

## STERILIZATION OF THE FERMENTER

If the medium is sterilized in a separate batch cooker, or is sterilized continuously, then the fermenter has to be sterilized separately before the sterile medium is added to it. This is normally achieved by heating the jacket or coils (see Chapter 7) of the fermenter with steam and sparging steam into the vessel through all entries, apart from the air outlet from which steam is allowed to exit slowly. Steam pressure is held at 15 psi in the vessel for approximately 20 minutes. It is essential that sterile air is sparged into the fermenter after the cycle is complete and a positive pressure is maintained; otherwise a vacuum may develop and unsterile air be drawn into the vessel.

## Medium Sterilization

Media can be sterilized by filtration, radiation, ultrasonic treatment, chemical treatment or heat. Steam is <sup>also</sup> used universally for the sterilization of fermentation media.

The destruction of micro-organisms by steam (moist heat) described by first-order chemical reaction.

## Sterilization of the feeds

A variety of additives are administered to a fermentation during the process and it is essential that these material should be sterile. The sterilization method depends on the nature of the additive, and the volume and feed rate at which it is administered.

If the ~~it~~ feed additive is fed in large quantities then continuous sterilization is desirable. Continuous heat sterilization is used for the feed medium of microbial enzyme fermentations. Filtration is also used for the sterilization of feed. Batch sterilization of feed liquids normally involves steam injection into the material held in storage vessels.