Magnetic Stirrer

PCE Americas Inc.
711 Commerce Way
Suite 8
Jupiter
FL-33458
USA
From outside US: +1
Tel: (561) 320-9162
Fax: (561) 320-9176
info@pce-americas.com

PCE Instruments UK Ltd.
Units 12/13
Southpoint Business Park
Ensign way
Hampshire / Southampton
United Kingdom, SO31 4RF
From outside UK: +44
Tel: (0) 2380 98703 0
Fax: (0) 2380 98703 9
info@pce-instruments.com

www.pce-instruments.com/english
www.pce-instruments.com

Introduction

Stirring is a method to obtain homogeneous mixtures and (or) intensify heat and mass exchange in the mixers. In accordance with the state of aggregation of matter there is a mixing of liquids and bulk solids. Stirring is carried out mainly in the vessels with mixing devices. The nature and intensity of mixing depends on the design of devices and mixers. Magnetic stirring can be used over a broad temperature range and with any chemical agent, as well as in open and closed systems, under pressure or vacuum.

The most common mixing is carried out with the help of magnetic stirrers. The device consists of two main parts: motor with stirring mechanism and control electronics. Motor movement with magnet on top causes rotation of stir bars which mix liquids. Control electronics supervises motor RPM, keyboard functions.

Magnetic stirrers are designed for mixing fluids of different viscosity with the help of a stir bar (also called „flea“) that spins very quickly. They are commonly used for sample preparation and analysis, in chemistry, biology and in such laboratory works as organic synthesis, extraction, oil analysis, pH measurement, dialysis, soil suspending, preparing buffer solutions where it is often needed to mix several types of liquids to get homogeneous mixtures. Magnetic stirrers have different service performance and technical parameters. The main difference is in the design which means that mixing occurs by rotating or oscillating processes. When you choose a magnetic stirrer you should take into consideration the volume of the liquid container, the speed of rotation, the oscillation intensity and heating if you need to raise the temperature of the mixture.

A magnetic stirrer is an electro-mechanical device that mixes with the help of an external magnetic field that rotates a stir bar placed in the mixture. Stir bar rotates at different speeds and can mix volumes up to one liter. Since only a small magnet bar which can easily be cleaned and sterilized has to be put inside the sample, the risk of contamination is minimized. Magnetic stir bars work well in glass vessels. Glass is the material that doesn't affect a magnetic field. Stir bar has a limited size that is why it can be used for relatively small experiments (under 4 liters). They can have difficulties with viscous liquids and thick suspensions. The plastic case of the device serves as a good isolation from spills. Magnetic stirrers have no moving parts and use a magnetic field. The housing of the most magnetic stirrers is made of polypropylene. Stir bar is made of ferrite enclosed in polypropylene.

These devices are reliable, universal and easy to use and meet all kind of safety standards.It is necessary to take into account the oscillation intensity, time and a possible heating. Modern magnetic stirrers successfully deal with these tasks and provide the right conditions. Besides, this device is a must be instrument for consistent, reproducible mixing or mixing over long time, for example, for multi-hour or overnight sample mixing.

Magnetic stirrers have advantage over motorized ones. They are quieter and more efficient. They have no moving external parts to break or wear out. For cleaning stir bars you don't need lubricants which could be the reason of contamination of the product. Sometimes magnetic stirrers include a hot plate for heating the liquid. Built-in fault diagnostics and automatic thermal shutdown ensure the safety of magnetic stirrer usage. Magnetic stirrers are easy to use and they ensure high productivity and accuracy. Our magnetic stirrers are built for durability and dependability and fit the most demanding applications. Our devices meet all the requirements for safe and correct operations.