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BAMBERGER POLYMERS TECH TIPS

PLASTIC PART STERILIZATION

Sterilization

Sterilization of plastic parts is often required to kill microorganisms such as Bioburden, Pyrogens among others depending on the requirements and application.

Effective decontamination through sterilization techniques is key in preventing transmission of organisms.

There are seven standard sterilization techniques:

- Autoclave/Steam Sterilization
- Dry Heat
- Ethylene Oxide (ETO)
- Irradiation/Radiation
- Gamma
- Electron Beam
- Plasma

Sterilization Techniques

1. Autoclave/Steam Sterilization - forced saturated steam in a pressure chamber. Allows lower temperatures and shorter times than dry heat deep penetration. High heat resistant plastic must be used with this process.

- * Temperature and times vary.
- * Some material can lose integrity by releasing

molded in stresses

2. Dry Heat - Not generally used in plastic parts. Low heat transmission and degradation due to time exposure.

3. Ethylene Oxide - Uses EtO gas. Low temp method. Monitoring is difficult and time consuming. Regulated by EPA as toxic. When mixed with air is flammable and can be explosive. Tight containment vessel.

4. Irradiation/Radiation - Can be Ionizing or non-ionizing.

- * Ionizing uses Gamma or x-rays.
- * Non ionizing uses longer wavelength.

5. Gamma - Exposure to gamma rays. Cobalt 60 is common. Widely used in single use medical devices.

* Changes in properties can occur. Some medical materials are labeled Gamma Resistant.

6. Electron Beam - Utilizes the beam to administer a uniform dose of radiation. Higher dose rates than Gamma and much lower penetrating power.

7. Plasma - Ionized Gas chemical reaction. Low temp process.

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