

## Visgard® Premium Plus

### Abrasion Resistant Anti-Fog Coating

#### DESCRIPTION

Visgard® Premium Plus is a urethane based thermal cure coating. It combines water sheeting Anti-Fog performance with abrasion and chemical resistance. It can be applied via dip, flow and spin coating techniques and has been specifically developed for use with polycarbonate substrates.

#### FEATURES

- Primer Free Adhesion on Polycarbonate
- Abrasion and Chemical Resistance
- Water Washable Anti-Fog Properties
- Optical Clarity
- One-part system, does not require premixing
- Passes EN-166:2001 for: Anti-Fog (N-mark), Falling Sand Abrasion (K-mark) & UV Resistance

#### STORAGE AND USE

The recommended storage temperature for Visgard Premium Plus is 4°C (40°F). When stored at this temperature in the original closed container it is recommended to start use of Visgard Premium Plus within 3 months of the date received.

Parts coated with Visgard Premium Plus should be stored in a cool, dry place. In a humid environment the coating may develop a wipeable haze which can be removed by wiping with a soft dry cloth.

It is recommended to use high density polyethylene (HDPE) bags (>2 mil). The bags should be sealed to exclude moisture. Do not package in an area where humidity is > 70%.

#### SOLUTION PROPERTIES

PROPERTY	TYPICAL VALUES
% Solids	26 - 32 %
Viscosity @ 25°C	100 - 160 cP
Density @ 25°C	0.93 - 1.10 g/ml
Solvents: PM Glycol Ether, Diacetone Alcohol	

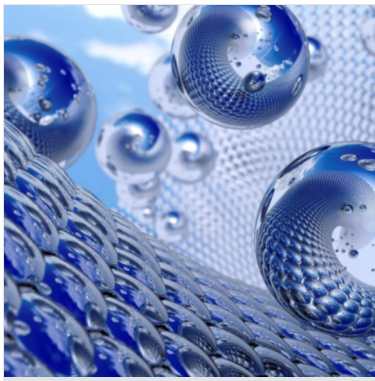
#### CURED COATING PROPERTIES

PROPERTY	TYPICAL VALUES
Coating Thickness*	7.0 - 9.0 µm
Refractive Index	1.50
Adhesion	100%
Anti-Fog Performance EN-166:2001 (N-mark)	Pass
Resistance to Surface Damage by Fine Particles EN-166:2001 (K-mark)	Pass
Resistance to UV Radiation EN-166:2001	Pass

\*5-7 µm cured coating thickness can pass N-mark, but 7-9 µm is required to pass K-mark and UV Resistance testing.

#### RECOMMENDED OPERATING GUIDELINES

PROPERTY	TYPICAL VALUES
Environmental Conditions	20 - 25°C, 35 - 65 % RH (Class 100)
Air Flow	Filtered, Laminar
Coating Temperature	20 - 30°C
Coating Filtration	1.0 - 5.0 µm nominal
Extraction Speed	0.6 - 0.9 mm/s
Dry Time/Temperature	10 - 60 s @ 20 - 25°C
Pre-Cure Conditions	10 - 20 min @ 90 - 100°C
Cure Conditions (PC)	1 hr @ 125°C (257°F)



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Coating Technologies

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## EQUIPMENT PREPARATION

**Equipment Cleaning:** Coating equipment should be cleaned prior to using Visgard Premium Plus to avoid any possible contamination. Coating contamination can result in problems with adhesion, poor Anti-Fog performance or general appearance. The cleaning process should include multiple solvent rinses (utilizing a solvent compatible with the material in prior use with the equipment) followed by a thorough PM glycol rinse. PM glycol ether should also be used for cleaning equipment after the use of Visgard Premium Plus.

**Equipment Materials:** Silicone hard coatings are incompatible with Visgard Premium Plus and will impair anti-fog performance even at low concentrations. Be sure all equipment is thoroughly clean and free from other coating residues before evaluating Visgard Premium Plus in production systems. A peristaltic pump is recommended for initial tests because there is no actual contact of Visgard Premium Plus with the pump chamber or mechanical parts. Visgard Premium Plus is incompatible with PVC tubing due to plasticizer extraction. Use only LDPE, PTFE, PU or stainless-steel tubing. Circulating PM glycol ether through the pump, hoses and filter for 8-12 hours is recommended for removing possible contaminants before start-up or change over.

## PRETREATMENT AND CLEANING OF SUBSTRATE

Parts to be coated with Visgard Premium Plus should be clean and free of any surface residues. Injection molded polycarbonate parts should be cleaned with a neutral detergent solution to remove any residues left on the parts from the molding process, and then rinsed thoroughly with de-ionized water.

## SOLUTION MANAGEMENT

For optimum performance, Visgard Premium Plus should be maintained at a range of 100-160 cps. Higher or lower viscosity (cps) can cause appearance problems or lead to a coating deposition that is either too thick or thin. The viscosity (cps) should be measured on a regular basis and adjusted as needed by the addition of PM glycol ether. Some applications may require the coating to be diluted to lower solids. The two main solvents used in the Visgard Premium Plus coating are PM glycol ether and Diacetone Alcohol. Both solvents can be used for the dilution of the coating.

The following are recommended starting formulations for reducing the solids of Visgard Premium Plus:

- 100 g Visgard Premium Plus + 25 g PM glycol ether - for improving flow rates without raising the possibility of solvent attack on the lenses.
- 100 g Visgard Premium Plus + 20 g Diacetone Alcohol + 5 g PM glycol ether - for excellent flow, but should be tested on a small scale first for possible solvent attack.

## HEALTH AND SAFETY INFORMATION

Before using this product, read and understand the Safety Data Sheet (SDS) which provides information on health, physical, and environmental hazards, handling precautions and first aid recommendations. For a copy of an SDS, contact a sales or customer service representative.

## WARRANTY AND LIABILITY LIMITATIONS

Information contained herein is accurate to the best of our knowledge. The coating solution properties and cured coating properties listed herein represent typical values for Visgard Premium Plus and are not meant as specifications. FSICT insists that users conduct their own tests for applicability and fitness for any purpose. Statements concerning use of products or formulations described herein shall not be construed as a warranty or license to infringe any patent or trademark, and no liability for infringement arising out of such use is assumed. Please refer to FSICT Standard Terms and Conditions or to your Purchase Agreement with FSICT for the warranty coverage of FSICT's product.

## PRODUCT SHIPPING AND AVAILABILITY

Typical lead-time for shipment of Visgard Premium Plus is four (4) weeks from confirmation of a purchase order. FSICT provides several shipping options. Please contact an FSICT representative to determine which option best fits your needs.

