

For life science research only.
Not for use in diagnostic procedures.



PCR Buffer Set

 **Version: 09**

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Buffer set for optimization of the magnesium concentration for PCR.

Cat. No. 11 699 121 001 1 set
2 x 1 ml of each solution

Store the product at –15 to –25°C.

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1. General Information

1.1. Contents

Vial / bottle	Label	Function / description	Content
1	PCR Buffer without MgCl_2 , 10x conc.	PCR Buffer: 100 mM Tris-HCl, 500 mM KCl, pH 8.3 at +20°C.	2 vials, 1 ml each
2	PCR Buffer without MgCl_2 , 10x conc., MgCl_2 Stock Solution	25 mM MgCl_2	2 vials, 1 ml each

1.2. Storage and Stability

Storage Conditions (Product)

When stored at -15 to -25°C , the product is stable through the expiry date printed on the label.

Vial / bottle	Label	Storage
1	PCR Buffer without MgCl_2 , 10x conc.	Store at -15 to -25°C .
2	MgCl_2 Stock Solution	

1.3. Application

The PCR Buffer without MgCl_2 in combination with the MgCl_2 Stock Solution is used for the individual adjustment of the Mg^{2+} concentration in the PCR.

- In most applications, a concentration of 1.5 mM MgCl_2 will yield satisfactory results with a dNTP concentration of 200 μM each.

i Oftentimes, however, it is required to titrate the optimal Mg^{2+} concentration to increase the specificity and the yield of the PCR.

2. How to Use this Product

2.1. Before you Begin

General Considerations

Mg²⁺ titration

Mg²⁺ ions form soluble complexes with dNTP and template DNA to produce the actual substrate that the polymerase recognizes.

- The concentration of free Mg²⁺ ions depends on the concentration of compounds, such as dNTP, free pyrophosphates (PPi), and EDTA, such as from TE buffer. The optimal Mg²⁺ concentration should be determined empirically. It may vary from 1 mM to 5 mM.
- The most commonly used MgCl₂ concentration is 1.5 mM with a dNTP concentration of 200 μM each.
- Excess Mg²⁺ in the reaction can increase nonspecific primer binding and increase the nonspecific background of the reaction.
- Too little Mg²⁺ in the reaction can result in a lower yield of the desired product.

The following table is a guideline for adjusting the MgCl₂ concentration. In a 50 μl PCR reaction, use 5 μl PCR Buffer without MgCl₂ and the respective amount of MgCl₂.

MgCl ₂ concentration [mM]	1	1.25	1.5	1.75	2	2.5	5
Volume of MgCl ₂ Stock Solution [μl]	2	2.5	3	3.5	4	5	10

3. Additional Information on this Product

3.1. Quality Control

For lot-specific certificates of analysis, see section, **Contact and Support**.

4. Supplementary Information

4.1. Conventions

To make information consistent and easier to read, the following text conventions and symbols are used in this document to highlight important information:

Text convention and symbols	
 <i>Information Note: Additional information about the current topic or procedure.</i>	
 Important Note: Information critical to the success of the current procedure or use of the product.	
① ② ③ etc.	Stages in a process that usually occur in the order listed.
① ② ③ etc.	Steps in a procedure that must be performed in the order listed.
* (Asterisk)	The Asterisk denotes a product available from Roche Diagnostics.

4.2. Changes to previous version

Layout changes.

Editorial changes.

4.3. Trademarks

All product names and trademarks are the property of their respective owners.

4.4. License Disclaimer

For patent license limitations for individual products please refer to:

List of biochemical reagent products.

4.5. Regulatory Disclaimer

For life science research only. Not for use in diagnostic procedures.

4.6. Safety Data Sheet

Please follow the instructions in the Safety Data Sheet (SDS).

4.7. Contact and Support

To ask questions, solve problems, suggest enhancements or report new applications, please visit our **Online Technical Support Site.**

To call, write, fax, or email us, visit **sigma-aldrich.com**, and select your home country. Country-specific contact information will be displayed.

