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Exploration of Instrument for Quality Control

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Abstract: *Pharmaceutical instruments are the devices that use to determine certain rational factors of the drugs and medicines. It encompasses a great variety of equipment and products that will find in the medical laboraties. Some instrument are used for the pharmaceutical products and some instruments are are used for determination of quality of pharmaceutical products.*

Keywords: Pharmaceutical equipment , bacteriological incubator, brust strength tester, colony counter, KF Titrator, KBr press, mili- Q- water system, etc

I. INTRODUCTION

Pharmaceutical instruments are various fundamental devices that play a vital role in the medicine and pharmaceutical fields. It is an analytical measuring device usually found in medical facilities and laboratories. The primary function of pharmaceutical instruments is to determine, test, study, observe and analyze particular medicine, drug, and other pharmaceutical compounds.

II. INSTRUMENT FOR QUALITY CONTROL

Autoclave

Autoclave is a pressurized device designed to heat aqueous solutions above their boiling point at normal atmospheric pressure to achieve sterilization.

Auto -self Clavis- locking device

An autoclave is a machine that uses steam under pressure to kill harmful bacteria, viruses, fungi, and spores on items that are placed inside a pressure vessel.

Analytical Balance

Analytical balances are an extremely accurate laboratory balance created to precisely measure the mass of an object. Offering a readability up to 0.00001 grams (0.01 mg), analytical balances are frequently used in laboratories. Providing such accurate measurement means that the balance is highly sensitive. Analytical balances are therefore designed with draft shields to provide protection from external environments such as air flows and dust which might affect the precision.

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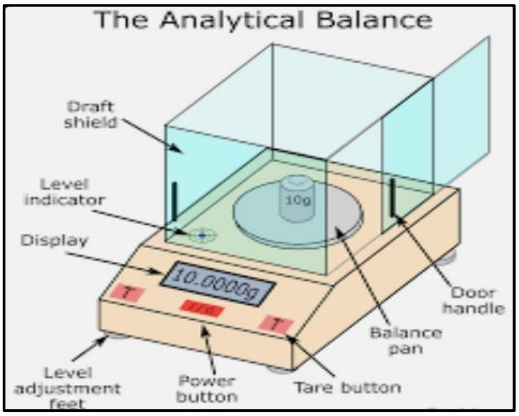
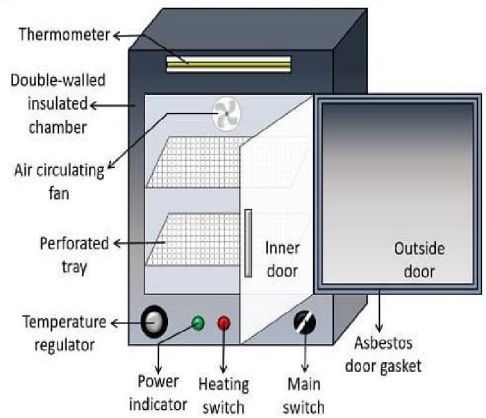


Analytical Balance

An automatic titrator allows you to start the titration and then walk away from the titrator to perform other tasks or tests while the titrator takes care of the titrant addition, endpoint detection and results calculations automatically without any involvement from the operator.

Bacteriological Incubator

Bacteriological Incubator is used for storage of bacteria plate and bacterial culture growth at 37 degree Celsius. These incubators are fitted with heating temperature only; therefore, these are also called heated incubators. We are bacterial incubator manufacturers and suppliers in India and make these units in different sizes (chamber dimensions). Standard modes come in small size as 28 liters and large size as 340 liters. We also make big size bacterial incubators on demand. Each unit is fitted with digital temperature controller for excellent accuracy and reliability. A motorized blower is also fitted for uniform air circulation across the chamber. Our Bacterial incubators are economical and fit in everyone's budget price. They require almost no maintenance and deliver wonderful performance for long years without need of after sales service.



