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ProductInformation

Magnesium chloride solution
PCR Reagent

Product Number **M8787**
Storage Temperature 2–8 °C

CAS# 7786-30-3

Product Description

Molecular Formula: $MgCl_2$
Molecular Weight: 95.21

The polymerase chain reaction (PCR)† is one of the most powerful techniques used in molecular biology. Magnesium chloride, as a source of magnesium ion for PCR, has been shown to influence the primer template annealing temperature,[1] fidelity,[2] specificity, and yield.[1,3] Standard PCR protocols typically call for a final magnesium ion concentration of 1.5 mM.[4] The optimum magnesium concentration for *Taq* DNA polymerase is generally between 1–4 mM in the presence of an overall dNTP concentration of 0.8 mM. Excess magnesium can cause an increase in nonspecific product, while too little can cause reduced yield.[4] The presence of EDTA and other chelating agents, often found in template DNA, can affect the concentration of free magnesium in the PCR. For this and other reasons, it is necessary to optimize specific PCR applications with respect to this divalent cation.[3,4,5,6]

This product is suitable for optimization of polymerase chain reactions.

DNase, RNase: none detected

Components

Provided as 25 mM magnesium chloride in water.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

Store at 2–8 °C.

References

1. Kidd, K.K. and Ruano, G.; "Optimizing PCR" in PCR 2: A Practical Approach, McPherson, M.J., Hames, B.D., and Taylor, G.R., eds; The Practical Series Approach Series, Rickwood, D. and Hames, B.D., series eds; IRL Press, pp. 1-22 (1995)
2. Fromant, M., *et al.*; "Effect of dNTP and Divalent Metal Ion Concentrations on Random PCR Mutagenesis" in Genetic Engineering with PCR, Horton, R.M and Tait, R.C. (eds.), Horizon Scientific Press, pp. 39-55 (1998).
3. Oste, C., "Optimization of magnesium concentrations in the PCR reaction", Amplifications Forum PCR Users, **1**, 10 (1989).
4. Saiki, R.K.; "The Design and Optimization of the PCR" in PCR Technology, Principles and Applications for DNA Amplification, Erlich, H.A. (ed.), Oxford University Press, pp. 7-8 (1992).
5. Innis, M.A., and Gelfand, D.H., "Optimization of PCRs" in PCR Protocols, A Guide to Methods and Applications, Innis, M.A, *et al.* (eds.), Academic Press, pp. 3-12 (1990).
6. Powell, S.J.; "Protocol Optimization and Reaction Specificity" in PCR, Essential Data; Newton, C.R. (ed.), Essential Data Series, Rickwood, D., and Hames, B.D. (series eds.), John Wiley & Sons, pp. 72-86 (1995).

Related Products

- PCR Optimization Kit, Product Code OPT2
- 5 M Betaine solution, PCR reagent, Product Code B0300
- Dimethyl sulfoxide, PCR Reagent, Product Code D9170
- Glycerol, PCR Reagent, Product Code G8778
- Polymer-Aide PCR Enhancer, Product Code P1623

† The PCR process is covered by patents owned by Hoffman-LaRoche, Inc. Purchase of this product does not convey a license under these patents.

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