

SilFORT™ PHC XH100P

Description

SilFORT* PHC XH100P hardcoat is a clear coat that promotes adhesion to various types and grades of PMMA (Polymethylmethacrylates). When thermally cured, it can provide enhanced abrasion resistance, combined with improved chemical and weathering protection, compared to uncoated PMMA.

These properties are reflected in outstanding gloss retention and clarity, after harsh environmental testing, which makes it an excellent candidate to consider for transparent or non-transparent outdoor applications where an extended service life is required.

Key Features and Benefits

- Good clarity
- Enhanced abrasion and mar resistance
- Good solvent/chemical resistance
- Primerless adhesion to many grades of PMMA
- Single coating process
- Graffiti resistant properties

Potential Applications

The product can protect various types and grades of transparent, tinted or black PMMA from degradation. Potential applications include the use in highly exposed wear-and-tear components in automotive and the consumer market, like bezels and covers, transparent doors, windows, sheets and trays.

SilFORT PHC XH100P hardcoat can also be considered for use on Polycarbonate to impart abrasion and chemical resistance, when baked at $\geq 126^{\circ}\text{C}$.

Typical Physical Properties

Property	Value
Solids Content, % by weight	approx. 25.5
Solvents	1-Butanol, 2-Propanol ³
Flash Point (Pensky Martens, Closed Cup)	19.4°C
Density (g/cm ³)	approx. 0.947
pH	5.2
Viscosity cSt @ 25°C	6.5
Gardner Colour	1-5
Shelf life (@ storage temperature 2 – 10°C)	9 months from day of manufacturing
Chemical Resistance of cured film	Ethylene Glycol, 10W30 Motor Oil, Heavy Duty Brake Fluid (Glycol), Windshield Washer Fluid, Heavy Duty Detergent, Auto Polishing Paste, Petrol or Leaded Gasoline, Battery Acid

Typical properties are average data and are not to be used as or to develop specifications.

Tests on cast PMMA (thickness approx. 6 µm; Cure: 90 min @ 90°C)*

Taber Abrasion ¹	500 cycles 1000 cycles	$\leq 2\%$ Haze $\leq 5\%$ Haze ⁴
Water Immersion ²		≥ 240 hrs

Note: Test data. Actual results may vary.

- 1 Taber Abrasion Test with 500g load CS10F (Gen. IV) wheels at 500 cycles. Haze % measured per ASTM D1003. Higher haze indicates greater abrasion. Humidity during coating and Taber wheel variability will affect final values.
- 2 Temperature = 65°C followed by cross hatch tape pull adhesion. Result: GT0 (according to EN ISO 2409).
- 3 Other solvents upon request
- 4 If it is required to achieve a Taber Abrasion resistance of $\leq 2\%$ Haze after 1000 cycles, extended cure times of ≥ 120 minutes may be applied

General Considerations for Use

Refrigeration between 2 and 10°C is required for this SilFORT PHC XH100P hardcoat. If extended storage is being considered, the material may be stored at temperatures below 2°C.

Before use, allow the product to return to room temperature in original container. When the product reaches 15°C, vigorously stir to re-constitute any material that may have separated. After air bubbles have dissipated, the solution should appear homogeneous at room temperature.

The coating area should be of clean room class 10,000 or better (acc. to US fed. std. 209e) or class 7 (acc. to ISO 14644-1) and be well-ventilated. If necessary, parts may be washed or wiped clean with 2-propanol, a mild detergent solution with clean water rinse, or an ultrasonic bath, followed by an ionized-air blow-off. Cleanliness is critical for the production of good parts. The coating solution should be filtered continuously or just prior to use to approximately 0.5 to 1.0 micron, using a 5 to 8 micron pre-filter.

Application can be done by a flow, spray, dip or spin process. After an ambient flash off at 20 – 25°C @ 40 – 50% relative humidity for a minimum of 2 minutes (ideally until the applied coating is tack-free), it should be cured using an electric or indirect gas-fired oven with good temperature distribution and air exchange rate.

The recommended cure conditions for a 4 mm thick substrate, are 90 minutes at 90°C part temperature in a preheated oven. Parts with higher wall thickness may require longer cure times.

Prolonged cure times up to 2 hours, as well as higher cure temperatures can be used

to further enhance abrasion resistance and promote other performance criteria.

For an optimum performance, a dry film thickness of $\geq 6 \mu\text{m}$ is recommended.

Packaging

25 kg Steel Pail with PE liner (SAP# 119952)

Patent Status

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

Product Safety, Handling and Storage

Customers should review the latest Material Safety Data Sheet (MSDS) and label for product safety information, safe handling instructions, personal protective equipment if necessary, emergency service contact information, and any special storage conditions required for safety. Momentive Performance Materials (MPM) maintains an around-the-clock emergency service for its products. MSDS are available at www.momentive.com or, upon request, from any MPM representative. For product storage and handling procedures to maintain the product quality within our stated specifications, please review Certificates of Analysis, which are available in the Order Center. Use of other materials in conjunction with MPM products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

Limitations

Customers must evaluate Momentive Performance Materials products and make their own determination as to fitness of use in their particular applications.

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