

# 11 dry heat depyrogenation and sterilization crcnetbase

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Depyrogenation and Dry Heat Sterilization\*\*

### **What is Depyrogenation?**

Depyrogenation is a process that removes pyrogens, which are substances that can cause fever, from medical devices and pharmaceutical products.

### **What is the Temperature Required for Depyrogenation?**

325-375 degrees Fahrenheit (163-191 degrees Celsius)

### **Difference Between Depyrogenation and Steam Sterilization**

- Depyrogenation removes pyrogens, while steam sterilization kills microorganisms.
- Depyrogenation uses dry heat, while steam sterilization uses moist heat.

### **Dry Heat Method of Sterilization**

Dry heat sterilization involves exposing materials to extreme temperatures without the presence of moisture.

### **Difference Between Dry Heat Sterilization and Autoclave**

- Dry heat sterilization uses only heat, while an autoclave uses steam under pressure.

- Dry heat sterilization is suitable for materials that are not water sensitive, while autoclaving is preferred for liquids and other moisture-sensitive materials.

### **Temperature Required for Dry Heat Sterilization**

250-300 degrees Fahrenheit (121-149 degrees Celsius)

### **USP for Dry Heat Depyrogenation**

- USP 1211> Sterilization and Sterility Assurance of Compendial Articles
- USP 1035> Depyrogenation

### **Difficulty of Depyrogenation**

Depyrogenation can be challenging because pyrogens can be difficult to remove due to their heat resistance and tendency to adsorb to surfaces.

### **Difference Between Heat Sterilization and Chemical Sterilization**

- Heat sterilization uses heat to kill microorganisms.
- Chemical sterilization uses chemicals to kill microorganisms.

### **Steam Sterilization vs. Dry Heat Sterilization**

Steam sterilization is generally considered more effective than dry heat sterilization because it penetrates materials better and kills a broader range of microorganisms.

### **Types of Sterilization**

- **Moist heat sterilization:** Autoclave, boiling
- **Dry heat sterilization:** Oven, hot air
- **Radiation sterilization:** Gamma radiation
- **Chemical sterilization:** Ethylene oxide, hydrogen peroxide

### **Dry Heat Method**

The dry heat method involves exposing materials to hot air in an oven.

### **Indicator for Dry Heat Sterilization**

- Biological indicator: *Bacillus subtilis*
- Chemical indicator: Browne's tubes

### **Purpose of Dry Heat Sterilization**

To kill microorganisms that can withstand boiling, such as spores.

### **Difference Between Autoclave and Sterilization**

- Autoclave is a specific type of steam sterilizer.
- Sterilization is a broader term that refers to any process that kills or removes microorganisms.

### **Difference Between UV Sterilizer and Dry Heat Sterilizer**

- UV sterilizer uses ultraviolet light to kill microorganisms.
- Dry heat sterilizer uses high temperatures to kill microorganisms.

### **Method of Depyrogenation**

- Depyrogenation oven
- Depyrogenating tunnel

### **Process of Depyrogenation and Inactivation of Pyrogens**

- Expose materials to high temperatures for an extended period.
- Chemical inactivation (e.g., sodium hydroxide)

### **Moist Heat vs. Dry Heat Sterilization**

- Moist heat sterilization is more effective for eliminating contamination.
- Dry heat sterilization is suitable for materials that cannot withstand moisture.

### **Two Types of Moist Heat Sterilization**

- Autoclave
- Boiling

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