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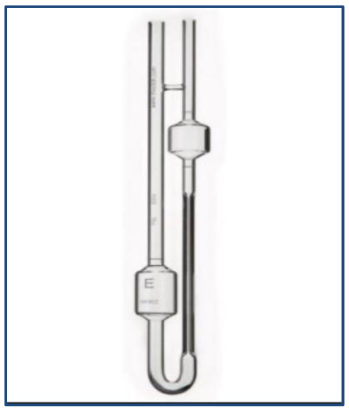
Viscometer

A viscometer (also called viscosimeter) is an instrument used to measure the viscosity of a fluid. For liquids with viscosities which vary with flow conditions, an instrument called a rheometer is used. Thus, a rheometer can be considered as a special type of viscometer.[1] Viscometers can measure only constant viscosity, that is, viscosity that does not change with flow conditions.

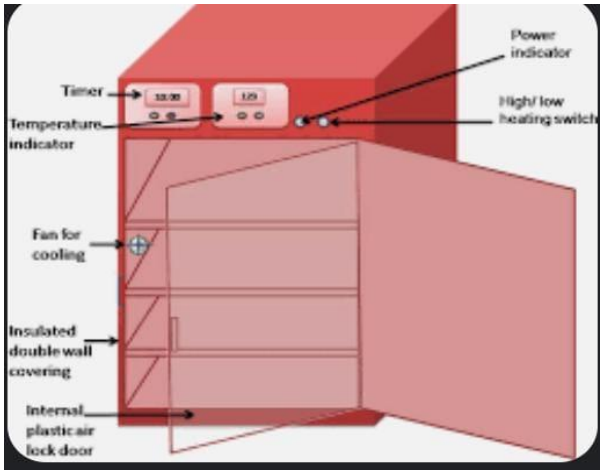
In general, either the fluid remains stationary and an object moves through it, or the object is stationary and the fluid moves past it. The drag caused by relative motion of the fluid and a surface is a measure of the viscosity. The flow conditions must have a sufficiently small value of Reynolds number for there to be laminar flow.



At 20 °C, the dynamic viscosity (kinematic viscosity x density) of water is 1.0038 mPa's and its kinematic viscosity (product of flow time x factor) is 1.0022 mm2/s. These values are used for calibrating certain types of viscometers.

BOD Incubator

BOD incubators are especially useful for determining levels of organic matter and nitrogen in waste water samples. These incubators are also called low temperature incubators. The BOD incubator provides the required temperature for the growth of microorganisms and allows to performthe BOD testing



Brust Strength Tester

Bursting Strength Tester is widely used in textile, leather, paper and other fields. The bursting strength and height of woven, knitted, non-woven fabric, paper or board are measured by air pressure drum. It is the basic equipment for testing physical strength and strength of materials.

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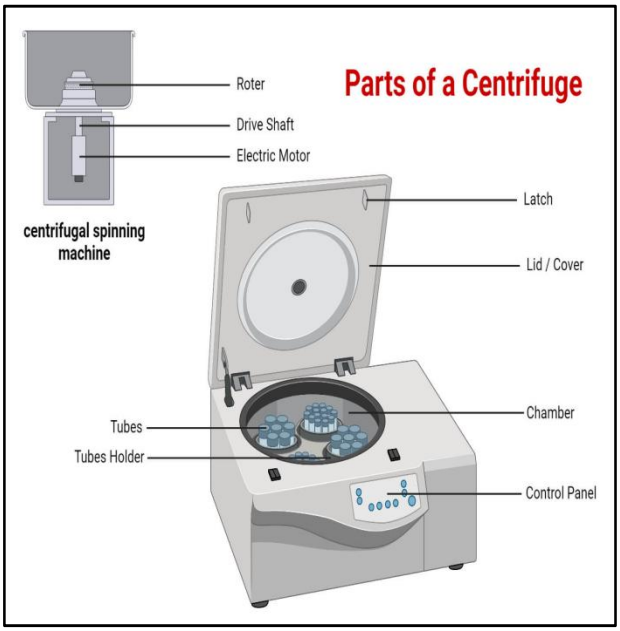

