions. See table 2 for an example.
For maximum yield and specificity, temperatures and cycling times should be optimized for each new template target or primer pair.

7. Place the tubes in the thermal cycler and start the reaction.

Table 2. Three-step PCR program

Cycles	Duration of cycle	Temperature
1	15 minutes	95 °C
25 - 35	20 – 30 seconds[a] 20 – 40 seconds[b] 30 seconds[c]	95 °C 50 – 65 °C 72 °C
1	5 minutes[d]	72 °C

[a.] Denaturation step: This step is the first regular cycling event and consists of heating the reaction to 95 °C for 20 – 30 seconds. It causes melting of the DNA template by disrupting the hydrogen bonds between complementary bases, yielding single-stranded DNA molecules.

[b.] Annealing step: The reaction temperature is lowered to 50 – 65 °C for 20 – 40 seconds allowing annealing of the primers to the single-stranded DNA template. Typically, the annealing temperature is about 3 – 5 °C below the T_m (melting temperature) of the primers used.

[c.] Extension/elongation step: TEMPase polymerase has its optimum activity temperature at 72 °C. At this step the DNA polymerase synthesizes a new DNA strand complementary to the DNA template strand. The extension time depends on the length of the DNA fragment to be amplified. As a rule of thumb, at its optimum temperature the DNA polymerase will polymerize a thousand bases per minute.

[d.] Final elongation: This single step is occasionally performed at a temperature of 72 °C for 5 minutes after the last PCR cycle to ensure that any remaining single-stranded DNA is fully extended.

Notes:

- The final $MgCl_2$ concentration of this 5x Master Mix is 2 mM. In some applications, more than 2 mM $MgCl_2$ is required for best results. Use 25 mM to adjust the Mg^{2+} concentration according to table 3.

Table 3. Additional volume (µl) of $MgCl_2$ per 25 µl reaction:

Final $MgCl_2$ conc. in reaction (mM)	2.0	2.5	3.0	3.5	4.0	4.5
Volume of 25 mM $MgCl_2$	0	0.5	1.0	1.5	2.0	2.5

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Other product sizes, combinations and customized solutions are available. Please look at www.ampliqon.com or ask for our complete product list for PCR Enzymes. For customized solutions please contact us.

Made in Denmark

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