HoppeSyler 2X M4 *Taq* Master Mix with Dye

Ready-to-use 2X hot start master mix · includes dNTPs, $MgCl_2$ & loading dye

Cat. M0802-020

DESCRIPTION

HoppeSyler 2X M4 *Taq* Master Mix with Dye is a ready-to-use 2X master mix formulated for fast PCR, high yield and strong specificity in standard endpoint workflows. It contains M4 *Taq* DNA Polymerase, dNTPs, $MgCl_2$, reaction buffer, stabilizers and a blue tracking dye in a single tube, reducing hands-on time and pipetting error. M4 is supplied only in hot start format: polymerase activity is suppressed during reaction setup and released under cycling (hot start is inherent to the engineered enzyme; no separate activation step), which reduces non-specific amplification and primer-dimer formation. Suited to rapid, reliable PCR from bacterial colonies, overnight cultures, crude-lysate genotyping samples, soil-associated samples and other routine templates; reactions load directly onto the gel. Developed and manufactured in Canada. **Because M4 extends faster than conventional *Taq*, protocols written for other polymerases should not be used unchanged: start from the Quick Guide settings on page 2.**

FEATURES

- Hot start in a ready-to-use 2X format
- Fast cycling: 15 s per kb extension
- Tolerates common PCR inhibitors, including humic acid
- Direct PCR from bacterial colonies and cultures
- Blue tracking dye for direct gel loading

SPECIFICATIONS

Enzyme	M4 *Taq* DNA Polymerase (engineered hot start, recombinant)
Format	2X master mix (includes dNTPs and $MgCl_2$)
Optimal reaction volume	50 µL
$MgCl_2$ at 1X	2.5 mM
dNTPs at 1X	0.2 mM each
Extension rate	15 s / kb
Loading dye	Blue (bromophenol blue; runs at 300–500 bp depending on gel percentage)
Storage	−20 °C

PURITY & QUALITY

Lot-release testing: the polymerase is tested for DNase activity, mycoplasma DNA, host genomic DNA and PCR activity before formulation; each master mix lot is tested before release.

ORDERING INFORMATION

CAT. NO.	REACTIONS	VOLUME
M0802-020	200	5.0 mL

KIT CONTENTS

COMPONENT	200 REACTIONS
2X M4 *Taq* Master Mix with Dye	4 × 1.25 mL
GC Enhancer	1 × 1 mL

GC Enhancer is provided for GC-rich and difficult templates. Store all components at −20 °C.

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HoppeSyler 2X M4 *Taq* Master Mix with Dye

Standard 50 µL PCR · ready-to-use 2X hot start master mix (with loading dye)

Switching from another *Taq*? Do not reuse your old program. **M4 is faster: carried-over extension times and cycle numbers give smears and extra bands, not more product.**

- **Extension:** 15 s/kb (20 s up to 2 kb). Longer adds no yield.
- **Mix:** 25 µL per 50 µL; contains $MgCl_2$ (2.5 mM at 1X) and dNTPs. Add neither.
- **Cycles:** 20–30; M4 needs fewer than conventional enzymes.

1 REACTION SETUP

COMPONENT	VOLUME	FINAL CONC.
Template DNA (up to 500 ng)	up to 10 µL	–
10 µM forward primer	0.5–2.5 µL	100–500 nM
10 µM reverse primer	0.5–2.5 µL	100–500 nM
2X M4 *Taq* Master Mix with Dye	25 µL	1X
GC Enhancer (optional)*	5–15 µL	–
Nuclease-free water	to 50 µL	–
Total reaction	**50 µL**	

*GC Enhancer helps amplify difficult templates and suppress non-specific products; determine the volume empirically for each template and primer pair.

Assemble on ice. **Mix** by pipetting several times or a brief vortex, **centrifuge** briefly to collect, then proceed to the amplification program.

2 THERMOCYCLING PROGRAM

	STEP	TEMP.	TIME	CYCLES
1	Denaturation	94 °C	30 s	20–30
	Annealing	55–60 °C	10–30 s	
	Extension	72 °C	15 s / kb	
2	Final extension	72 °C	7 min	1
3	Hold	4 °C	∞	1

Begin with an initial denaturation of 94 °C for 3 min. Hot start is inherent to the enzyme; no separate activation step is required. Set extension time to 15 s per kb of expected product. Annealing 10–30 s suits most primer pairs.

OPTIMIZATION

- **Loading dye:** the master mix contains a blue tracking dye that runs at 300 to 500 bp depending on gel percentage; load reactions directly onto the gel.
- **Hot start:** assemble reactions on ice; the enzyme stays inactive until cycling begins. Hot start is inherent to the enzyme, with no separate activation step.
- **Direct PCR:** pick a colony directly into the reaction, or add 0.5–4 µL of overnight culture as template.
- **Annealing:** start ~5 °C below primer T_m; 55–60 °C works for most pairs.

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