# Agar Powder

## Preparation and Application

Agar (agar-agar, gum agar) is a natural polysaccharide derived from several species of marine red algae. Its primary use in the educational laboratory is as a solidifying (gelling) agent in microbiological media. For this purpose 15 grams of agar per liter of distilled or deionized water is the standard recipe. The agar powder is stirred into the water which is then heated to the boiling point (heat gently, stir constantly) to dissolve the agar. The resulting solution should be clear, lightly colored, and with little or no undissolved material.

To enable proper growth of microorganisms other compounds *must* be added, as agar by itself has little nutritive capacity. Additives (enrichments) typically include various carbohydrates and protein derivatives. Numerous media formulations have been developed over the years to serve a variety of applications—each formulation consisting of specific compounds in defined proportions. For example, nutrient agar—perhaps the most commonly used general purpose bacteriological medium—consists of agar (15 grams per liter), beef extract (3 g/L), and peptone (an enzymatically digested protein derivative, 5 g/L). Broth media, which are used in a liquid state, do not contain agar as solidification is not required.

To make one liter of a very simple and inexpensive culture medium, add 15 g of agar and two bouillon cubes to one liter of distilled or deionized water. Heat and stir to dissolve agar as described above. This medium will support adequate growth of many bacterial species. For more demanding uses, including the culture and isolation of specific organisms and biotechnological applications, we strongly recommend the use of an appropriate defined medium.

As a general guideline to the total volume of medium required, allow for approximately 20 mL per 15 × 100 mm (standard) Petri dish, or approximately 8 mL per 15 × 60 mm Petri dish. One liter of medium will fill 50 standard Petri dishes or 125 of the smaller dishes.

Please consult the Flinn Scientific website for our complete listing of microbiological media. Many are available in powdered form, and pre-prepared in melt-and-pour bottles and culture tubes.



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