UNISTERINDI™ - UNIVERSAL CHEMICAL STERILIZATION INDICATORS

JP Labs has invented and developed two major groups of unique and revolutionary chemical sterilization indicators (CSI) which have a rare combination of the most desired properties sought for decades and still not found in the commercially available CSI. These two groups of human and machine readable (barcode and RFID) CSI, trade-named UniSterIndi™, change from opaque-to-clear upon sterilization, irrespective of the sterilant used and hence have the capability of universalizing CSI - making the current jungle of hundreds of CSI obsolete and capturing the global annual market of about $450 million.

The first group of CSI undergo an abrupt change in color & opacity after ~90% of the time. They change from silvery white/opaque to clear and display a message, e.g., “PROCESSED” or “STERILIZED”, a barcode and/or green color upon sterilization, irrespective of the sterilant used.

The second group of CSI undergo a gradual change in color & opacity. For example, these CSI change from black/opaque-to clear and also have the capability of displaying a message, e.g., “PROCESSED” or “STERILIZED”, and/or barcode upon sterilization, irrespective of the sterilant used.

Commercially available chemical sterilization indicators (CSI) undergo a wide variety of color changes and the color changes are gradual. None of those CSI are self-reading or have an abrupt color change. They require a color reference chart and color matching for interpretation. They have different colors, color changes, messages, designs and end points. They all lack the most desired feature/properties, such as a long induction period and machine readability.

UniSterIndi™ is a universal sterilization indicator. By selecting the proper additives, it can made to undergo the same changes with gas sterilants such as chlorine dioxide, nitrogen dioxide, peracetic acid vapor, ethylene oxide (ETO) and liquid sterilants, such as solutions of peracetic acid and formaldehyde. It can also be used to monitor dish washing. Classes I, II, IV, V and VI of CSI can also be made. They have long induction period, i.e., they change from opaque to clear after ~80+% (~95%). There is essentially no effect of ambient conditions/humidity and that have a long shelf life. They are human & machine readable, i.e., readable with RFID and a barcode reader. No other CSI or a group of CSI have any of these most desired properties.

We have also developed color changing UniSterIndi™. These UniSterIndi™ change color, e.g., from brown/black to colorless with all sterilants such as hydrogen peroxide (H_2O_2), peracetic acid (PAA), chlorine dioxide (ClO_2), nitrogen dioxide (NO_2), ethylene oxide (ETO), formaldehyde (HCHO), radiation, steam and dry heat. Many other color changes are also available. We have also developed sterilization indicators, e.g., for vapor hydrogen peroxide (VHP), which undergo a series of color changes from colorless to colored/black, e.g., colorless → yellow → red → dark red → black and also machine/barcode readable.