

Processing Guidelines – OrmoPrime®08

OrmoPrime®08

Characteristics

OrmoPrime®08 is an adhesion promoter solution based on organofunctional silanes. It has been designed to enhance the adhesion of *micro resist technology's* hybrid polymer products OrmoComp®, OrmoClear®, OrmoCore, OrmoClad, and OrmoStamp® to various substrates like silicon, glass, and quartz. It is provided as a ready-to-use solution for spin coating.

Processing

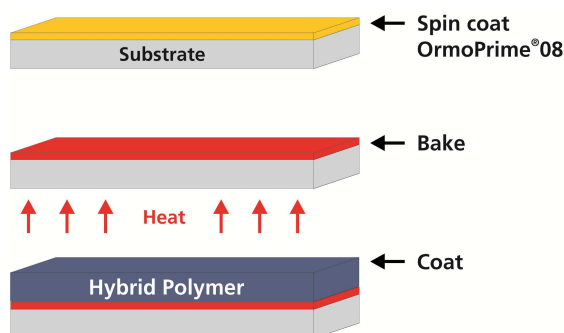


Fig. 1: Process scheme of substrate pretreatment with OrmoPrime®08.

Standard Processing Conditions

Best results are accomplished at temperatures of 20–25 °C and a relative humidity of 40–46 %. The guidelines relate to standard processing on silicon, glass, or silicon dioxide. The specific process parameters depend on substrate, application, and equipment.

Processing Details

OrmoPrime®08			
Substrate preparation		Dehydrate on a hotplate at 200 °C for 30 min or apply short O ₂ plasma treatment	
Spin coating	spin speed	[rpm]	4000
	time	[s]	60
	acceleration	[rpm/s]	1000
Hardbake (hotplate)	temperature	[°C]	150
	time	[min]	5
Film thickness		[nm]	130 ± 15
Storage time of primed substrates		Glass: up to 48 h. Silicon: up to 4 weeks	

Substrate Preparation

The substrates have to be free of impurities and moisture in order to achieve optimum adhesion of OrmoPrime®08. They should be baked at 200 °C for 5 min and cooled to room temperature immediately before coating. Alternatively, short oxygen or ozone plasma cleaning is recommended. An inappropriate substrate pretreatment can lead to unsatisfying quality and noticeable surface roughness of the OrmoPrime®08 films.

This information is based on our experience and is, to the best of our knowledge, true and accurate. It should inform you about our products and their application processes. We don't guarantee special features of our products or use for a concrete process.

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Coating and Baking

Uniform coatings are obtained by spin-coating of the OrmoPrime®08 solution. A spin curve is shown in the attachment. After spin coating the spin-coated films are baked on a hotplate at 150 °C for 5 min. If an oven is used, increase baking time by 15 min. This treatment accomplishes the removal of the residual solvent in the film and the curing of the OrmoPrime®08 material.

Coating with Hybrid Polymers

The hybrid polymer products OrmoComp®, OrmoClear®, OrmoCore, OrmoClad, and OrmoStamp® can be applied immediately to the substrates pre-treated as described above. For the deposition of the hybrid polymer products please refer to the respective processing guidelines. The maximum storage times of primed substrates are as follows: glass up to 48 h, silicon up to 28 days before applying the hybrid polymers.

Removal

Residue-free removal of OrmoPrime®08 films from substrates is preferably achieved by applying wet-chemical etching using piranha solution or plasma etching with fluorine-containing plasma gases (e.g. O_2/CHF_3). *After treatment with pure oxygen plasma porous SiO_2 residues would be left on the substrate, since OrmoPrime®08 contains silicon compounds.*

Storage

We recommend 10–25 °C as standard storage temperature. Storage in a refrigerator is not required. Keep the OrmoPrime®08 bottles closed when not in use. Under these conditions a shelf life of 6 months from the date of manufacture is ensured.

Disposal

Dispose waste of as halogen free solvent according to your national regulations.

Environmental and Health Protection

OrmoPrime®08 is a non-hazardous material. Nevertheless, it should be handled with same care as all chemicals. Ensure that there is adequate ventilation while processing the materials. Avoid contact with skin and eyes and breathing solvent vapours. Wear suitable protective clothing, safety goggles and gloves.

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Attachment

OrmoPrime®08 Specifications

OrmoPrime®08		
Appearance		Colourless, clear liquid
Viscosity 25 °C	[mPa s]	4.0 ± 1.5
Refractive index n_p^{25} (589 nm)		1.348 ± 0.001
Filtration level	[µm]	0.1

Film Thickness and Spin Curve

The thickness values of spin-coated films were determined after baking. The data refer to an open spin coating system.

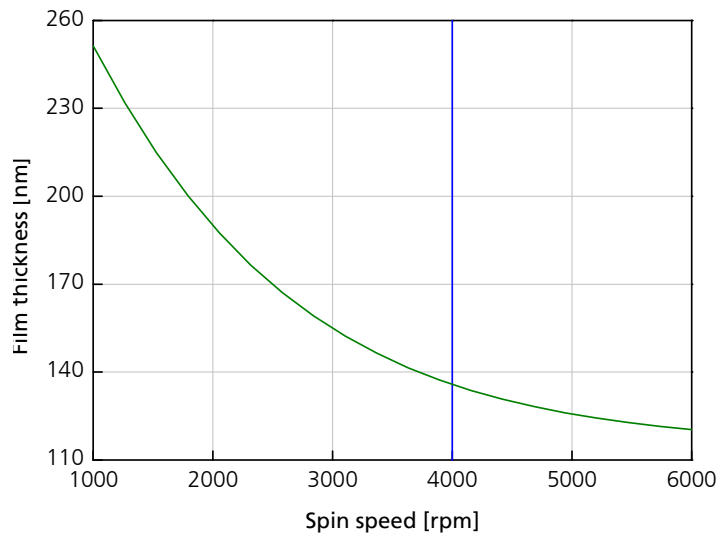


Fig.2: Spin curve (60 s spin time and 150 °C bake temperature).

OrmoPrime®: DE 30 210 075 436

OrmoComp®: DE 30 210 075 433; IR 1 091 982; TW 100030626 (application)

OrmoClear®: DE 30 210 075 434; IR 1 091 359; TW 100030628 (application)

OrmoStamp®: DE 30 210 075 435; IR 1 092 621; TW 100030629 (application)

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