AcesoOptics
A SURFACE MODIFICATION COMPANY

Product Information

SH-M Superhydrophobic
A-2479

General Information

SH-M Superhydrophobic was developed for the deposition of oleophobic layers by evaporation in vacuum and has the ability to greatly reduce the hygroscopic effect of original thin films. Topcoats made of SH-M on AR coated glass or plastic substrates exhibit anti-wettability by water and oil therefore creating a lowered tendency to be contaminated by grease and finger prints. SH-M was designed to molecularly bond to SiO2 but can also be applied to uncoated, clean glass. Thin films used in conjunction with SH-M will demonstrate reduced porosity, improved durability, and good level of cleanability. SH-M affords worry free edging as an assisted additive or top coat is not required. Water contact angle is > 107 degrees.

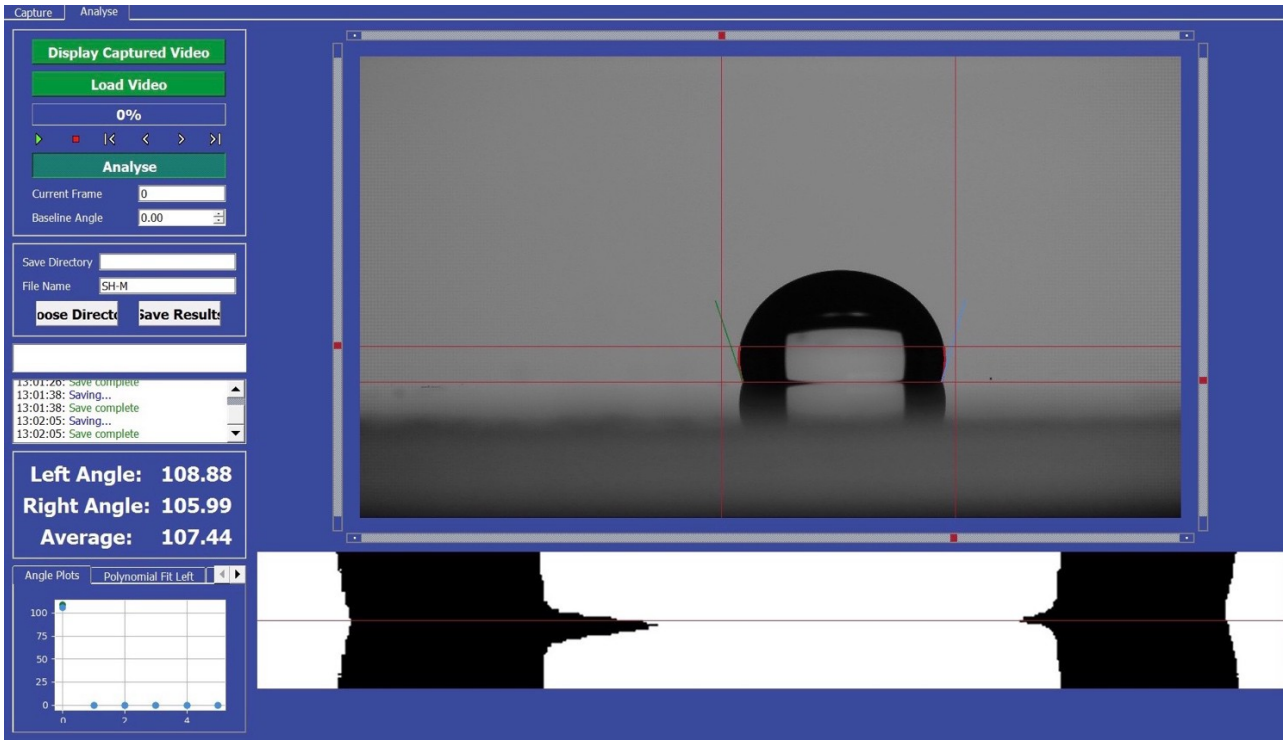
The product SH-M comes ready to use, consisting of a brass beaded cylinder doped with a superhydrophobic polymer. Cylinder sizes are approximately 10mm in diameter and 12mm tall. SH-M is designed to work with chamber sizes up to 940mm / 37inches.

Areas of Application

Superhydrophobic coating agent suitable but not limited to handheld device displays, ophthalmic lenses, glass lenses, and optical filters.

Thin Film Properties

Contact angle with water	>106°
Contact angle with hexadecane	>65°
After abrasion cotton cloth 4000 cycles	>105°
Tendency for fingerprint transfer	Moderate
Ease of fingerprint removal	Good



Tips for Evaporation

Evaporator Source

- Resistance heated thermal evaporator
- Electron beam evaporator (indirect)

Tablet Holder

- For resistive heating: Box type or W boat
- For indirect e-beam heating: Mo or Ta liner with protective shield.

Evaporation Temperature

- 350 - 750° C
- Recommended 450° C

QCR Settings

- Density 1.0 g/cm3, Z-Ratio 1.0

Thickness (QCR)

- 20-25 nm (depending upon tooling factor)

The typical water contact angle of SH-M Superhydrophobic should be larger than 106°.

The refractive index is approximately 1.5 in the visible spectral range.

Shelf life of hermetically sealed SH-M is 6 months from date of manufacture. Cold storage is recommended. For purposes of physical vapor deposition, the more moderate resistive source of heating is preferred over e-beam heating. If e-beam heating is selected, the e-beam should not be focused directly on the chemical vessel and the crucible liner should require a lid for shielding the carrier. After opening the shutter, the thermal source current should be set to a low and constant value. Onset evaporation usually occurs after approximately 45-75 seconds. The evaporated SH-M

will form a thin fluorinated siloxane layer on the substrate. Excess material can be wiped off. For optimum spectral stability the spectral measurement of the coating should be performed after wiping off surplus material. Maximum durability is achieved for approximately 20-25 nm thickness quartz crystal reading at 1.0 g/cm^3 density setting.

SH-M Superhydrophobic layer undergoes a ripening process post deposition at ambient conditions. Post treatment in warm and humid environment for a few hours reduces the ripening time.

Due to the diversity of deposition systems, specific results should be verified by a qualified process technician or engineer.