



Ways to Keep Sweeper Dust Suppression Systems From Freezing in Cold Weather

Note: The following includes 'small number citations' showing where the information was obtained. These allow the reader to check the validity of the information for their particular situation. We also recommend that you check with your local and state regulations regarding the legality of using any of the options provided.

Propylene glycol is generally considered safe for use in the dust suppression systems of street and parking area sweepers, particularly in freezing conditions. Here are the key points supporting its use:

1. **Non-Toxic and Environmentally Friendly:** Propylene glycol is recognized as safe (GRAS) by the U.S. FDA and is biodegradable, making it a safer alternative to ethylene glycol. It is non-toxic to humans, pets, and plants when used within permissible limits, and it does not harm concrete or asphalt surfaces¹².
2. **Freezing Point Depression:** Propylene glycol effectively lowers the freezing point of water, making it suitable for use in dust suppression systems during cold weather. This property helps prevent freezing in spray nozzles and water tanks¹².
3. **Non-Corrosive:** Unlike some traditional antifreeze agents, propylene glycol is non-corrosive, which minimizes wear and tear on the equipment's components¹.

4. Application in Industrial Settings: Propylene glycol is widely used in various industries, including as an antifreeze in HVAC systems and as a de-icing agent. These applications demonstrate its suitability for preventing freezing in mechanical systems like those found in street sweepers²⁵.

Considerations for Use of Propylene Glycol:

- Proper Concentration: The concentration of propylene glycol should be adjusted based on the expected temperatures to ensure adequate freeze protection.
- Environmental Precautions: While propylene glycol is biodegradable, care should be taken to prevent spills into waterways or soil to minimize environmental impact⁵.
- Regular Maintenance: Systems using propylene glycol should be inspected regularly to ensure proper operation and to avoid buildup or contamination.

In summary, propylene glycol is a viable and environmentally friendly option for preventing freezing in the dust suppression systems of street sweepers. However, operators should follow manufacturer recommendations and local regulations when incorporating it into their equipment.

Some other substances that might be considered for being added to dust suppression systems to prevent freezing in cold weather include the following:

1. Calcium chloride: This hygroscopic salt can be added to water in dust suppression systems. It lowers the freezing point of the solution and remains in liquid form even in dry, high heat conditions¹³.
2. Magnesium chloride: Another hygroscopic salt that can be used in dust suppression systems. It has a lower freezing point than water and is effective in humid or freezing climates¹³.

3. Calcium magnesium acetate (CMA): Marketed under the name ICE & DUST-AWAY, this product serves as both a dust binder and de-icer. It can be effective down to -32°C .
5. Glycerin-based products: Newtrol, a high-performance glycerin-based dust suppressant, has humectant and binding characteristics that make it effective for long-term dust suppression.
6. Synthetic polymers modified to resist low temperatures: Some dust suppression additives, like the DMS® line developed by ABCDust, contain nonionic nanopolymers and copolymers that are modified to resist low temperatures.

When using these substances, it's important to:

- Ensure proper concentration based on expected temperatures
- Regularly check and maintain the antifreeze mixture throughout the winter season
- Consider the environmental impact and choose eco-friendly options when possible

By incorporating these substances into dust suppression systems, operators can maintain functionality and prevent damage to equipment in freezing conditions.

However, when choosing any dust suppressant for cold climates, it's important to consider not just its effectiveness in freezing temperatures, but also its environmental impact, safety, and longevity. Products like Durasoil and DustLess are marketed as environmentally-friendly options that remain effective in cold conditions. Always follow manufacturer guidelines for application and use in specific temperature ranges.

If you have questions or comments about the information in this file, please send an email to editor@worldsweeper.com.