Centrifuge

A centrifuge is a device that uses centrifugal force to subject a specimen to a specified constant force, for example to separate various components of a fluid. This is achieved by spinning the fluid at high speed within a container, thereby separating fluids of different densities (e.g. cream from milk) or liquids from solids. It works by causing denser substances and particles to move outward in the radial direction. At the same time, objects that are less dense are displaced and moved to the centre. In a laboratory centrifuge that uses sample tubes, the radial acceleration causes denser particles to settle to the bottom of the tube, while low-density substances rise to the top.[1] A centrifuge can be a very effective filter that separates contaminants from the main body of fluid.

Colony Counter

A colony counter is an equipment used to count colonies of microorganisms growing on agar plates.

There are numerous types of colony counters available for counting bacteria and yeast colonies rapidly and precisely. Some of these colony counters are manually operated, while others are automatically operated.

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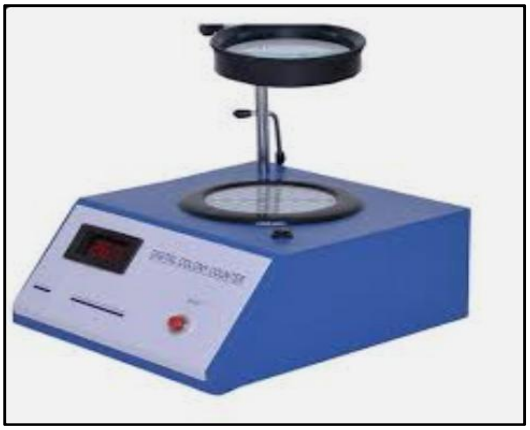

Conductivity Meter

Conductivity meter allows us to measure the level of conductivity in solutions. Conductivity is an ability of materials (solutions, metals or gases) to pass an electric current. While all materials possess the ability to pass electric currents, the degree of such ability can vary. Substances with conductive aqueous solutions are referred to as electrolytes. These electrolytes are able to break down into ions when dissolved in water, thus creating free ions in the solution. Acids, bases, and salts are examples of electrolytes. Substances with non-conductive aqueous solutions are referred to as nonelectrolytes. These substances are often composed of covalent bonds, and examples include Carbon-containing compounds, fat, and sugar.

Cyclo mixer

Cyclo Mixer Plus is designed for mixing liquids in Schools, Laboratories & Factories. The Touch/Continuous Operation mode has selection through bi- directional switch. The speed regulate through knob provided on the control panel. An Interchangeable mixing heads is for use with variety of tubes.

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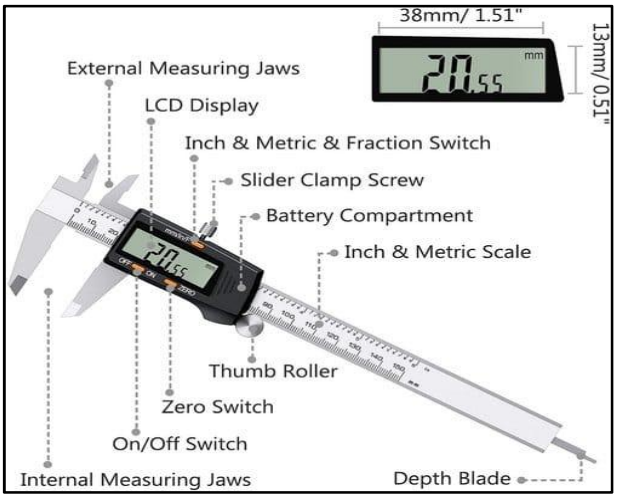
Digital Vernier Caliper

A caliper is a device with a measuring scale and a "jaw" that measures an object's dimensions. A vernier caliper is a specific type of caliper with two scales, including a vernier scale. A vernier scale is an auxiliary scale that appears alongside the instrument's principal scale that gives you the option of a higher resolution. You'll find vernier scale markings between the graduation markings on the main scale. Some vernier scales allow for a measurement resolution as precise as 0.01mm



FTIR

FTIR stands for Fourier transform infrared, the preferred method of infrared spectroscopy. When IR radiation is passed through a sample, some radiation is absorbed by the sample and some passes through (is transmitted). The resulting signal at the detector is a spectrum representing a molecular 'fingerprint of the sample. The usefulness of infrared spectroscopy arises because different chemical structures (molecules) produce different spectral fingerprints.

