## FACTS REGARDING STEAM AND RAPIDHEAT<sup>™</sup> STERILIZATION EFFICACY

## STEAM STERILIZATION

- 1) In steam sterilization, water is heated and the autoclave chamber pressurized to produce the elevated heat and temperature prescribed to kill microorganisms. Steam is the vehicle that transfers the heat to the load that is being sterilized.
- 2) There <u>must</u> be direct steam contact with the surfaces in the load in order to achieve sterilization. If there are "physical barriers" to direct steam contact of surfaces then there will be no sterilization of those items during the sterilization cycle.
- 3) In traditional "Gravity Cycle" sterilizers, loads containing instruments with internal mechanisms (e.g., handpieces) or highly dense packs of various items will find it difficult to achieve complete sterilization unless a cycle time is extended to insure either steam penetration or steam heat conduction.
- 4) Ambient air not removed from the chamber prior to a sterilization cycle will also compromise sterilization since air with greater density becomes an insulator to steam.
- 5) The real danger occurs when trapped air (within or around an instrument) has <u>not</u> been properly evacuated before or during steam entry into the sterilizer chamber. The trapped air will inhibit steam penetration and prevent sterilization.
- 6) Only in "Vacuum" sterilization, where air is mechanically removed from the chamber before and during steam entry, will there be more assurance of a reliable outcome.
- 7) Tabletop vacuum sterilizers, commonly referred to as "Class B" sterilizers, require higher maintenance with more frequent troubleshooting and repair. As a consequence, they are not generally recommended for use in dental, veterinary and physician group practices.
- 8) Even with vacuum assist, tabletop sterilizers can often fail in achieving sterilization if there are unknown barriers to direct steam contact such as a bioburden-containing residue from the improper cleaning of instruments.

## RAPIDHEAT STERILIZATION

- 1) RapidHeat is a modern technology that does not require a pressure chamber or a gas such as steam to transfer heat to achieve sterilization.
- 2) Through a uniform distribution of circulating "High-Velocity Hot Air" in a sealed chamber at the rate of 200-300 air exchanges per minute, RapidHeat effectively penetrates and sterilizes a load regardless of any of the "physical barriers".
- 3) Highly dense packs and mechanical instruments are sterilized by RapidHeat at efficiencies and efficacies equal to or greater than gravity or vacuum sterilizers, and without the drying cycle required by the FDA.
- 4) Depending on load characteristics and cycle set temperature, RapidHeat's total cycle times will be either considerably faster or comparable to that of steam processing cycles.
- 5) Evolved from NASA's early research to discover the best efficacious and non-destructive decontamination technology for spacecraft, RapidHeat offers healthcare providers a faster, waterless, chemical free, low maintenance alternative in the sterile processing of medical and dental instruments.
- 6) RapidHeat technology has been cleared by the FDA to achieve a Sterility Assurance Level (SAL) equating to a total documented 12-Log<sub>10</sub> spore inactivation which dry heat sterilizers are designed to confirm, whereas steam sterilizer biological indicators are only quantified with 10<sup>5</sup> spores per strip.