



One-Part Abrasion Resistant Anti-Fog Coating

Product Application Overview

Visgard Premium Plus is a one-part abrasion resistant anti-fog coating designed for safety, sport, and military markets where optical clarity and high durability are required. When Visgard Premium Plus is properly applied, without primer, to a polycarbonate lens it will meet the following EN requirements:

- EN 166:2001-N Mark-Resistance to fogging
- EN 166:2001-K Mark-Resistance to surface damage by fine particles
- EN 166:2001 Clause: 7.1.5.2 - Resistance to ultraviolet radiation
- REACH compliant coating

General Requirements for Both Dip & Flow Coating Operations



Equipment Preparation

It is important to clean equipment with solvents compatible with the coating system. We recommend use of PM glycol ether or Diacetone alcohol as a rinse before coating is added. If Diacetone alcohol is used as a rinse, PM glycol ether should be used thereafter as a final flush and, also, as a first flush when coating is removed from the system.

Filtration

A one (1) micron filter cartridge is recommended. However, a 0.5 micron filter cartridge may also be used, but back pressure should be monitored. When coating is removed from the tank, the filter should be disposed of, and replaced with an unused filter prior to introducing fresh coating to the system.

Circulation

Once the system is loaded, the coating should be continuously cycled. It is recommended to allow the contents of the system to cycle overnight prior to use. Do not leave coating in the system for long periods of time without use. If production shut-down is expected, drain the coating from the tank into supplied jerricans. Once coating is removed, the system should immediately be flushed with PM glycol ether.

Storage

Visgard Premium Plus should be stored at room temp (20°C-30°C).

Environmental Conditions

Parameter	Range
Coating Temperature	20-30°C
Relative Humidity	35-65%
Room Temperature	20-25°C



Solution Management

PM glycol ether is used both for dilution and as a make-up solvent. Actual amounts will be discussed in the respective dip and flow coating sections.

Coating

See dip and flow coating sections below for specific recommendations.

Cure

Visgard Premium Plus was designed with minimum air dry time in mind to reduce particle collection on the surface of an uncured lens. To produce lenses that are free from specs, the following curing conditions are recommended:

Parameter	Range
Air Dry Time	10 - 60 sec. for dip cure; 4-5 min. for flow coat
Pre-Cure	10-20 min. @ 90-100°C
Cure	1 hr @ 125°C

Guidelines for Dip Coating

In order to achieve cosmetically acceptable parts while meeting industry performance standards, the coating procedure should be managed as follows:

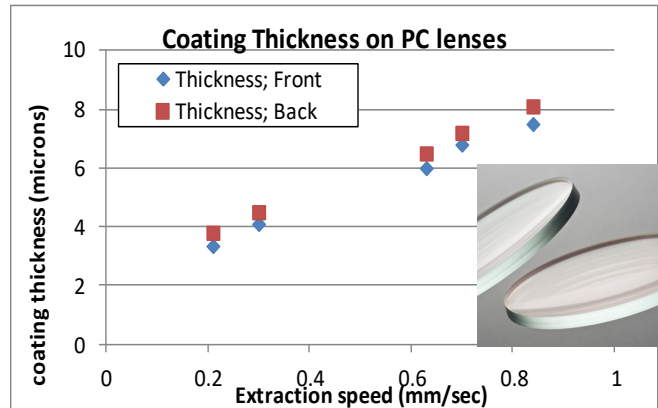
Parameter	Range
% Solids	26 -32
Viscosity	100-160 cps
Coating Temperature	20-30°C
Make-up & Dilution Solvent	PM glycol ether

Coating System Requirements

Parameter	Range
Dwell Time of Part In Coating	15-60 sec.
Pump	Off During Lift Out
Coating Turnover	As High as Possible (Without Causing Turbulence)

Extraction Speed

0.8 mm/s (1.9 inches/min) is the optimal dip speed to produce coated lenses that will meet industry standards for fogging, fine particles and UV radiation. Note: Dip speed will need to vary for different lens geometries. At 0.8 mm/s the user should expect a thickness range of 7-8 μ m on Plano-convex polycarbonate lenses.



Guidelines for Flow Coating

The same performance characteristics achieved through dip coating can be met by flow coating. The following formulation is suggested as a starting point.

Visgard Premium Plus	100 parts
PM glycol ether	40 parts
Solids Content	21-22%
Viscosity	40-45 cps
Coated Thickness	7-8 μ m



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