Maxime™ PCR PreMix Kit (i-StarTaq)

QUICK GUIDE

96 tube : 25165
480 tube : 25167

1. KIT DESCRIPTION

iNtRON's Maxime™ PCR PreMix Kit is an optimized, ready-to-use PCR master mix system containing i-StarTaq™ DNA Polymerase, dNTP mixture, reaction buffer, and a gel loading buffer in a single PCR tube for a 1-reaction scale. This system ensures maximum convenience and reproducibility by minimizing pipetting steps. Users simply need to add template DNA, primer sets, and sterile distilled water to execute amplification. Furthermore, the inclusion of a tracking dye/gel loading buffer allows direct gel loading onto agarose electrophoresis gels without additional sample preparation. Every manufacturing lot undergoes rigorous Quality Control (QC) to guarantee exceptional batch-to-batch consistency and high amplification performance.

2. CHARACTERISTICS

- **All-in-One System :** Contains i-StarTaq™ DNA Polymerase, dNTP mixture, reaction buffer, and a tracking dye in a single pre-aliquoted tube for maximum convenience and reproducibility.
- **Direct Gel Loading :** Includes a built-in gel loading buffer, allowing direct sample loading onto agarose electrophoresis gels without any additional post-PCR treatment.
- **Versatile Applications :** Highly suitable for standard PCR, high-throughput routine screening, gene expression analysis, and direct electrophoresis workflows.

3. KIT CONTENTS AND STORAGE

Contents	25165	25167
Maxime PCR PreMix (i-StarTaq)	12 Strips/pk (96 Tube)	12 Strips/pk x 5pk (480 Tube)

- **Storage Condition :** Store strictly at -20°C immediately upon receipt.
- **Shelf Life & Stability :** Guaranteed to maintain stable performance through the indicated Expiration Date when stored and handled under recommended conditions.

4. CONSIDERATIONS BEFORE USE

- **Research Use Only (RUO) :** For research use only. Not for diagnostic or clinical procedures.
- **Storage & Handling :** Store strictly at -20°C. Avoid repeated freeze-thaw cycles.
- **Contamination Control :** Use clean gloves and filter pipette tips to prevent cross-contamination.
- **PreMix Dissolution :** Ensure complete pellet dissolution; briefly spin down if necessary prior to use.
- **Template Integrity :** Use high-purity DNA free of inhibitors (phenol, ethanol, EDTA, genomic contaminants).

5. PROTOCOLS

1) Prepare the reaction mixture by adding components into the pre-aliquoted PCR tube as follows :

- Template DNA : 1 ~ 5 µl (Recommended : 10 pg~100 ng)
- Forward Primer (10 pmol/µl) : 1 µl
- Reverse Primer (10 pmol/µl) : 1 µl
- Sterile Distilled Water (D.W.) : 13~17 µl (final vol : 20 µl)

NOTE : Since the PreMix already contains enzyme and buffer components, adjust the volume of distilled water according to the template and primer volumes.

2) Dissolve the blue pellet by pipetting.

NOTE : If the mixture lets stand at RT for 1-2min after adding water, the pellet is easily dissolved.

3) Perform PCR of samples.

[SUGGESTED CYCLING PARAMETERS]

Tube		Temp.	Time
Initial denaturation		94°C	5~10min
30-40 Cycles	Denaturation	94°C	30sec
	Annealing	Tm-dependent*	30sec
	Extension	72°C	1min/kb
Final extension		72°C	5min

*Annealing temperature: 3–5°C below the lower primer Tm.

4) Load the PCR products directly onto an agarose gel without adding loading dye, and perform electrophoresis.

6. TROUBLESHOOTING GUIDE

Refer to the following troubleshooting guide for possible causes and recommended actions when unexpected PCR results are observed.

Observation	Possible Cause	Recommendation
Little or no PCR product	Insufficient template or poor template quality	Check template concentration and quality
	Primer concentration not optimal	Optimize primer concentration
	Incorrect cycling conditions	Optimize annealing temperature, cycle number, and extension time
	Insufficient hot-start activation	Ensure initial denaturation at 94°C for 5–10 min
Non-specific bands	Annealing temperature too low	Increase annealing temperature
	Excessive template	Reduce template amount
	Excessive primer concentration	Reduce primer concentration
Primer-dimer formation	Primer concentration/design not optimal	Optimize primer concentration or primer design
Smeared bands	Poor template quality or excessive DNA	Use purified DNA and reduce template amount
	Excessive cycle number	Reduce the number of PCR cycles

7. PCR OPTIMIZATION NOTES

- i-StarTaq™ requires an initial activation step at **94°C for 5–10 min.**
- The premix provides a final **$MgCl_2$ concentration of 2 mM.**
- Annealing temperature should be optimized according to primer Tm.
- Extension time may be adjusted according to amplicon length.
- Template and primer concentrations may require optimization depending on the target.

