Three ways to prepare agarose gels

There are several ways to prepare agarose gels

- Watch a video outlining three methods to cast agarose gels by scanning the QR code.
- See the following pages for detailed instructions on how to prepare 2% agarose gels using each method.

Important notes

- These instructions are designed for use with the blueGel™ electrophoresis system by miniPCR bio™. If using another electrophoresis system, these instructions may need to be adjusted according to the manufacturer’s instructions.
- These instructions are for preparing 2% agarose gels. If you plan to pour gels of a different percentage, adjust volumes proportionally, as in the table below.

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<table>
<thead>
<tr>
<th>All-in-one Agarose Tabs™</th>
<th>Gel %</th>
<th>Agarose format</th>
<th>Liquid</th>
<th>Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>2%</td>
<td>1 all-in-one tab</td>
<td>20 ml H₂O</td>
<td>1 gel</td>
<td></td>
</tr>
<tr>
<td>1%</td>
<td>1 all-in-one tab</td>
<td>40 ml H₂O</td>
<td>2 gels</td>
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</table>

<table>
<thead>
<tr>
<th>Agarose Tabs™</th>
<th>Gel %</th>
<th>Agarose format</th>
<th>Liquid</th>
<th>Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>2%</td>
<td>1 agarose tab</td>
<td>25 ml 1X TBE</td>
<td>1 gel</td>
<td></td>
</tr>
<tr>
<td>1%</td>
<td>1 agarose tab</td>
<td>50 ml 1X TBE</td>
<td>2 gels</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Agarose powder</th>
<th>Gel %</th>
<th>Agarose format</th>
<th>Liquid</th>
<th>Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>2%</td>
<td>0.4 g agarose powder</td>
<td>20 ml 1X TBE</td>
<td>1 gel</td>
<td></td>
</tr>
<tr>
<td>1%</td>
<td>0.2 g agarose powder</td>
<td>20 ml 1X TBE</td>
<td>1 gel</td>
<td></td>
</tr>
</tbody>
</table>
Option 1: All-in-one Agarose Tabs™
Tabs contain agarose, TBE buffer, and DNA stain. Just add water!

A. Prepare a 2% agarose solution
   - Obtain a heat-resistant container such as a glass Erlenmeyer flask or beaker that is at least three times the volume you wish to add.
   - Combine 20 ml room temperature distilled water and one all-in-one tab for each gel you plan to pour.
   - Allow the tabs to soak until they fully disintegrate (this could take a few minutes).
   - Swirl the flask or beaker until reagents are well mixed.

B. Heat solution
   - Expect to heat for about 60 seconds per 20 ml of liquid in a standard microwave.
   - If a microwave is not available, a hotplate can be used. Note that this option takes more time.
   - Heat until the solution boils and continue until agarose is fully dissolved. No agarose particles should remain.
   - Note: The included DNA stain will give the solution a yellow/orange tinge.

Caution: The solution may boil over the top of some containers. The solution will be very hot.

C. Pour the agarose solution into the prepared casting platform with a gel tray and comb
   - The agarose solution should cover the bottom of the gel tray and the bottom 3 mm of the comb (roughly the bottom 1/3 of the comb).

D. Allow gel to solidify completely, then remove the comb by pulling firmly upwards
   - Gels will typically be ready in about 10 minutes.
   - Gel is ready when cool and firm to the touch.
   - Gels can be stored for up to three days at room temperature in an airtight container protected from light.

E. Prepare 1X TBE buffer
   - Prepare approximately 30 ml of buffer for every blueGel™ electrophoresis system you plan to use. This will be used as running buffer.
   - TBE buffer is often provided as liquid concentrate or powder.
   - Follow manufacturer’s instructions to prepare 1X TBE buffer solution.
Option 2: Agarose Tabs™
Tabs contain pre-weighed agarose. Add TBE buffer and DNA stain.

A. Prepare 1X TBE buffer
- Prepare at least 60 ml of buffer for every blueGel™ electrophoresis system you plan to use.
- You will use 25 ml of 1X TBE to make the gel and 30 ml as running buffer.
- TBE buffer is often provided as liquid concentrate or powder.
- Follow manufacturer’s instructions to prepare 1X TBE buffer solution.

B. Prepare a 2% agarose solution
- Obtain a heat-resistant container such as a glass Erlenmeyer flask or beaker that is at least three times the volume you wish to add.
- Combine 25 ml room temperature 1X TBE buffer and one Agarose Tab™ for each gel you plan to pour.
- Allow the tabs to soak until they fully disintegrate (this could take a few minutes).
- Swirl the flask or beaker until reagents are well mixed.

C. Heat solution
- Expect to heat for about 60 seconds per 25 ml of liquid in a standard microwave.
- If a microwave is not available, a hot plate can be used. Note that this option takes more time.
- Heat until the solution boils and continue until agarose is fully dissolved. No agarose particles should remain.

Caution: The solution may boil over the top of some containers. The solution will be very hot.

D. Add DNA stain to the solution
- Add 2.5 μl of SeeGreen™ stain or GelGreen® stain for each 25 ml of solution.
- Swirl solution in flask or beaker until dye appears evenly distributed.

E. Pour the agarose solution into the prepared casting platform with a gel tray and comb
- The agarose solution should cover the bottom of the gel tray and the bottom 3 mm of the comb (roughly the bottom 1/3 of the comb).

F. Allow gel to solidify completely, then remove the comb by pulling firmly upwards
- Gels will typically be ready in about 10 minutes.
- Gel is ready when cool and firm to the touch.
- Gels can be stored for up to three days at room temperature in an airtight container protected from light.
Option 3: Agarose powder

A. Prepare 1X TBE buffer
   • Prepare at least 50 ml of buffer for every blueGel™ electrophoresis system you plan to use.
   • You will use 20 ml of 1X TBE to make the gel and 30 ml as running buffer.
   • TBE buffer is often provided as liquid concentrate or powder.
   • Follow manufacturer’s instructions to prepare 1X TBE buffer solution.

B. Prepare a 2% agarose solution
   • Obtain a heat-resistant container such as a glass Erlenmeyer flask or beaker that is at least three times the volume you wish to add.
   • Combine 20 ml 1X TBE buffer and 0.4 g agarose powder for each gel you plan to pour.
   • Swirl the flask or beaker until reagents are well mixed.

C. Heat solution
   • Expect to heat for about 60 seconds per 20 ml of liquid in a standard microwave.
   • If a microwave is not available, a hotplate can be used. Note that this option takes more time.
   • Heat until the solution boils and continue until agarose is fully dissolved. No agarose particles should remain.

   Caution: The solution may boil over the top of some containers. The solution will be very hot.

D. Add DNA stain to the solution
   • Add 2 μl of SeeGreen™ stain or GelGreen® stain for each 20 ml of solution.
   • Swirl solution in flask or beaker until dye appears evenly distributed.

E. Pour the agarose solution into the prepared casting platform with a gel tray and comb
   • The agarose solution should cover the bottom of the gel tray and the bottom 3 mm of the comb (roughly the bottom 1/3 of the comb).

F. Allow gel to solidify completely, then remove the comb by pulling firmly upwards
   • Gels will typically be ready in about 10 minutes.
   • Gel is ready when cool and firm to the touch.
   • Gels can be stored for up to three days at room temperature in an airtight container protected from light.