

VWR

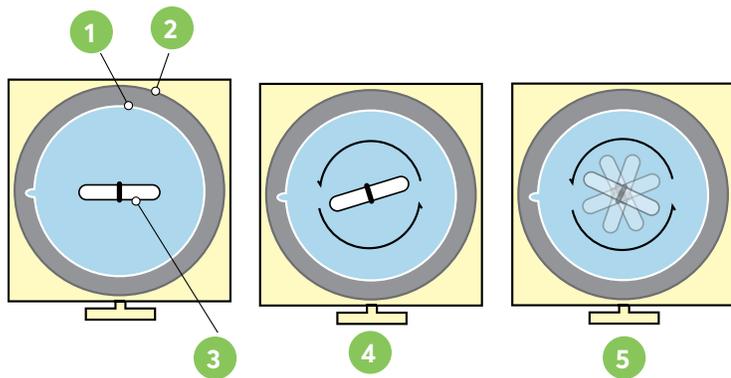
magnetic stir bar selection guide

01. STIR BARS FOR
EVERY APPLICATION

02. FDA-APPROVED
MATERIALS

03. MANUFACTURED IN A REGISTERED ISO 9001:2015
DEPARTMENT, AS VERIFIED BY SGS CERTIFICATION





Achieving best results with magnetic stirring
Top view of stirrer

- 1 Beaker
- 2 Surface plate
- 3 Magnetic stir bar (centered over drive magnet)
- 4 Slowly increasing speed
- 5 Until optimum speed is reached

All Spinbar® and other Teflon® PTFE-coated magnetic stirring bars are manufactured in a registered ISO 9001:2015 department, as verified by SGS certification.

Magnetic stirring is used in a number of common laboratory procedures, yet the importance of selecting the best stirring bar for each particular application is often overlooked. The drive magnet, vessel shape, viscosity and abrasiveness of the materials should all be considered when choosing the size, shape and materials (coating and magnet) of the magnetic stir bar in order to achieve effective, efficient stirring results.

First, let's discuss magnetism. On the most basic level, we know that opposite poles attract. A magnetic stirrer has a drive magnet—generally a bar or U-shape made of a metallic alloy or a ceramic—that rotates, powered by a drive motor. The magnetic poles of the drive magnet are typically about two inches apart in bench top models, and can be up to six inches apart in larger units used to mix 50 gallons of liquid solution. For optimum magnetic coupling, the distance between the magnetic poles of the drive magnet and the length of the stirring bar should be equal. Bars too long or too short in proportion to the drive magnet will not have optimum coupling which is important to reduce spinout.

Once a magnetic stir bar has been placed in a container with solution, it should be positioned directly over the center of the drive magnet. The stirring speed should be increased slowly, until the desired vortex pattern is achieved. Should the magnetic stir bar lose its coupling with the drive magnet because of the speed of the drive magnet, viscosity of the fluid, or an improperly selected stir bar length, it is said to have "spun-out."

Vertical distance between the drive magnet and the stir bar should be kept to a minimum for the best coupling and stirring efficiency. Therefore, the containing vessel should be as thin as practical.

The selection of the shape of the magnetic stir bar also influences the resulting vortex. Multi-sided shapes may be more efficient in moving solutions and certain shapes have been designed to provide a tailored fit in specialty vessels such as test tubes, cuvettes, and spectrophotometer cells.

Magnetic stir bars are generally made of ALNICO (an alloy of aluminum, nickel, iron, and cobalt) magnets encapsulated in an FDA approved PTFE coating. In addition, magnetic stir bars also use high energy magnetic materials, such as Samarium Cobalt which increases strength of coupling with a drive magnet and helps to reduce spinout when mixing viscous solutions or mixing at high speeds.

| Applications | General Stirring Applications | High Temperature Stirring |
|---------------|--|--|
| Brand/Type | Spinbar® Telfon® PTFE | Spinbar® PYREX® Glass |
| Magnetic Type | Alnico | Alnico |
| Covering | Teflon PTFE | Clear PYREX Glass |
| Features | Wide selection of shapes and sizes to fit vessels of all types; Individual shapes create different vortexes for efficient and effective stirring | Heated stirring applications up to 274°C (525°F) |
| | FDA grade Teflon PTFE low friction coating is durable and inert | Glass casing has zero absorption and porosity |
| | Color selection for color-coding work processes | |

Spinbar magnetic stirring bar shapes and performance

Whether mixing is needed in a 10mm cuvette, a 1.5mL vial, a beaker, or a 50 gallon drum, there is a Spinbar magnetic stirring bar that can do the job.