Heating Mantle

A heating mantle, or isomantle, is a piece of laboratory equipment used to apply heat to containers, as an alternative to other forms of heated bath. In contrast to other heating devices, such as hotplates or Bunsen burners, glassware containers may be placed in direct contact with the heating mantle without substantiallyincreasing the risk of the glassware shattering, because the heating element of a heating mantle is insulated from the container so as to prevent excessive temperature gradients. Heating mantles may have various forms. In a commonarrangement, electric wires are embedded within a strip of fabric that can be wrapped around a flask. The current supplied to the device, and hence the temperature achieved, is regulated by a rheostat. This type of heating mantle is quite useful for maintaining an intended temperature within a separatory funnel.

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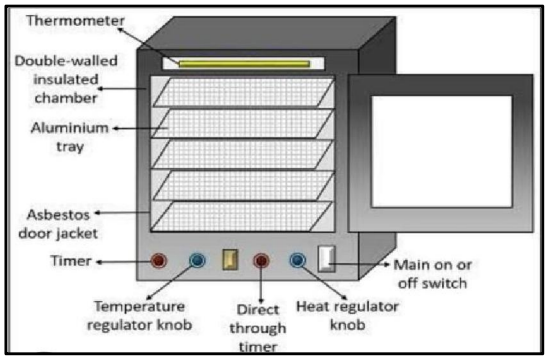
Hot Air Oven

A hot air oven is used to sterilize the product in a particular period of time under specific conditions like humidity, pressure, and other environmental factors. Hot air oven controls the humidity level by removing moisture from the products and combining the airflow with heat.



Hot Plate

A "hot plate" is defined as a device with a flat surface and an internal electric heating element that is used for cooking or heating food.

Prohibited

1. Hot plates may not be used to fry or cook food items that produce grease laden vapors (bacon, sausage, butter, etc.).
2.No liquid oils may be used when cooking or heating with hot plates; only small quantities of non-stick cooking spray may be used.
3.Gas fueled hot plates and hot plates with exposed heating elements are not allowed on campus. Hot Plates are also not allowed to be used in any residential dormitory room.

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Karl Fisher Titration

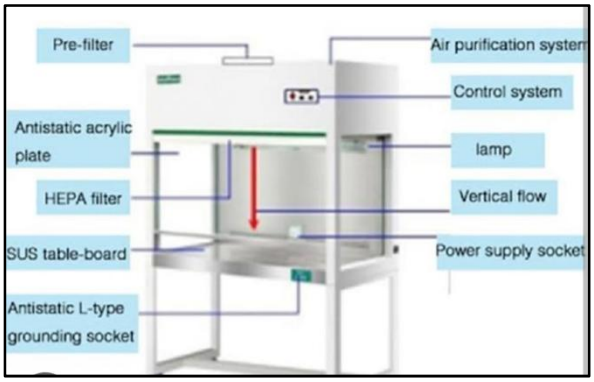
Karl Fischer titration is a classic titration method In chemical analysis that uses coulometric or volumetric titration to determine trace amounts of water in a sample. It was invented in 1935 by the German chemist Karl Fischer. Today, the titration is done with an automated Karl Fischer titrator.

KBr Press

A KBR Manual Hydraulic Press producing a force about 15 tones use to make high quality 13 mm Pallet used for IR/FTIR/XRF Solid Sampling. 15-ton laboratory Hydraulic Pellet Press is a compact, elegant and robust machine, typically used by R&D & QC labs for various pelletizing applications for IR/XRF, etc.

