



# **PRODUCT INFORMATION**

## **AGAROSE TECHNICAL INFORMATION**

### **DEFINITION**

Agarose is a neutral polysaccharide extracted from the cell walls of certain Rhodophyceae algae, also known as agarophyte seaweeds because they are the raw material used in the production of agar-agar. The structure of the polysaccharide is a galactan, formed by linking agarobioses 1-3, 1-4. This chemical structure gives agarose the capacity to form gels that are very strong even at low concentrations. These gels have a macroreticular structure with a very open mesh which can be adjusted simply by varying the concentration of agarose. The macroreticular of the agarose gel is formed by hydrogen bonds, which makes the gel thermo-reversible, thus it melts upon heating. They hysteresis—difference between gelling and melting temperature—is freather than for any other hydrocolloid. In addition, the absence of ionic groups makes the gel a neutral structure, thus there is no interaction with hydrophilic macromolecules which migrate through the gel mash. The gel is an efficient sieve for these particles.

### **APPLICATIONS**

All applications for agarose take advantage of the special characteristics of the macroreticular gel. It is used as a sieve or support through which biological macromolecules such as proteins or nucleic acids can pass. Larger particles, such as viruses and subcellular fragments, are also able to move through the gel network.

- Immunodiffusion. In this technique, macromolecules migrate and are precipitated in the gel by molecular diffusion.
- Electrophoresis. Agarose is suitable for the widest range of electrophoresis procedures as well as in immunoelectrophoresis and electrofocusing. Driven by electrostatic fields, the macromolecules migrate through macroreticular structure.
- Gel Chromatography, Affinity Chromatography and Ion Exchange Chromatography. In these applications, the movement of macromolecules is caused by the displacement of solvent along the gel formed in microspheres.
- Supports for Biocatalysis. Agarose is derivatized and activated by organic synthesis to make supports for molecules with enzymatic activity. The capacity of gel beads as enzymatic support is much greater because enzymes can also be attached inside the beads. The structure is sufficiently open to allow the movement of coenzymes and substrates inside the gel.
- Solid Culture Media. Solid or semi-solid media are used to grow plant cells and tissues. Culture media prepared with agarose (instead of agar) can be used for strict autotrophic bacteria.
- Growth of Protein Crystals. The agarose gel regulates the diffusion of the protein molecules, allowing the formation of crystals suitable for crystallographic study.

There are other scientific and technical applications.



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### **D0012**

#### **Agarose A, Biotechnology Grade**

Agarose A is a standard melting/gelling agarose, suitable for routine nucleic acid and protein analytical preparative applications.

*Please see certificate of analysis for specifications.*

### **D0014**

#### **Agarose B LOW EEO, Biotechnology Grade**

Agarose B Low EEO is optimized for pulsed-field electrophoresis. This product has an exceptionally low EEO and high gel strength, both of which facilitate the preparation of low concentration gels for resolving **LARGE** (>20kb) fragments.

*Please see certificate of analysis for specifications.*

### **D0011**

#### **Agarose C, Biotechnology Grade**

Agarose C has **HIGHEST** gel strength and is suitable for pulsed-field applications like gene mapping and chromosomal analysis. It can also be used for resolving nucleic acid of **SMALL** fragments down to about 200bp.

*Please see certificate of analysis for specifications.*

### **D0010**

#### **Agarose D, Biotechnology Grade**

Agarose D is a unique blend of agarose developed to provide high resolution of **SMALL** nucleic acids and PCR products. Specially designed for analysis of DNA fragments less than 1,000bp, agarose D provides precise banding patterns without smearing or high background of fluorescence.

*Please see certificate of analysis for specifications.*