8. CAUTIONS

- Wear appropriate personal protective equipment when handling samples and reagents.
- Use aerosol-resistant filter tips to minimize cross-contamination.
- Use separate areas for PCR setup and post-PCR analysis whenever possible.
- Avoid contamination of reagents with amplified DNA.
- Dispose of biological samples and PCR products according to applicable laboratory procedures.

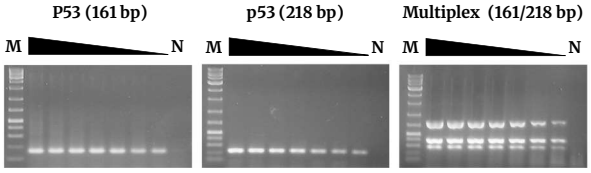
9. ADDITIONAL REQUIRED EQUIPMENT

- Thermal cycler
- Micropipettes and aerosol-resistant tips
- PCR-grade water
- Forward and reverse primers
- Agarose gel electrophoresis equipment

10. EXPERIMENTAL INFORMATION

1) High sensitivity and efficient amplification

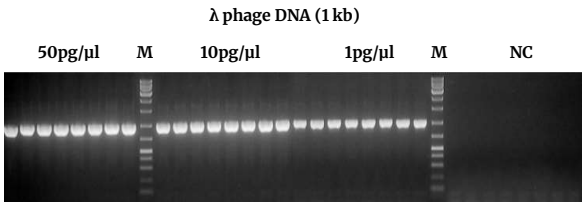
Maxime PCR PreMix Kit (i-StarTaq) demonstrated high sensitivity, amplification yield, and reproducibility. Total genomic DNA isolated from cultured human K-562 cells was used as the PCR template at amounts ranging from 100 ng to 1.56 ng using a two-fold serial dilution. The p53 gene was amplified as 161 bp and 218 bp fragments individually and simultaneously by multiplex PCR.



Lane M, SiZer-100 DNA Marker; **lane N,** Negative control

2) Repeatability and amplification consistency

The performance of Maxime™ PCR PreMix Kit (i-StarTaq) was evaluated using different concentrations of lambda phage DNA. Each concentration was tested in eight replicates to assess the consistency and repeatability of PCR amplification.

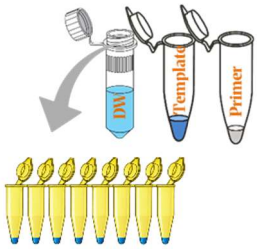


Lane M, SiZer-100 DNA Marker; **NC,** Negative control

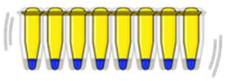
11. EXPLANATION OF SYMBOLS

LOT	Batch code	REF	Catalogue number
Σ	Contains sufficient for <n> tests		Temperature limit
	Date of manufacture		Manufacturer
	Use-by date	RUO	Research Use Only
	Consult instructions for use		Caution

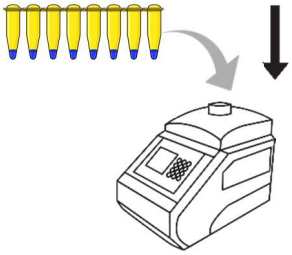
Visual Protocol



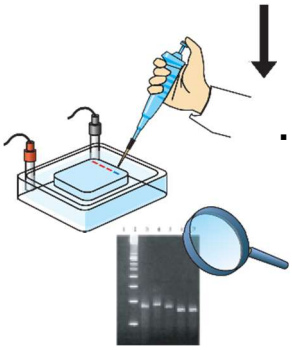
- Add to each PreMix tube :
  Template DNA (10pg ~ 100ng, 1~5 µl)
  +Forward primer + Reverse primer
  (10 pmol/µl , each 1 µl)
  +D.W. (up to 20 µl total)



- Mix thoroughly.
  Ensure the blue dried reagent is fully dissolved before PCR.



- PCR amplification :
  Run PCR
  (Initial denaturation : 94 ˚C, 5~10 min)



- Direct gel loading :
  Load directly onto an agarose gel
  (No additional loading dye required)