

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



MgCl₂ Stock Solution

 **Version: 05**

Content Version: November 2021

For the optimization of the magnesium chloride concentration in PCR.

Cat. No. 11 699 113 001 3 x 1 ml

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 | MgCl ₂ Stock Solution | Solution, 25 mM MgCl ₂ in double-distilled water. | 3 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 | MgCl ₂ Stock Solution | Store at –15 to –25°C. |

1.3. Application

The MgCl₂ Stock Solution is used for the individual adjustment of the Mg²⁺ concentration in the PCR reaction and can be used in combination with the PCR Buffer without MgCl₂*.

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. It may be necessary to titrate the optimal Mg²⁺ concentration to increase the specificity and yield of the PCR.
- 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 provides 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

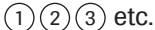
4.1. Conventions


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

 *Information Note: Additional information about the current topic or procedure.*

 **Important Note: Information critical to the success of the current procedure or use of the product.**

 etc. Stages in a process that usually occur in the order listed.

 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. Ordering Information

| Product | Pack Size | Cat. No. |
|----------------|--------------------|----------------|
| Reagents, kits | | |
| PCR Buffer | 3 x 1 ml, 10x conc | 11 699 105 001 |

4.4. Trademarks

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

4.5. License Disclaimer

For patent license limitations for individual products please refer to:

List of biochemical reagent products.

4.6. Regulatory Disclaimer

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

4.7. Safety Data Sheet

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

4.8. 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.

