Technical Bulletin

December 2019

Respiratory Protection for

Spor-Klenz RTU Cold Sterilant (Lot 426661)

Background Information

Spor-Klenz is a disinfectant, sterilant and sporicidal cleaner used for the cleaning of surfaces and equipment. According to the MSDS (Material Safety Data Sheet) provided by its manufacturer, it is a mixture of peroxyacetic acid (4.5%), hydrogen peroxide (22%) and acetic acid (<10%) that are combined to form peracetic acid. The vapors surrounding peracetic acid contain acetic acid, hydrogen peroxide, and peracetic acid. Of these chemicals, acetic acid is the chemical that shows breakthrough first or the penetration of challenge material(s) through a gas or vapor air-purifying element. Therefore, a Bullard PAPRFC4 or PAPRFC5 cartridge should be used in PAPRs (Powered Air-Purifying Respirators) to protect against exposure of Spor-Klenz.

Cartridge Test

The Bullard PAPRFC5 cartridge was tested by an independent lab against Spor-Klenz at a range of concentrations to obtain the relationship between test concentration and the time to 5.0 ppm acetic acid breakthrough, which is the recommended exposure limit (REL) by NIOSH. The cartridge was tested at a flow rate of 170 L/min, 50% RH, and 25°C. At the concentrations for hydrogen peroxide 560 mg/m^3 (405 ppm), acetic acid <255 mg/m^3 (105 ppm), and peroxyacetic acid 115 mg/m^3 (37 ppm), service life was at least twenty-four (24) hours. A subset of Bullard PAPRFC5 cartridges were tested against lower concentrations at a flow rate of 170 L/min, 50% RH, and 25°C. At the concentration for hydrogen peroxide 113 mg/m^3 (179 ppm), acetic acid <113 mg/m^3 (46 ppm), and peroxyacetic acid 51 mg/m^3 (16 ppm), service life was at least fifty-one (51) hours.

The Bullard PAPRFC4 cartridge was tested by an independent lab against Spor-Klenz at a range of concentrations to obtain the relationship between test concentration and the time to 5.0 ppm acetic acid breakthrough, which is the recommended exposure limit (REL) by NIOSH. The cartridge was tested at a flow rate of 170 L/min, 50% RH, and 25°C. At the concentrations for hydrogen peroxide 560 mg/m^3 (405 ppm), acetic acid <255 mg/m^3 (105 ppm), and peroxyacetic acid 115 mg/m^3 (37 ppm), service life was at least twenty-six (26) hours. A subset of Bullard PAPRFC4 cartridges were tested against lower concentrations at a flow rate of 170 L/min, 50% RH, and 25°C. At the concentrations for hydrogen peroxide 113 mg/m^3 (179 ppm), acetic acid <113 mg/m^3 (46 ppm), and peroxyacetic acid 51 mg/m^3 (16 ppm), service life was at least fifty-two (52) hours.

Summary

Based on the independent lab results outlined above, Bullard cartridges PAPRFC4 and PAPRFC5 which include a NIOSH (National Institute of Occupational Safety & Health) “organic vapor” approval, can filter Spor-Klenz up to the levels described above. Spor-Klenz with higher acetic acid concentrations compared to the lot used (Lot 426661) in this experiment would be expected to have shorter breakthrough times. The test concentrations in these experiments may be higher than what may be expected or allowed for respirator use. The maximum use concentration (MUC) for respirators is whichever is lower between the assigned protection factor (APF) and the exposure limit of the hazardous substance or the exposure concentration that is considered immediately dangerous to life or health (IDLH). The Bullard cartridges were tested at 170 L/min to mimic NIOSH criteria. Nominal flow rates for the Bullard EVA and EVAHL Powered Air- Purifying Respirators are approximately 198 / 240 L/min (low / high speed). Therefore, the cartridge service life may be slightly shorter when used with these PAPRs.

Warning ⚠

Respirators help reduce exposures to certain airborne contaminants. Before use, the wearer must read and understand the User Manual provided as a part of the product packaging. Misuse may result in sickness or death. For correct use, consult the User Manual, or contact Bullard at www.bullard.com.

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