Cold Weather Disinfection Procedure

Cold winter days bring a challenge for the outdoor application of liquid disinfectants due to the fact that most disinfectant products are aqueous and freeze around 32°F. To use liquid disinfectants during winter months when temperatures are below 32°F an antifreezing agent is needed to prevent them from freezing under such conditions. The freezing point temperature of Accelerated Hydrogen Peroxide® (AHP®) may be reduced by the utilizing propylene glycol in conjunction with water as the diluent.

The addition of propylene glycol does not impact efficacy of the 4.25% AHP Concentrate. Their addition to the formulation in fact improves the antimicrobial property of the disinfectant formulations (1-5).

The table below shows the potential effect of adding propylene glycol to 4.25% AHP Concentrate, on both freezing point and contact time.

Disinfection Dilution Rate*	4.25% AHP® Concentrate (Per 1Gal/128oz of Solution)	Water** (Per 1Gal/128oz of Solution)	Propylene Glycol (Per 1Gal/128oz of Solution)	Temperature (°F)	Contact Time
1:16	8oz	90oz (70%)	38oz (30%)	32 to 14	40 minutes
1:16	8oz	77oz (60%)	51oz (40%)	13 to 5	60 minutes
1:16	8oz	77oz (60%)	51oz (40%)	4 to -4	80 minutes
1:8	16oz	90oz (70%)	38oz (30%)	32 to 14	20 minutes
1:8	16oz	77oz (60%)	51oz (40%)	13 to 5	30 minutes
1:8	16oz	77oz (60%)	51oz (40%)	4 to -4	40 minutes

*Please note that at higher concentrations/lower dilutions surfaces may become slippery due to the increased surfactant (detergent) levels, therefore a thorough rinse with water is required. **Note: dilution using seawater (or any saline source) is not recommended.

To clean and disinfect all surfaces using 4.25% AHP Concentrate:

1. Dilute the 4.25% AHP Concentrate at the 1:16 or 1:8 dilution as described in the above table.

2. Apply the diluted AHP solution to surfaces using preferred method of application (bucket and brush, foaming gun, pressure washer) and allow surfaces to remain wet for the appropriate contact time in accordance to the dilution rate and temperature.

References

1. F. M. BERGER, C. V. HUBBARD, AND B. J. LUDWIG, The Antimicrobial Action of Certain Glycerol, Ethers and Related Compounds, 1953, available online at http://aem.asm.org/content/1/3/146.full.pdf accessed in Feb 2014.

2. Neihof RA, Bailey CA. Biocidal properties of anti-icing additives for aircraft fuels. Applied and Environmental Microbiology, 1978 Apr;35(4):698-703.

3. W-Hugo, Inhibition and Destruction of the Microbial Cell, Academic Press Inc., New York, 1971, page 665.

4. Showell, MS. Handbook of Detergents, Part D: Formulation, CRS Press, 2006.

5. Kinnunen T, Koskela M. Antibacterial and antifungal properties of propylene glycol, hexylene glycol, and 1,3-butylene glycol in vitro. Acta Derm Venereol. 1991;71(2):148-50.