VWR® CIRCULUS™ MAGNETIC STIR BARS, COLOR-CODED

Circulus™ magnetic stirring bars provide strong turbulence at relatively low speeds, offer reduced surface contact, and have excellent centering characteristics, particularly in vessels with convex bottoms.

| Dimensions, Dia. x L | Color | Cat. No. |
|---------------------------------|--------|-----------|
| 7.9 mm (5/16") x 32 mm (1 1/4") | White | 58947-849 |
| 7.9 mm (5/16") x 32 mm (1 1/4") | Red | 58947-882 |
| 7.9 mm (5/16") x 32 mm (1 1/4") | Yellow | 58947-929 |
| 7.9 mm (5/16") x 32 mm (1 1/4") | Blue | 58947-962 |

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VWR® SPINRING® MAGNETIC STIR BARS

Stirring bars provide maximum stabilization of the magnetic stirring bar with the addition of a "hoop" around a standard octagonal bar. The friction fit of the "hoop" and bar allows them to spin as a unit. By presenting a greater surface area and wider profile, "spin out" is virtually eliminated. This particular arrangement is best suited for larger open-neck vessels, such as buckets and beakers.

| Ring O.D. | Dimensions, Dia. x L | Cat. No. |
|-----------|-----------------------------------|-----------|
| 19 mm | 7.9 mm (5/16") x 12 mm (1/2") | 58949-020 |
| 31.8 mm | 7.9 mm (5/16") x 25 mm (1") | 58949-018 |
| 44.5 mm | 7.9 mm (5/16") x 38.1 mm (1 1/2") | 58949-024 |
| 57.2 mm | 7.9 mm (5/16") x 51 mm (2") | 58949-022 |



VWR® SPINBAR® MICRO STIR BARS

Micro (Flea) magnetic stirring bars are designed for stirring small volumes in vessels such as vials, tubes, and gradient makers. Available in a variety of colors and sizes, micro (flea) stirring bars are particularly useful for environmental testing and life science applications in which small sample volumes need to be prepared and evaluated.

| Dimensions, Dia. x L | Cat. No. |
|---------------------------------|-----------|
| 1.5 mm (1/16") x 7.9 mm (5/16") | 58948-353 |
| 1.5 mm (1/16") x 15 mm (5/8") | 58948-411 |
| 2 mm (1/16") x 5 mm (3/16") | 58948-377 |
| 2 mm (1/16") x 7 mm (7/32") | 58948-976 |

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VWR® SPINBAR® CUVETTE STIR BAR

Cell magnetic stirring bars are designed specifically for use with spectrophotometer cells, cuvettes, or test tubes. The cell stirrer fits into standard 10mm spectral cells and provides rapid vertical and horizontal mixing with a minimum of vortexing when placed on a magnetic stirring machine. Centrifugal pumping action, generated by the cross channels in the upper face, mixes without aeration.

| Dimensions, Dia. x L | Cat. No. |
|------------------------------|-----------|
| 9 mm (7/8") x 7.9 mm (5/16") | 58949-030 |



VWR® SPINVANE® STIR BARS FOR TEST TUBES, MICRO VIALS, AND CONICAL BOTTOM CENTRIFUGE TUBES

Magnetic stirring bars are designed for test tubes, micro vials, and conical bottom centrifuge tubes. Each style is manufactured for a specific size tube, but can be modified if needed without affecting the magnet.

| Description | Cat. No. |
|--|-----------|
| Half-Round Stir Bar, Rounded for 16 mm Round Bottom Test Tubes | 58949-274 |
| Half-Round Stir Bar, Tapered for Conical Bottom Centrifuge Tubes (Trim to Fit) | 58949-276 |
| Triangular Stir Bars for 1 mL Micro Vials and Conical Tubes | 58949-270 |
| Triangular Stir Bars for 1 mL Micro Vials and Conical Tubes, Pack of 3 | 55999-000 |
| Triangular Stir Bars for 3 mL or 5 mL Vials and Conical Tubes | 58949-272 |



VWR® SPINBAR® MAGNETIC STIR BARS, OCTAGON

Octagon magnetic stirring bars with integral pivot ring are the most commonly used shape. Their interrupted profile provides greater surface area and added turbulence when compared to the smooth surface of cylindrical bars. Pivot ring aids in reducing friction and chattering.

| Dimensions, Dia. x L | Cat. No. |
|---------------------------------|-----------|
| 3 mm (1/8") x 12 mm (1/2") | 58948-091 |
| 7.9 mm (5/16") x 12 mm (1/2") | 58948-116 |
| 7.9 mm (5/16") x 28 mm (1 1/8") | 58948-950 |
| 7.9 mm (5/16") x 51 mm (2") | 80089-636 |

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VWR® GIANT SPINBAR® STIR BARS, POLYGON

Multifaceted surfaces add turbulence relative to similar smooth size cylindrical bars. Giant Polygon bars can be used for stirring substantial volumes in large vessels such as drums and tanks. Available with or without a molded pivot ring, this ring minimizes the contact area between the bar and the vessel, thus reducing friction and chattering.

| Dimensions, Dia. x L | Cat. No. |
|---|-----------|
| 28 mm (1 ¹ / ₃₂ ") x 57 mm (2 ¹ / ₄ ") | 58948-974 |
| 28 mm (1 ¹ / ₃₂ ") x 108 mm (4 ¹ / ₄ ") | 58948-972 |
| 28 mm (1 ¹ / ₃₂ ") x 159 mm (6 ¹ / ₄ ") | 58948-978 |



