



Laboratory Equipment Guide

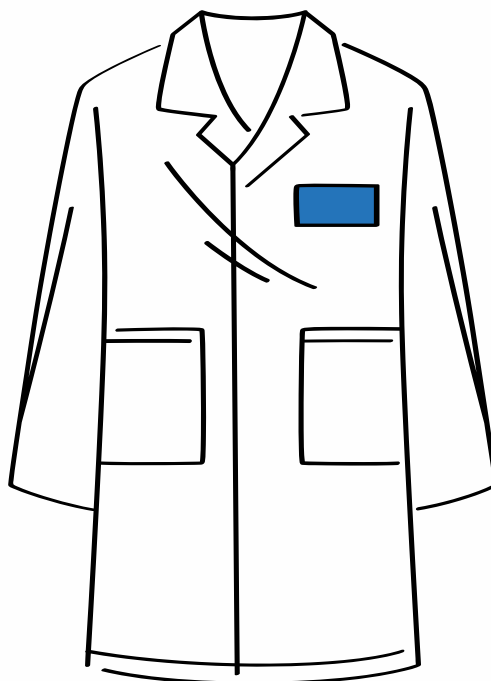
A guide to helping you to understand the different types of Laboratory Equipment and what they are used for.



European Instruments are specialists in the supply of Laboratory equipment, with over 50 years of experience within the industry.

The term 'Laboratory Equipment' encompasses a wide array of instruments which operate in various ways and are utilised by those working in laboratories to conduct experiments, carry out research and generate results.

This guide will identify the large range of laboratory equipment available at European Instruments, as well as explain how these instruments work to transform the capabilities of laboratories and those working inside them. In addition to this, this guide will use examples to highlight how each instrument is utilised by lab professionals in real life scenarios.





Centrifuge

A Centrifuge is an instrument with a container capable of rotating at high speeds, which places a centrifugal force (An outward force on a mass when it is rotated) to the contents within the container, to subject them to a specified constant force. When the centrifuge is in use and the containers contents are subjected to this centrifugal force, this allows the operator to separate particles of different densities, shapes, sizes or viscosities.

Centrifuges are utilised in wide range of laboratory types, such as Academic, Clinical and Research laboratories. Furthermore they are used for a number of processes such as to purify cells, subcellular organelles, viruses, proteins, and nucleic acids. One of the most common uses is to separate red blood cells and other blood components from whole blood.





Shakers

Shakers are instruments that are used in a wide range of shaking and mixing procedures, such as to mix, blend or agitate substances. Shakers contain a motor which vibrates or rotates the instruments platform, this then allows substances that have been placed inside flasks or tubes to be placed on to the platform, where the vibrating/rotating plates mix the substance to then produce a homogenous mixture.

Shakers are utilised within a number of industries. For example, the instrument is used within the Pharmaceutical, Food and Beverage, Cosmetics and Biotech Industries and more. Shakers also have a wide variety of uses, for example just a few uses of Shakers include General Mixing, Diagnostic Testing as well as Bacterial Suspensions.





Stirrers

Hotplates & Stirrers:

Hotplate Stirrers as the name suggests are devices used for heating and stirring solutions with various viscosities simultaneously, for the purpose of achieving a chemical reaction once the solutions have been mixed. The hotplate more specifically heats the solutions maintaining a constant temperature whilst the stirrer is able to consider the intensity of the motion as well as the amount of time it is required for. These instruments are used in a range of industries such as the Food and Beverage and Pharmaceutical Industries and have a range of applications such as Sample Preparation, Drug and Chemical Synthesis and emulsifying liquids to name a few.



Overhead Stirrers:



Overhead stirrers are typically utilised when the use of a magnetic stirrer is not possible. This device is used in particular when working with high viscosity solutions or large volumes of a solution to homogenise, mix, suspend or recirculate the liquids.



Vortex Mixers:

Vortex Mixers are devices used to mix different components that are contained within smaller utensils such as test tubes, well plates and flasks. Vortex Mixers as the name implies create a vortex (Circular motion) in the sample allowing for a strenuous process of mixing to occur. To achieve this a motor with a shaft attaches to the container holding the components and then oscillates underneath, causing them to move in this circular motion.

