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

Agarose MP
multi purpose agarose

Version: 11
Content Version: July 2021

Cat. No. 11 388 983 001	100 g
Cat. No. 11 388 991 001	500 g

Store the product at +15 to +25°C.

1. General Information

1.1. Contents

Vial / bottle	Label	Function / description	Catalog number	Content
1	Agarose MP	High gel strength agarose: ≥1,800 g/cm^2; 1%.	11 388 983 001	1 bottle, 100 g
			11 388 991 001	1 bottle, 500 g

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	Agarose MP	Store at +15 to +25°C. ⚠ ***Store dry.***

1.3. Additional Equipment and Reagent required

For preparation of agarose gels

- Electrophoresis buffer
- Boiling water bath or microwave oven

For electrophoresis and staining of DNA

- Tris-acetate or borate buffers
- Ethidium bromide
- 1 mM $MgSO_4$
- Running buffer
- Opaque box

1.4. Application

Agarose MP, a multi-purpose agarose is developed for analytical and preparative electrophoresis of nucleic acids and separation of high molecular weight DNA.

- Especially well suited for pulse field gel electrophoresis (PFGE).
- Also used for the preparative separation of nucleic acids.

2. How to Use this Product

2.1. Before you Begin

General Considerations

Specifications

Specification	Value
Electroendosmosis (EEO)	≤0.12
Sulfur as SO_4	≤0.12%
Gelling temperature (1.5%)	+36°C (± 1.5°C)
Melting temperature (1.5%)	+88°C (± 1.5°C)
Gel strength (1%)	≥1,800 g/cm^2
Gel strength (1.5%)	≥3,200 g/cm^2
DNase	none detected
RNase	none detected

Digestion of electroeluted DNA is tested using the restriction endonucleases BamH I and Pst I.
Recovered DNA can be ligated with T4 DNA ligase.

Properties

- The high gel strength reduces separation times for large DNA molecules while maintaining high resolution, and permits the use of low concentrations of agarose in electrophoretic gels.
- The agarose matrix of gels made with low concentrations of Agarose MP allows rapid migration of high molecular weight molecules without significant restriction.
- Biologically active DNA can be recovered quantitatively.

2.2. Protocols

Preparation of <2% agarose gels

1. Use a flask that is 2 to 4 times the volume of the solution being prepared.

2. Add the correct amount of dry agarose to a measured quantity of electrophoresis buffer.

3. Select one of the following methods.

Method	Step
Boiling water bath	Melt the agarose by heating the slurry in a boiling water bath until the agarose dissolves.
Microwave oven	Melt the agarose in solutions of less than 2%; then heat the slurry in a microwave oven on a high power setting until it starts to boil. – Boil the solution for 1 minute or until all particles are dissolved. – Remove the flask from the microwave oven, and gently swirl to mix the agarose solution. ⚠ ***Use extreme caution when handling. The solution may become superheated and boil vigorously when touched.***

4. Cool the solution to approximately +60°C before pouring.

Preparation of >2% agarose gels

1. Use a flask that is 2 to 4 times the volume of the solution being prepared.
   – Add the correct amount of dry agarose to a measured quantity of electrophoresis buffer.

2. Heat the slurry in a microwave oven on a medium power setting until it starts to boil.
   The lower power setting will make it less likely that the solution will foam, a tendency of concentrated agarose solutions.

3. Remove the flask from the oven and gently swirl to resuspend the gel particles.

4. Reheat the solution on a medium power setting until it starts to boil.

5. Remove the flask from the microwave and gently swirl.
   If the agarose did not completely dissolve, reheat the solution.

6. Cool to approximately +70°C before pouring.

DNA electrophoresis

Resolution ranges

The most commonly used technique for DNA separation is horizontal electrophoresis in 0.5 to 2% agarose gels submerged in Tris-acetate or Tris-borate buffer.

- The use of gels having different agarose concentrations makes the resolution of a wide size range of DNA fragments possible.
- The resolution ranges which can be obtained with various concentrations of Agarose MP are shown in the table. The corresponding migration behavior of bromophenol blue is depicted in Figure 1.

Concentration of Agarose MP in gel [%]	Efficient range of separation of linear DNA molecules [kb]
0.4	2 – 30
0.75	1 – 15
1	0.5 – 10
1.25	0.3 – 5
1.5	0.2 – 4
2	0.1 – 2.5

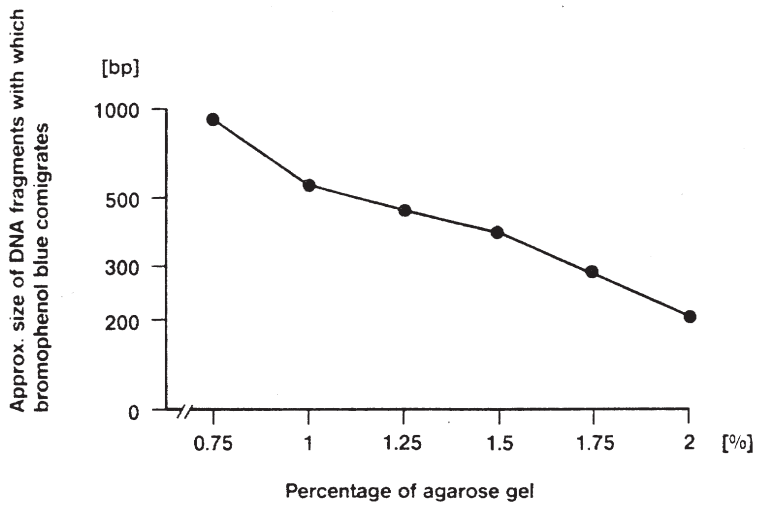

Fig. 1: Migration of DNA fragments in Agarose MP.

Staining DNA in agarose gels

The most common stain for detecting nucleic acids is ethidium bromide. Some general guidelines include:

- Use ethidium bromide in concentrations between 0.5 and 5 µg/ml in the gel and in the electrophoresis buffer. If the gel contains 5 µg/ml ethidium bromide, it is not necessary to add ethidium bromide to the running buffer.
- Reduce the background fluorescence caused by ethidium bromide by soaking the stained gel in 1 mM $MgSO_4$ for one hour at +15 to +25°C.
  Allows easy detection of very small amounts of DNA.
- To stain the DNA after electrophoresis, soak the gel in a 1 µg/ml ethidium bromide solution for 10 minutes.

Destaining of gels

1. Destain with a 30 minute rinse in running buffer.

2. Keep the gel in an opaque box when ethidium bromide is present to avoid nicking of the DNA.

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.	
① ② ③ etc.	Stages in a process that usually occur in the order listed.
❶ ❷ ❸ 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.

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