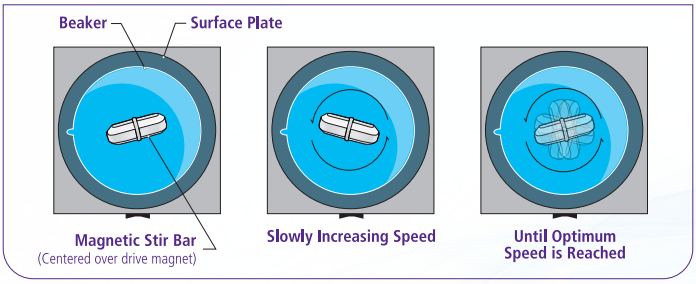
MAGNETIC STIRRING BAR SELECTION & USE

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 (including the opening of the vessel that the stirbar has to fit through), viscosity and abrasiveness of the materials should all be considered when choosing the size, shape and materials (coating and magnet) of the magnetic stirring 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 which 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 stirring 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 stirring bar lose its coupling with the drive magnet because of the speed of the drive magnet, viscosity of the fluid, or an improperly selected stirring bar length, it is said to have "spun-out."

Achieving Best Results with Magnetic Stirring
Top View of Stirrer



Vertical distance between the drive magnet and the stirring 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 stirring bar also influences the resulting vortex in that 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, spectrophotometer cells and round bottomed boiling flasks.

Magnetic stirring bars are generally made of ALNICO (an alloy of aluminum, nickel, iron and cobalt) magnets encapsulated in FDA approved Teflon®, known for its inert chemical compatibility and heat resistance. In addition, magnetic stirring 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.

Contact Us for Your Special Magnetic Stirring Bar Needs

Spinbar® Magnetic Stirring Bar Guide

A Magnetic Stirring Bar for Every Application

Applications	General Stirring Applications	High Temperature Stirring	Viscous Solutions High Speed Stirring
Brand/Type	**Spinbar® Teflon PTFE**	**Spinbar® Pyrex Glass**	**Spinbar® Rare Earth Samarium Cobalt**
Magnetic Type	Alnico	Alnico	Samarium Cobalt
Covering	Teflon® PTFE	Clear Pyrex® Glass	Teflon® PTFE
Features/ Benefits	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 274ºC (525ºF)	Reliable Magnetic Coupling - Superior magnetic energy reduces frequency of spinout in the most vigorous applications
	FDA grade Teflon® PTFE low friction coating is durable and inert	Glass casing has zero absorption and porosity	FDA Grade Teflon® PTFE low friction coating is durable and inert
	Color selection for color-coding work processes		Distinct Color - Green color lets you quickly identify Spinbar® Rare Earth Samarium Cobalt

All Spinbar® and other Teflon® PTFE Coated Magnetic Stirring Bars are Manufactured in a Registered ISO 9001:2008 Facility, as Verified by SGS Certification.

Bel-Art • H-B Instrument
SP SCIENCEWARE™
Prepare to Discover™