

Experiment No.7

(autoclave)





What is Autoclave (Sterilization by Steam)?

Sterilization is the destruction of all forms of microbial life, as verified by demonstrating the killing of highly resistant bacterial spores. It is the highest level of microbial kill. Sterilization by steam or autoclaving is one of the most common and widely used methods for sterilization in dental practices. The process refers to a process of instrument sterilization that uses time, temperature and pressure to kill all forms of microbial life, including spores. An autoclave is a pressure chamber, kind of a vessel that uses high-pressure steam to sterilize equipment and supplies. This is believed to be one of the most efficient methods of sterilization, destroying all microorganisms, both pathogenic and non-pathogenic, including spores and viruses. Autoclaving requires a minimum of 121 degrees celsius (250 degree Fahrenheit) with steam pressure of 15 pounds per square inch (psi), for 15 minutes to ensure sterilization.

Main Features of Vertical Autoclave Steam Sterilizer

- Fully stainless high-alloy steel structure .
- Digital display of working status, touch of key.
- Manual or semi-automatic control.
- Auto discharge the cool air, and steam discharging automatically after sterilization.
- Automatically shut off with beep reminding after sterilization
- The accident protection system.
- Automatic off of heating elements at reducing of a water level.
- Blocking top cover at working.
- Blockage of starting at opening.
- Heater protection sensor.
- Pressure and water level control.
- With three stainless steel sterilizing baskets.

The drying system is optional, which can be equipped according to the customers request.



What are the Advantages of Moist Heat Sterilization?

1. Take less time to sterilize
2. Require low temperature
3. Easy to monitor and control
4. Low cost and non-toxic

What are the Disadvantages of Moist Heat Sterilization?

1. Cannot sterilize the heat-sensitive instrument
2. Lead to corrosion after sterilization
3. Repeated exposure of instrument can lead to damage

Difference between Autoclave and oven Sterilizer

Sterilization by steam is carried out by a specialized pressure-induced chamber called an autoclave that uses high-pressure steam to sterilize equipment and supplies. It is one of the most common and the oldest methods for sterilization of instruments and materials, mostly used in dental offices. Autoclaves are available in various sizes and types. Another popular method used for sterilization in the dental offices is through dry heat. One of the simplest methods of dry heat sterilization is direct flaming. Although, dry heat sterilization is relatively slower than autoclave processing, it is good for instruments that tend to rust in a moist autoclave.



Applications of Autoclave vs. oven Sterilizer

Sterilization by steam can be used for all items that can accept heat and moisture but steam can penetrate dense materials such as containers, wraps, PVC tubing, etc. Steam can also damage plastic and rubber items. They are also used to decontaminate biological wastes. Although, dry heat sterilization is relatively slower than autoclaving, it is widely used to sterilize materials that may be damaged by moisture or are impenetrable by steam. They are used to remove pyrogens from glassware, most commonly in the pharmaceutical industry. However, dry heat should never be used on soft rubber goods.