

# HardCoats Applications

## Product Description

Silicones HardCoats offer an excellent combination of technology options, application versatility, and high quality finished surfaces for plastic parts.

HardCoats work to enhance and sustain the surface appearance and service life of finished parts in applications as diverse as optical discs, computer screens, and automotive exterior headlamps and trims. Momentive Performance Materials' HardCoats provide excellent long-term protection against abrasion, scratch, mar, chemicals, solvent, and ultraviolet light. They stand up to environmental challenges like acid rain and can be used to protect, enhance, or impart surface gloss. The durability of Momentive Performance Materials HardCoats makes them an excellent choice for substrates exposed to the effects of weathering and wear.

## Key Features and Typical Benefits

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- Enhance and sustain surfaces of plastic
- Versatile use
- Long term protection
- Protect or impart surface gloss

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Momentive Performance Materials provides versatile materials as the starting point for our creative approach to ideas that help enable new developments across hundreds of industrial and consumer applications. We are helping customers

solve product, process, and performance problems; our silanes, fluids, elastomers, sealants, resins, adhesives, urethane additives, and other specialty products are delivering innovation in everything from car engines to biomedical devices.

From helping to develop safer tires and keeping electronics cooler, to improving the feel of lipstick and ensuring the reliability of adhesives, our technologies and enabling solutions are at the frontline of innovation.



## HardCoats Applications

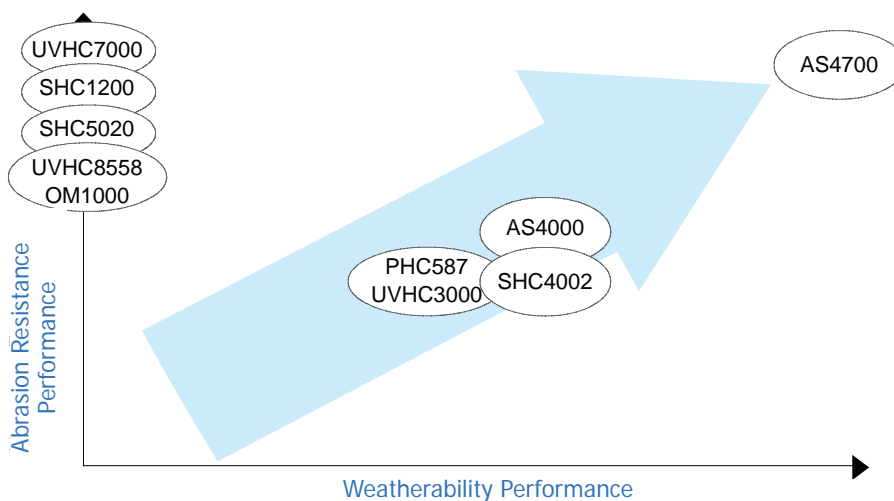
### Two Cure System Expands Plastic Protection

Our Silicones business is committed to the development of thermal cure HardCoats and has pioneered the development of UV cure HardCoats, bringing the advantages of silicone HardCoat to a broader range of plastic products. The technology choice depends on key factors such as geometry of the part, substrate material, the product end-use, and other process or downstream considerations. Drawing on extensive application experience, our technical staff can help customers decide on the coating and curing methods that will meet their needs.

### Apply With Ease And Precision

We offer a comprehensive line of silicone HardCoats. They are easily applied by dip, flow, spray or spin coating methods and are designed for use with extruded parts, sheet materials, or molded products. Suitable applications are high performance films, optical or safety products, consumer and business electronics, or automobiles headlamps or panels.

### Product Selection



### Typical Physical Properties

Product	Solids (wt%)	Viscosity (cstk, 25°C/77°F)	Density (g/cc)	Primer	Flash Point (°C)	Cure Conditions <sup>(1)</sup> (Minimum minutes @ part temperature of 130°C/266°F)
AS4700	24 – 27	3 – 7	0.91	SHP470	20 – 30	60
AS4000	19 – 21	4 – 7	0.91	SHP401	19.4	30
SHC4002	19 – 21	4 – 7	0.91	SHP401	19.4	15
PHC587	19.5 – 21.5	4 - 8	0.91	-----	19.4	30
PHC200	19.5 – 21.5	3 - 10	0.91	-----	19.4	30
SHC5020	19 – 21	4 – 7	0.91	-----	23.3	30
SHC1200	19 – 21	4 – 7	0.91	SHP401	19.4	10

Product	Solids (wt%)	Viscosity (cstk, 25°C/77°F)	Density (g/cc)	Primer	Flash Point (°C)	Cure Conditions <sup>(2)</sup> (Dosage J/cm <sup>2</sup> )	Cure Conditions <sup>(2)</sup> (Minimum UVA W/cm <sup>2</sup> )
OM1000	100	22 – 50	1.2	-----	81	1.0 – 2.5	0.7
UVHC7000	30 – 34	4.8 – 5.4	1.0	-----	32	1.8 – 3	0.3
UVHC3000	42 – 48	10	1.0	-----	32	5 – 15	0.3
UVHC8558	100	20 – 80	1.2	-----	81	0.75 – 1	0.7

(1) For non-polycarbonate substrates such as acrylic, complex molded shapes or molded parts with high residual stress, prolonged cure (1-2 hours) at lower temperatures (90 - 120°C) is recommended for dimensional stability and minimal distortion.

