

Lumera MRC16 Coating

MRC16 photomask release coating is used as an anti-stick coating for contact photolithography. The coating allows for a quick release between the resist surface and the mask. It also aids in minimizing photoresist damage on the coated substrate and photoresist transfer to the photomask.

It can be used on soda lime and quartz photomask substrates with Cr/CrOx patterns. Used or new photomasks can be coated. It forms a continuous, transparent coating that is 20 to 40 Angstroms thick. Wetting contact angle of up to 110 degrees can be achieved.



Properties of Lumera MRC16

UV STABILITY: A photomask coated with MRC16 has been tested by exposing it to UV light, 365 nm @ 34mW/cm² for 24 hours. No reduction in either release performance or contact wetting angle is observed.

CHEMICAL RESISTANCE: MRC16 is resistant to the following process chemicals as determined by a 1-hour soak that had no effect on the release performance or contact-wetting angle:

- Organic Solvents
- Negative Photoresist
- Triton® X-100 surfactant
- Cyantek RS-112 photoresist™ stripper
- Positive photoresist
- 18 Megohm DI water

Application Notes

CONTACT PRINTING: Practical lifetime of coating varies depending on the user's photolithography process. Testing on 1.2 mm resist showed that >20 vacuum contact prints can be made in softbaked positive resist without cleaning the photomask.

IN PROCESS CLEANING: If the photomask becomes contaminated, it can be cleaned in Nanostrip™ at room temperature. 5 hour soak times have been tested with no effect on the coating from a release performance standpoint. Aggressive scrubbing with cleanroom wipers and toluene showed no effect on contact angle during testing.

COATING PROCESS: To learn more about Lumera's proprietary mask coating process using MRC16, please email us at eo_info@lumera.com.

Photomask Coating Process

Method A.

1. Clean photomask in 30% NaOH/DI water at room temperature for 10 minutes
2. Rinse in 18 meg/ohm DI water
3. Spin/rinse dry
4. Load on to spin chuck with Cr/CrOx pattern up
5. Flood surface of photomask with MRC16
6. Immediately spin at 500 rpm and flush surface with anhydrous toluene for 3 seconds
7. Ramp spinner to 1000 rpm for 100 seconds
8. Remove from spinner and bake at 100°C for 20 minutes
9. Remove from oven and allow to cool to room temperature
Photomask is now ready for use

Method B.

1. Clean new photomask with Nanostrip™ at room temperature for 5 minutes
2. Rinse in 18 meg/ohm DI water
3. Spin/rinse dry
4. Load on to spin chuck with Cr/CrOx pattern up
5. Flood surface of photomask with MRC16
6. Immediately spin at 500 rpm and flush surface with anhydrous toluene for 3 seconds
7. Ramp spinner up 1000 rpm 100 seconds
8. Remove from spinner and bake at low for 20 minutes
9. Remove from oven and allow to cool to room temperature
Photomask is now ready for use

Storage & Handling

The Material Safety Data Sheet (MSDS) for MRC16 is available from Lumera through our website (www.lumera.com) or by calling 425.415.6900.

MRC16 is a moisture sensitive liquid. Any unused coating should be stored in a sealed container at room temperature. MRC16 will last approximately 3 weeks after opening, while unopened containers have a shelf life of 2 months.

Do NOT dump MRC16 into any sewers, on the ground or into any body of water. All disposal methods must be in compliance with all Federal, State and local laws and regulations. Chemical disposal is the responsibility of the waste generator.

About Lumera

Lumera Corporation develops polymer electro-optic devices used in applications such as RF photonics, high speed optical communications, optical interconnects, sensing and imaging. Lumera polymer materials are uniquely engineered at the molecular level to enable active components, that feature a combination of the fastest switching speeds and the lowest drive voltages in the industry.

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Coating Removal

Method A

Complete stripping of the coating is accomplished by soaking the photomask in 30% NaOH/DI water at room temperature for 24 hours or in 15% NaOH at 80°C for 2 minutes. Both strip-ping methods are followed by a DI water rinse and a spin dry to eliminate any water spots. regulations. Chemical disposal is the responsibility of the waste generator.

Method B

O2 Plasma: 200W@1.5torr for 7 minutes.