

If water boils at 212°, how
do we get 270° steam?

STEAM STERILIZATION EXPERT SERIES

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Joel Schafer, CRCST
VP of Sterile Services, LLC

Beyond Clean Steam Sterilization Expert Series:

IF WATER BOILS AT 212° , HOW DO WE GET 270° STEAM?

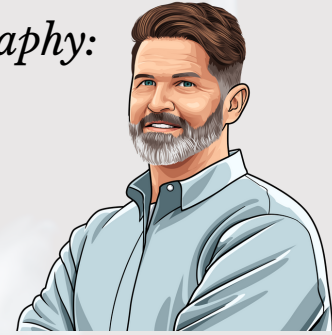
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Steam, the gaseous state of water, is formed when water is heated until it begins to boil. If it is heated beyond the boiling point, the steam becomes “dry” and as it cools below the boiling point, it condenses back to water. Steam must remain in motion in order to remain in its gaseous state. At sea level, water boils and becomes steam at approximately 212 degrees Fahrenheit. How on earth does our steam that is generated at 212 degrees reach the 270 degrees needed for sterilization? Water boils at various temperatures based on the pressure of the air. At higher altitudes, the lower air pressure lowers the boiling point of water. Conversely, at lower altitudes, where the air pressure is higher, the boiling point of water increases. Because of this correlation between the atmospheric pressure and the boiling point of water, we are able to increase the boiling point by increasing the atmospheric pressure inside of the autoclave chamber. The pressure generated to reach the boiling point of 270 degrees is the equivalent of being under water at a depth of approximately 100 feet. Just in case you were wondering, the atmospheric equivalent to the deepest vacuum pulled during a sterilization cycle would be found at over 100,000 feet above the earth or roughly 20 miles.

Have more steam sterilization questions? Contact Joel at: joel@hhstx.com

Beyond Clean Steam Sterilization Expert Biography:

JOEL SCHAFER, CRCST VP OF STERILE SERVICES, LLC



Joel Schafer is the Vice President of Engineering and Product Development for Sterile Services, LLC. Based in Houston, Sterile Services evolved from its parent company Houston Hospital Services, Inc. from an ever-growing need for sterilization consultative services throughout the Texas Medical Center. While Sterile Services began in Houston with the Texas Medical Center, the company's reputation has grown beyond Texas and has led Joel into some of the most prestigious hospital institutions nationwide. Joel has over 15 years' experience working alongside sterile processing department staff and management. Growing from an onsite instrument repair technician into a consultative sales representative, Joel was able to personally design and manufacturer Sterile Services proprietary autoclave validation tools, including an inner-lumen sensor unique to surgical instrumentation validation. Joel is CRCST and a founding member of the Houston IAHCSSM chapter. With the increased awareness of the steam sterilization processes, Joel's ambition is to highlight the role of every hospital's sterile processing department and the steam sterilization process.

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