Vortex Mixers can be used in any laboratory however they are primarily utilised within Microbiology, Biochemical, Bioscience, and Analytical laboratories. Linking to this, Vortex Mixers have various uses within these separate fields such as, in the analysis of proteins and enzymes and for tissue analysis and cell culture.





Dry Block Heaters:

Dry block heaters are utilised to precisely control the temperature during heating and cooling applications. These devices are capable of either heating or cooling samples and designed with wide temperature ranges, whilst also being capable of heating variously sized vessels. In regards to how this instrument type works, Dry Block Heaters operate by heating a block of metal or ceramic material to a certain temperature, which is then maintained using a temperature controller.

Dry Block Heaters are utilised within different laboratory types such as Food, Biotechnological and Pharmaceutical labs and have many applications. For example they are a highly useful source of temperature control during analytical processes such as enzyme digestions and nucleic acid hybridisations as well as other processes that require a high degree of temperature stability.





Homogenisers:

A Homogeniser uses multiple forces such as turbulence and cavitation in addition to high pressure to break or divide materials such as tissue, food and soil into small particles. These small particles are forced through a narrow space which allows them to be evenly distributed throughout a mixture. Cooperation of the rotor and stator (the rotor rotates at high speed and steadily to obtain homogeneity) is what allows Homogenisers to work.

The Pharmaceutical, Biotech and Food and Beverage industries are all examples of various sectors in which Homogenisers are frequently utilised. In addition to this, processes such as particle size reduction, emulsion production and the modification of microorganisms are all examples of uses of Homogenisers.





Laboratory Washer Disinfectors:

Washer Disinfectors are devices used by a range of laboratory professionals to ensure that instruments that have previously been used, are properly cleaned and sterilised. There are a number of different types of Washer Disinfectors, for example the equipment is available in various sizes to suit the requirements of different applications. This being said, the way in which different Washer Disinfectors work remains alike. The machines apply a combination of cold and hot water, as well as cleaning chemicals during different stages, followed by a drying process to make certain that no bacteria remains on the contents inside. This allows lab professionals to verify that the cleaned equipment is now safe for use.

Washer Disinfectors allow those in laboratories to save time, manpower, water and chemicals and allows lab professionals to increase safety through the proper cleaning and sterilisation of equipment that needs to be used again.





pH and Conductivity Meters

pH and Conductivity meters are analytical instruments used to measure the pH and conductivity of a solution. pH is the measurement determining the acidity or alkalinity of a product whilst conductivity measures the concentration of ions present in a sample.

These two parameters (pH and Conductivity) are closely interlinked as the level of hydrogen ions present in a substance will affect the pH level and the conductivity.

There is a wide range of pH and Conductivity Meters available. For example, some devices are equipped with pH and Conductivity capabilities built into one electrode or separate electrodes. A reference electrode, a reference solution, a reference fluid connection and a glass membrane are the main components of pH electrodes. Once the electrode is immersed within a sample, a current is generated and the charge of the reference solution is measured against the solution outside of the glass membrane. The result of this is the pH measurement. The Conductivity Meter measures conductivity by applying an alternating electrical current to two or four electrodes. The electrodes cause a current to pass through a solution. The relative concentration of ions found in the solution determine its conductivity or resistibility. A number of industries and applications require the utilisation of pH and Conductivity Meters. For example pH meters are used for soil measurements in Agriculture and used for blood chemistry in the Pharmaceuticals and Healthcare Industries. Conductivity meters are often utilised in a number of applications such as concentration and dilution control and measuring particular chemicals that make up a solution.





Contact Us

This guide aims to help you gain a better understanding of the laboratory equipment that is available at European Instruments. This being said, a wide range instruments types exist. For example, there are Micro, Mini and Multi Centrifuges available for different applications and their requirements.

If you need assistance when selecting the correct product, make or model. Do not hesitate to contact us using the details below and we will help you choose the most suitable instrument to meet your requirements.

Call us on:

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OR

Email us at:

sales@ei.co.uk