VWR® SPINWEDGE® STIR BARS

Magnetic stirring bars provide strong turbulence at fairly low speeds and are well suited for churning sediment or dissolving salts.

| Dimensions, Dia. x L | Cat. No. |
|--|-----------|
| 25 mm (1") x 9.5 mm (3/8") | 58949-232 |
| 44 mm (1 ³ / ₄ ") x 12 mm (1/2") | 58949-254 |
| 50 mm (2") x 12 mm (1/2") | 58949-265 |



VWR® SPINPLUS® MAGNETIC STIR BARS

Magnetic stirring bars add speed and efficiency to mixing operations. The "+" shape creates a deep vortex and provides stable, quiet operation.

| Dimensions, Dia. x L x H | Cat. No. |
|---|-----------|
| 9.5 mm (3/8") x 9.5 mm (3/8") x 4.7 mm (3/16") | 58947-820 |
| 19 mm (3/4") x 19 mm (3/4") x 9.5 mm (3/8") | 58947-822 |
| 25 mm (1") x 25 mm (1") x 14.3 mm (9/16") | 58947-824 |



VWR® SPINBAR® MAGNETIC STIR BARS, EGG-SHAPED

Elliptical (Egg Shaped) magnetic stirring bars are particularly well suited for round bottom flasks. Their shape mimics that of a flask and ensures complete mixing. They also offer minimal contact when used in plastic containers.

| Dimensions, Dia. x L | Cat. No. |
|--------------------------------|-----------|
| 5 mm (3/16") x 9.5 mm (3/8") | 58949-012 |
| 6 mm (1/4") x 15 mm (3/8") | 58949-010 |
| 9.5 mm (3/8") x 19 mm (3/4") | 58949-006 |
| 12 mm (1/2") x 25 mm (1") | 58949-196 |



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VWR® SPINBAR® MAGNETIC STIR BARS, SATURN

Easily stir powders into solutions without getting stalled. A prominent sphere in the middle of the bar elevates the stirring bar arms during rotation and consequently diminishes the surface contact area, permitting the magnet to spin freely without stalling. For use in round or flat bottom vessels.

| Length | Cat. No. |
|--|-----------|
| 40 mm (1 ⁵ / ₈ ") | 89030-912 |
| 50 mm (2") | 89030-914 |



VWR® PYREX® SPINBAR® STIR BARS

Completely encapsulated in Pyrex glass. Glass stirring bars are useful for high temperature applications in excess of 225°C (437°F) where Teflon PTFE is not stable. Glass bars also offer "zero absorption" of the stirred solution.

| Dimensions, Dia. x L | Cat. No. |
|---|-----------|
| 6 mm (1/4") x 22 mm (7/8") | 58948-422 |
| 9.5 mm (3/8") x 12 mm (1/2") | 58948-444 |
| 9.5 mm (3/8") x 25 mm (1") | 58948-466 |
| 9.5 mm (3/8") x 38.1 mm (1 ¹ / ₂ ") | 58948-488 |



VWR® SPINFIN® MAGNETIC STIR BARS

Magnetic stirring bars can be used in round bottom flasks as well as rounded vessels such as test tubes or cylinders.

| Dimensions, Dia. x L | Cat. No. |
|---------------------------------|-----------|
| 9.5 mm (3/8") x 9.5 mm (3/8") | 58948-996 |
| 12 mm (1/2") x 12 mm (1/2") | 58948-992 |
| 15.9 mm (5/8") x 12 mm (1/2") | 58948-994 |
| 19 mm (3/4") x 12 mm (1/2") | 58948-990 |



VWR® SPINSTAR® MAGNETIC STIR BARS

Magnetic stirring bars create a deep mixing vortex at relatively slow speeds. Designed to fit the inside diameter of most commonly-used beakers, the Spinstar stirring bar is perfect for applications requiring slow, thorough mixing.

| For Use With | Cat. No. |
|---------------|-----------|
| 100 mL Beaker | 58949-028 |
| 250 mL Beaker | 58949-026 |
| 400 mL Beaker | 58949-032 |



VWR® SPINBAR® STIR BARS, CYLINDRICAL

Cylindrical magnetic stirring bars offer excellent centering and smooth running characteristics. A small removable pivot ring in the center adds to their versatility. The pivot ring minimizes the contact area of the bar to the vessel, reduces friction, and lessens marring of plastic containers.

| Dimensions, Dia. x L | Cat. No. |
|--|-----------|
| 7.9 mm (5/16") x 12 mm (1/2") | 58949-061 |
| 7.9 mm (5/16") x 19 mm (3/4") | 58948-956 |
| 7.9 mm (5/16") x 25 mm (1") | 58949-083 |
| 7.9 mm (5/16") x 32 mm (1 ¹ / ₄ ") | 58948-960 |



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