

KAPA2G FAST Multiplex Kits

High-speed, high-performance multiplex PCR

KAPA2G Fast Multiplex PCR Kits contain a second-generation (2G) enzyme derived through a process of molecular evolution. KAPA2G FAST HotStart DNA Polymerase is an antibody-mediated hot start formulation engineered for higher processivity and speed, offering significantly faster extension rates than wild-type *Taq* DNA polymerase. In addition to speed, KAPA2G Fast provides higher yields and sensitivity than competitor enzymes for highly multiplexed PCR.*

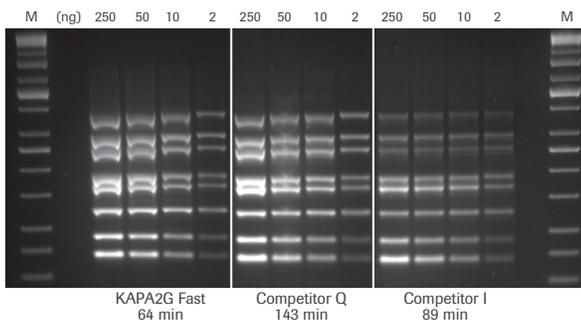
Benefits include:

- higher yields and sensitivity
- uniform representation of all amplicons
- reduction in PCR cycling time up to 60%
- high speed without compromising performance
- minimal optimization with master mix formulation

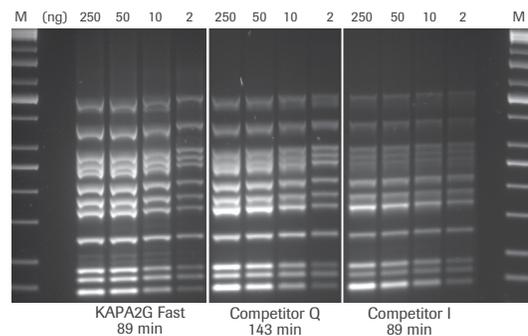
Improve sensitivity, specificity, and yields

- Uniform representation of all amplicons
- Successful multiplex PCR with difficult, GC-rich targets

High speed and performance



Uniform representation of all amplicons in 12-plex PCR

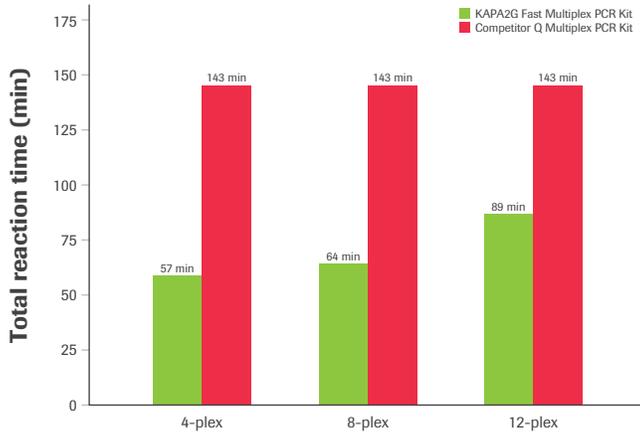


***Multiplex PCR (8-plex) performed with the KAPA2G Fast Multiplex PCR Kit, Competitor Q, and Competitor I.** Reactions (25 μ L) contained 1X PCR Master Mix (KAPA and Competitor Q) or 1X PCR Buffer, 3 mM MgCl₂, 0.2 mM of each dNTP and 1 U of hot start *Taq* DNA Polymerase (home-brew multiplex reagents, with Competitor I). Human genomic DNA was used as template (250 – 2 ng per reaction), and primers were supplied at 0.2 μ M each. Cycling was performed according to manufacturers' recommendations (30 cycles).

***Multiplex PCR (12-plex) performed with the KAPA2G Fast Multiplex PCR Kit, Competitor Q, and Competitor I.** Achieving uniform representation of all amplicons in a complex multiplex assay is a challenge due to amplification bias—a result of differences in amplicon length, secondary structure, and priming efficiency. Reactions (25 μ L) contained 1X PCR Master Mix (KAPA and Competitor Q) or 1X PCR Buffer, 3 mM MgCl₂, 0.2 mM of each dNTP and 1 U of hot-start *Taq* DNA Polymerase (home brew multiplex reagents, with Competitor I). Human genomic DNA was used as template (250 – 2 ng per reaction), and primers were supplied at 0.2 μ M each. Cycling was performed according to manufacturers' recommendations (30 cycles).

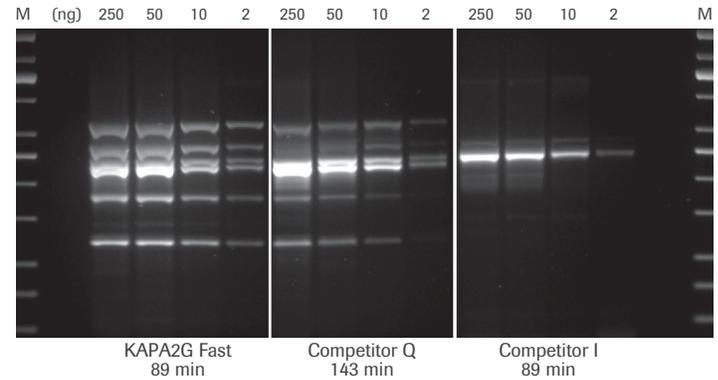
Increase speed without compromising performance

- 60% reduction in cycling time
- Extension times as low as 15 seconds



Fast Multiplex PCR with KAPA2G Fast Multiplex PCR Kits. Multiplex PCR with wild-type *Taq* typically requires very long annealing and extension times to allow primer annealing and extension of all primers in the multiplex. Total PCR cycling times required for 4-plex, 8-plex, and 12-plex multiplex PCRs (30 cycles, set up according to the manufacturers' recommendations) with KAPA2G Fast Multiplex PCR Kits and Competitor Q Multiplex PCR Kit (which contains wildtype *Taq* DNA polymerase) are shown. Time savings of 40 – 60% are possible with the KAPA2G Fast Multiplex PCR Kit.

Successful multiplex PCR with difficult, GC-rich targets



GC-rich Multiplex PCR (6-plex) performed with the KAPA2G Fast Multiplex PCR Kit, Competitor Q and Competitor I. Successful Multiplex PCR with wild-type *Taq* is limited to easy, simple targets that can be amplified with equal efficiency. The improved processivity of the engineered KAPA2G Fast DNA Polymerase allows uniform multiplex PCR of a broad range of difficult targets. Reactions (25 μ L) contained 1X PCR Master Mix (KAPA and Competitor Q) or 1X PCR Buffer, 3 mM MgCl₂, 0.2 mM of each dNTP and 1 U of hot start *Taq* DNA Polymerase (home brew multiplex reagents, with Competitor I). Human genomic DNA was used as template (250 – 2 ng per reaction), and primers were supplied at 0.2 μ M each. DMSO (5%) and KAPA Enhancer 1 (1X) was added to all reactions. Cycling was performed according to manufacturers' recommendations (30 cycles). Amplicons range in size from 241 – 642 bp, and in GC content from 72.7 – 83.8%.

Ordering information

Roche cat. no.	KAPA code	Description	Kit size
07961421001	KK5801	KAPA2G Fast Multiplex PCR Kit	1.25 mL
07961430001	KK5802	KAPA2G Fast Multiplex PCR Kit	6.25 mL

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