

## Visgard® 112-20

### Abrasion, Chemical and Scratch Resistant Anti-Fog Coating

#### DESCRIPTION

Visgard® 112-20 is a urethane based thermal cure coating. It combines permanent anti-Fog performance with abrasion and chemical resistance. It can be applied via dip or flow coating techniques.

#### FEATURES

- Primer-free adhesion to ADC, Nylon and Polycarbonate
- Abrasion and Chemical Resistance
- Water Washable Anti-Fog Properties
- Optical Clarity
- Thermoformable and Flexible
- One-part system, does not require premixing
- Passes EN-166:2001 for; Anti-Fog (N-mark) Falling Sand Abrasion (K-mark)

#### STORAGE AND USE

The recommended storage temperature for Visgard 112-20 is 20-25°C (68-77°F). When stored at this temperature in the original closed container, it is recommended to start use of Visgard 112-20 within 3 months of the date received.

Parts coated with Visgard 112-20 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	28.5 - 31.5 %
Viscosity @ 25°C	30 - 55 cP
Density @ 25°C	0.9 - 1.0 g/ml
Solvents: Tertiary Amyl Alcohol, Diacetone Alcohol	

#### CURED COATING PROPERTIES

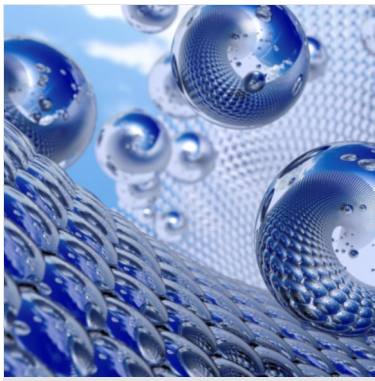
PROPERTY	TYPICAL VALUES
Coating Thickness*	4.0 - 8.0 µm
Refractive Index	1.53
Adhesion	100%
Anti-Fog Performance EN-166:2001 (N-mark)	Pass
Resistance to Surface Damage by Fine Particles EN-166:2001 (K-mark)	Pass
Taber (500g/100 cycles CS10F wheel)	ΔHaze = 10%

\*8 µm cured coating thickness is required to pass K-mark and achieve ΔHaze = 10% in Taber testing.

#### RECOMMENDED OPERATING GUIDELINES

PROPERTY	TYPICAL VALUES
Environmental Conditions	20 - 25°C, 35 - 65 % RH (Class 100)
Air Flow	Filtered, Laminar
Coating Temperature	20 - 25°C
Coating Filtration	5 µm
Extraction Speed	1.0 - 2.0 mm/s
Dry Time/Temperature	10 - 60 s @ 20 - 25°C
Pre-Cure Conditions	10 - 15 min @ 100 - 110°C
Cure Conditions (PC)**	1 hr @ 125°C (257°F)

\*\* A minimum temperature of 110°C (230°F) is required for full cure.



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## CONTACT INFORMATION

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## EQUIPMENT PREPARATION

**Equipment Cleaning:** Coating equipment should be cleaned prior to using Visgard 112-20 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 Diacetone Alcohol rinse. Diacetone Alcohol, Methyl Ethyl Ketone or Isopropanol may be used for cleaning equipment after the use of Visgard 112-20.

**Equipment Materials:** Silicone hard coatings are incompatible with Visgard 112-20 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 112-20 in production systems. A peristaltic pump is recommended for initial tests because there is no actual contact of Visgard 112-20 with the pump chamber or mechanical parts. Visgard 112-20 is incompatible with PVC tubing due to plasticizer extraction. Use only PTFE, LDPE, PU or stainless-steel tubing. Circulating Diacetone Alcohol 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 112-20 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 112-20 should be maintained at a range of 30 - 55 cps (unless diluted). 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 Diacetone Alcohol or a 50/50 Diacetone Alcohol/Isopropanol. Some applications may require the coating to be diluted to lower solids. The following are recommended starting formulations for reducing the solids of Visgard 112-20:

- Dip coating (25% solids) - 100 g Visgard 112-20 + 20 g Diacetone Alcohol
- Flow coating (20% solids) - 100 g Visgard 112-20 + 50 g Diacetone Alcohol

It is possible to include PM glycol ether and/or Isopropanol in the dilution mix if the curing ovens have sufficient extraction. Do not reduce coating solids below 15%. Please contact an FSI representative for further advice on dilution.

## 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 112-20 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 112-20 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.