Laminar Air Flow

In fluid dynamics, laminar flow is characterized by fluid particles following smooth paths in layers, with each layer moving smoothly past the adjacent layers with little or no mixing.[1] At low velocities, the fluid tends to flow without lateral mixing, and adjacent layers slide past one another like playing cards. There are no cross-currents perpendicular to the direction of flow, nor eddies or swirls of fluids. [2] In laminar flow, the motion of the particles of the fluid is very orderly with particles close to a solid surface moving in straight lines parallel to that surface. Laminar flow is a flow regime characterized by high momentum diffusion and low momentum convection.



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Magnetic Stirrer

A magnetic stirrer or magnetic mixer is alaboratory device that employs a rotating magnetic field to cause a stir bar (or flea) immersed in a liquid to spin very quickly, thus stirring it. The rotating field may be created either by a rotating magnet or a set of stationary electromagnets, placed beneath the vessel with the liquid. It is used in chemistry and biology as a convenient way to stir small volumes and where other forms of stirring, such as overhead stirrers and stirring rods, may not be viable.

Melting Point Apparatus

A melting-point apparatus is a scientific instrument used to determine the melting point of a substance. Some types of melting- point apparatuses include the Thiele tube, Fisher-Johns apparatus, Gallenkamp (Electronic) melting- point apparatus and automatic melting-point apparatus.

Mili-Q- Water system

Milli-Q Direct Water Purification System, Pure and ultrapure water directly from potable water at a flow rate of 8 L/hr. Expand. ZIQELEMTO. Milli-Q IQ Element Purification Unit, Produces high-quality Type 1 ultrapure water for trace elemental analysis. Expand.

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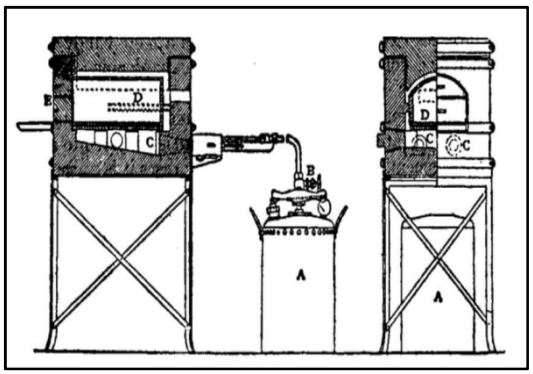
Muffle Furnies

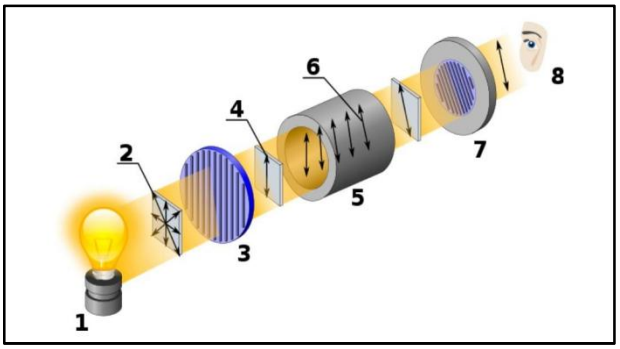
A muffle furnace or muffle oven (sometimes retort furnace in historical usage) is a furnace in which the subject material is isolated from the fuel and all of the products of combustion, including gases and flying ash. After the development of high- temperature heating elements and widespread electrification in developed countries, new muffle furnaces quickly moved to electric designs.



Polarimeter

A polarimeter is a scientific instrument used to measure the angle of rotation caused by passing polarized light through an optically active substance.

Some chemical substances are optically active, and polarized (uni-directional) light will rotate either to the left (counter-clockwise) or right (clockwise) when passed through these substances. The amount by which the light is rotated is known as the angle of rotation. The direction (clockwise or counterclockwise) and magnitude of the rotation reveals information about the sample's chiral properties such as the relative concentration of enantiomers present in the sample.



