



## **ON THE SAFE SIDE: Effective decontamination of Herbs and Spices with a Ventilex Continuous Steam Sterilizer for “ultra pasteurization”.**

The presence of pathogens including salmonella, yeasts, moulds, enterobacteraceae and sporeformers can never be excluded despite frequent checking and is the main reason for the requirement of sterilization. Often times, the raw materials are heavily contaminated from the soil and these microbes often remain after processing due to simple treatments and the processing at low temperatures in their countries of origin. If left untreated, these products offer ideal conditions for continued growth and can easily lead to spoilage and customer health issues.

There are many commonly used methods, such as ethylene oxide and irradiation but most have been restricted due to health risk and adverse consumer acceptance. Aside from health risks, food technological aspects such as the inactivation of enzymes, e.g. amylase and lipase, cannot be solved by irradiation or ethylene oxide treatment. These enzymes have been shown to cause a breakdown of fat and starch components in sauces, salads and many ready-made meals.

As a result, many of the worlds largest spice processing companies have selected the Ventilex Continuous Steam Sterilizer for their ultra pasterization needs.

With the Ventilex system, you get the continuous “inflow” application of saturated, high pressure steam that provides the ideal enviroment for the inactivation of enzymes and the elimination of undesired micro-organisms while causing the minimum harm to the organoleptic characteristics of spices and herbs.

The use of steam is ideal as it is natural, non-toxic, cheap and in unlimited supply. Steam offers many advantages including, the fastest possible way of heating product to an exact preset temperature, condensation on the product and provides the water activity required for effective sterilization while protecting the product against overheating and burning. The steam condensed on the product also enables flash cooling of the product when it leaves the sterilizer and is returned to pre treatment specifications in an intigrated Ventilex Dryer / Cooler system.

This process insures that the product is subjected to the minimum heat load for adequate decontamination with a minimum adverse effect on flavor, color and loss of volatile oil.

With Ventilex technology the treatment time of the product is controlled within very narrow limits, it is not necessary to apply longer treatment times than the minimum time for a safe product at the selected sterilizing temperature. This guarantees a minimum deviation of treatment-time of the entire product flow of less than 4 % and makes automatic cleaning in place of the sterilizer easy. Treatment temperatures may vary between 107° and 123°C, corresponding with absolute steam pressures of 1.3 – 2.2 bar. Corresponding treatment times may vary between 25 and 50 seconds depending on type of contamination, particle size and final application of the treated product.

The decontamination system is controlled from a central control panel offering accurate reading and recording of the chosen process parameters. This makes it possible to repeat the individual treatment processes even during multiple product runs and frequent changover situations.

**Microbiological quality of products treated with the Ventilex continuous system:**

+ Total count	<10,000 often <1,000
+ Enterobacteriaceae:	<10/gram
+ Salmonella	absent
+ Yeasts and moulds	<100/gram
+ Bacillus Cereus	<100/gram
+ Clostridium Perfringers:	<100/gram
+ Staphylococcus Aureus:	<100/gram