(2) Typical UV Cure Conditions: 2 Fusion H lamps @ 300 watts each, Type H bulb or 2 HG lamps at 120 W/cm.

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## HardCoats Application Selector Guide

	Thermal HardCoats				UV HardCoats		
	General Purpose	Weatherable	Acrylic - PMMA	Primer-less	General Purpose	Weatherable	Anti-Soil
<u>Automotive</u>							
Headlamps	-	AS4700	-	PHC587	-	UVHC3000	-
	-	AS4000	-	PHC20	-	-	-
	-	PHC587	-	-	-	-	-
	-	PHC200	-	-	-	-	-
	-	SHC4002	-	-	-	-	-
Window - AS4700	-	PHC587	-	UVHC3000	-	-	-
	-	AS4000	PHC200	-	-	-	-
	-	PHC587	-	-	-	-	-
	-	PHC200	-	-	-	-	-
Appliqués	-	AS4700	-	PHC587	-	UVHC3000	-
Coating on pillar							
	-	AS4000	-	PHC200	-	-	-
	-	PHC587	-	-	-	-	-
	-	PHC200	-	-	-	-	-
Body Panels	-	AS4700	-	PHC587	-	UVHC3000	-
	-	AS4000	-	PHC200	-	-	-
	-	PHC587	-	PHC200	-	-	-
	-	PHC200	-	-	-	-	-
<u>Optical</u>							
Safety	SHC1200	-	SHC5020	-	UVHC8558	UVHC3000	UVHC7000
	SHC5020	-	-	-	UVHC7000	-	-
Ophthalmic	SHC1200	-	SHC5020	-	UVHC8558	UVHC3000	UVHC7000
Safety Glasses	-	-	-	-	UVHC3000	-	-
CD/DVD	-	-	-	-	OM1000	-	-
Sunglass/Lenses	SHC1200	SHC4002	SHC5020	PHC587	UVHC8558	UVHC3000	-
<u>Molded Parts</u>							
Electronics	AS4000	AS4000	SHC1200	PHC587	UVHC7000	-	-
	-	SHC4002	SHC5020	SHC5020	UVHC8558	UVHC3000	UVHC7000
	-	PHC587	-	-	UVHC3000	-	-
	-	SHC4002	SHC5020	-	UVHC7000	-	-
Appliances	SHC4002	SHC4002	SHC5020	-	UVHC8558	UVHC3000	UVHC7000
	PHC587	PHC587	-	-	UVHC3000	-	-
Packaging	-	AS4000	SHC1200	PHC587	UVHC8558	UVHC3000	UVHC7000
	-	SHC4002	SHC5020	SHC5020	UVHC3000	-	-
	-	PHC587	-	-	UVHC7000	-	-
<u>Film &amp; Sheet</u>							
<u>Products</u>							
Consumer	AS4000	AS4000	SHC5020	PHC587	UVHC8558	UVHC3000	UVHC7000
Products	-	-	-	-	UVHC7000	-	-
Credit Cards	-	PHC587	-	SHC5020	UVHC3000	-	UVHC7000
Industrial	AS4000	AS4000	SHC5020	PHC587	UVHC8558	UVHC3000	UVHC7000
Products	-	-	-	-	UVHC7000	-	-
Windows in	PHC587	SHC4002	-	SHC5020	UVHC3000	-	-
Buildings	-	PHC587	-	-	UVHC7000	-	-

## Coatings Recommendations

Product	Top Coat Film Build (microns)	Primer Coat Film Build (microns)
AS4700/SHP470	4 – 8	2 – 4
AS4000/SHP401	4.5 – 6.5	0.2 – 0.8
SHC4002/SHP401	4.5 – 6.5	0.2 – 0.8
PHC587	6 – 8	Not Applicable
PHC200	6 – 8	Not Applicable
SHC5020	3 – 5	Primer-less for PMMA <sup>(1)</sup>
SHC1200/SHP401	2.8 – 4.5	0.5 – 0.8
OM1000	3 – 5	Not Applicable
UVHC7000	5 – 15	Not Applicable
UVHC3000	8 – 12	Not Applicable
UVHC8558	5 – 10	Not Applicable

(1) Use SHP401 for polycarbonate

(2) Momentive Performance Materials HardCoat is compatible with other polymer grades such as Ultem\*, Valox\* and Cyclocac\*, polystyrene, polycarbonate, polyester, acrylic, polyolefin, and polyester.

The table above is merely a guide. Customer bears full responsibility for making its own determination as to the suitability of a Momentive Performance Materials product for its own particular use.

# Principal Locations

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	<b>UA, Silanes, Resins, and Specialties</b> 800.334.4674	304.746.1623
	<b>RTV Products-Elastomers</b> 800.332.3390	304.746.1623
	<b>Sealants and Adhesives and Construction</b> 877.943.7325	304.746.1654
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