1. Light source 2. Unpolarized light 3. Linear polarizer 4. Linearly polarized light 5. Sample tube containing molecules under study 6. Optical rotation due to molecules 7. Rotatable linear analyzer 8. Detector

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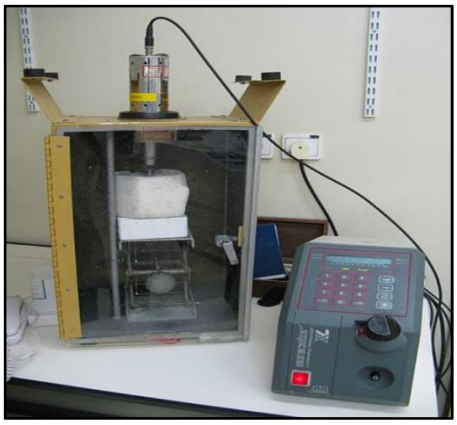
Refractro meter

A Refractometer is the instrument used to measure refractive index (RI). A refractometer measures the extent to which light is bent when it moves from air into a sample and is typically used to determine the refractive index of a liquid sample.

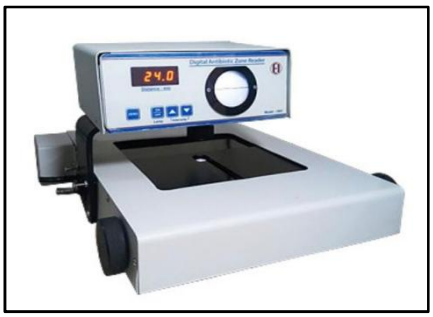
Sonicator

Sonication is the act of applying sound energy to agitate particles in a sample, for various purposes such as the extraction of multiple compounds from plants, microalgae and seaweeds. Ultrasonic frequencies (> 20 kHz) are usually used, leading to the process also being known as ultrasonication or ultra-sonication.



Zone Reader

The zone reader accurately measures the diameter of the inhibited zone to 0.1 mm within range of O to 80.0 mm diameter. Light is passed through the transparent and semitransparent portions of the agar from a source at base towards up. It then passed to a reflecting mirror supported by an arm above the unit, which reflects the light to glass prism mounted at the front of the unit and magnified image of the zone of inhibition is clearly visible on the prism.



Stability chamber

Stability Chambers are specially designed equipment for the testing of products and also to determine their shelf life such as drug, electrical components, industrial materials etc which enables you to tweak parameters like temperature, humidity to conduct a thorough check over varied conditions.

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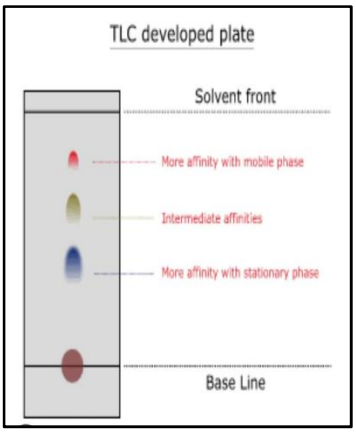
TLC Plate

It is performed on a TLC plate made up of a non- reactive solid coated with a thin layer of adsorbent material.This is called the stationary phase.The sample is deposited on the plate, which is eluted with a solventor solvent mixture known as the mobile phase (or eluent). This solvent then moves up the plate via capillary action.As with all chromatography, some compounds are more attracted to the mobile phase, while others are more attracted to the stationary phase.



UV Spectrophotometry

UV spectroscopy or UV-visible spectrophotometry (UV-Vis or UV/Vis) refers toabsorption spectroscopy or reflectance spectroscopy in part of the ultraviolet and the full, adjacent visible regions of the electromagnetic spectrum. Being relatively inexpensive and easily implemented, this methodology is widely used in diverse applied and fundamental applications. The only requirement is that the sample absorb in the UV-Vis region, i.e. be a chromophore. Absorption spectroscopy is complementary to fluorescence spectroscopy. Parameters of interest, besides the wavelength of measurement, are absorbance (A) or transmittance (%T) or reflectance (%R), and its change with time.

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