



TECHNICAL DATA SHEET

Food Grade Anti-Fog Coating 2098-39-6 (Waterborne)

General Description

A non-reactive waterborne solution for treatment of Industrial and food packaging films and molded containers that is heat sealable, heat stable and non-yellowing. The waterborne food grade coating deposits a thin film (1.0 to 25.0 microns) of hydrophilic polymer that causes condensed moisture to spread invisibly rather than forming water beads that appear as mist or fog.

Food grade anti-fog solution has been used successfully in films made of low density polyethylene (LDPE), linear low density polyethylene (LLDPE), Polycarbonate (PC), oriented polypropylene (OPP) and plastic containers made from extrusion, injection, thermoforming polyester (PET), styrene, polyvinyl chloride (PVC), etc.

In the case of some specialized polyolefins that the adhesion is only fair, a corona or plasma treatment of the substrate can improve adhesion.

Typical Physical Properties

<u>Property</u>	<u>Temp</u>	<u>Unit</u>	<u>Approved Spec. Range</u>
Appearance (Visual)	RT	NA	Clear to Slightly Hazy
Gardner Color (CLR 1.1)	RT	VCS	<1
Non-volatiles (NVN 1.1)	NA	%	5 - 9
Specific Gravity (SPG 1.0)	25° C	g/ml	0.790 – 0.810
Viscosity (ZCV 1.0) (#2 Zahn Cup)	25° C	seconds	14 - 17

Coating Methods and Application

Method of application includes dip, spin, spray, roll or flow coating. The waterborne solution as supplied will be adequate for most plastics however testing should be done to determine Isopropanol (IPA) tolerance in presence of heat for each substrate material. Two roll coating, dipping, gravure, flexogravure and HVLP are the general methods for coating a substrate with anti-fog solution.

Drying: The coating system can be air dried at room temperature. Check on plastic material to be coated first to determine the optimum temperature and time set for full commercial process. It is recommended that a thermal (heat) cure be utilized to assist in reducing the cure time.

Whether coating is applied by an in-line or off-line process, the coating when dry should be a smooth evenly distributed layer with a dry coating solids weight of 0.5grams – 1.0 grams per 1000 square surface inches.

Shelf Life: The coating solution will remain useful for 12 months when stored in a closed system at room temperature. As supplied the solution is properly filtered using a 5 micron filtration apparatus. For left over solution, it is important to filter it immediately through a 5-10 micron filter before the final application in order to eliminate foreign matter (dirt) that may be present.



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Coating Thickness and Cure

Recommended dry coating thickness is 0.04 to 1.0mils (1 to 25 microns). Coating thickness less than 0.04 mils will have mildly reduced anti-fog properties due to thin thickness on the substrate. The sheeting effect is generally indifferent to coating thickness however, if the substrate is contaminated with grease and oils this can destroy the anti-fog properties.

The recommended level of solids in the anti-fog solution for any combinations of the above factors lies between 2.5% to 7.0% max. as non-volatiles. The optimum level to be used in any particular case should be determined by trial testing prior to production. Production line speed relates to coating thickness and ability to dry. **Typical of this coating.....TIME TEMP DATA.}**

FDA Food Packaging Regulations

The antifog coating in dry solid state (cured) are approved for contact with dry and fatty foods under title:

21 CFR 174.5

21 CFR 175.105 (Adhesives)

21 CFR 176.170 (Resinous & Polymeric)

The antifog coating also follows GRAS guidelines.

When exposed to 120F water immersion for 24 hrs as specified in 21 CFR 175.300 an experiment LDPE film yielded total extractable of less than 0.05mg/inches sq.

Clean Up

Best to clean before coating solidifies. Coating residual can be cleaned with water or IPA isopropyl alcohol. Though biodegradable, adhere to local ordinances before disposal in wastewater systems.

Safety Precautions

Flash Point :

Keep away from heat, sparks and open flame. Wear safety glasses, gloves and protective clothing when handling. If swallowed induce vomiting. (Please refer to MSDS)

Note: The information contained herein is derived from sources believed to be reliable, but no representations, guarantees or warranties of any kind are made to its accuracy, suitability for particular applications or the results to be obtained there from. Users should undertake sufficient verification and testing to determine suitability for their own particular purpose of any information or products referred to herein.