

Compatibility of Medical Devices and Materials with Low Temperature Hydrogen Peroxide Gas Plasma

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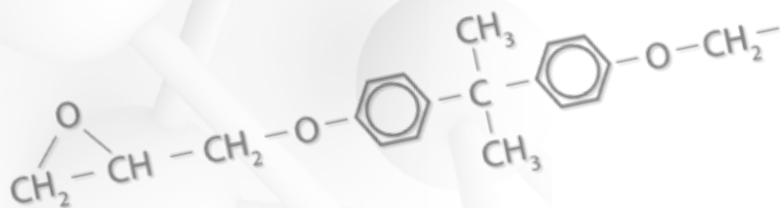
Summary

Feldman and Hui introduce Sterrad® sterilization and illustrate the strengths/comparative advantage of gas plasma sterilization, the plasma process, and materials compatible with Sterrad®. Sterrad utilizes plasma hydrogen peroxide at low temperature to provide a high degree of sterilization along with stress on a part. When compared to autoclave, it is a much lower cost and much lower temperature process than EtO or irradiation techniques.

Conclusions

- 95% of devices tested could safely be sterilized with low temp H₂O₂ plasma
- Sterrad® is lower temp than autoclave and lower cost than EtO or E-beam
- Sterilizes in five phases; vacuum, injection, diffusion, plasma, and vent cycles
- Low temperature hydrogen peroxide gas plasma is a commonly accepted method of sterilization for flex and rigid endoscopes, fiber optic light cables, laser hand pieces, power drills and saws, and ophthalmic devices
- Typical change in adhesive is physical appearance and occasional embrittlement of the adhesive
- 353ND was rated as a "1" (excellent compatibility, no leaks after 500 cycles)
- 320 was rated as a "1" (excellent compatibility after 100 cycles)
- 354, 314, 377 rated as a "3" (compatible, minor changes after 200 cycles)
- Imidazoles tend to show better compatibility than amine type cures due to homopolymerization with relatively low proportions of cure agent to resin

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