

****COMPLETE THIS FORM TO INITIATE SUPPLIER SCOUTING****
MEPNN Supplier Scouting Opportunity Synopsis

Reticle plates

_____ days
Opportunities will be posted for 30 days unless specified

Item to be Scouted

Please describe the item application/ the end use of item.* Provide the item number if applicable: (N95 Mask vs Protective Mask).

The 6 inch photobank plates, that meet SEMI Spec SEMI P1-0708: "SPECIFICATION FOR HARD SURFACE PHOTOMASK SUBSTRATES", is used to make reticles for an ASML 5500/80 and 5500/100 wafer stepper. A cleanroom user designs a pattern using CAD software and then inserts the photobank into a reticle writing tool. A laser writes the design from the CAD software onto a photoresist layer on the plate. The user then develops this photoresist that is protecting a layer of chrome on the photobank. The user then etches this layer of chrome and removes the photoresist. This creates a reticle that has the design from the CAD software on the plate. The reticle is then inserted into the ASML 5500/80 or ASML 5500/100 wafer stepper where the tool uses complex optics to project this image onto a photoresist layer on the users substrate. This allows them to pattern their wafer with photoresist to act as a protective layer for later fabrication steps.

2021-024

Supplier Scouting Number (NIST MEP use)

Scouting customer/product [NAICS Code](#), if known

TECHNICAL INFORMATION:	1. Supplier Information	a. Type of supplier being sought*
		<input checked="" type="checkbox"/> Manufacturer <input type="checkbox"/> Contract Manufacturer <input checked="" type="checkbox"/> Distributor <input type="checkbox"/> Other _____
	2. Summary of Technical Specifications and Performance Requirements:	b. Reason for scouting submission*
		<input type="checkbox"/> 2nd Supplier <input type="checkbox"/> Price <input type="checkbox"/> Re-shore <input type="checkbox"/> Past supplier no longer available <input type="checkbox"/> New Product Startup <input checked="" type="checkbox"/> Other <u>Find US manufacturer</u>
	a. Describe the manufacturing processes (elaborate to provide as much detail as possible).*	
	Optical quality soda-lime glass is cut into 6" x 6" x .12" inch pieces with a squareness of greater than 8 parts per thousand. Low reflective chrome is deposited on the glass. Then, the chrome is covered with photoresist. Unit are then packaged and shipped in a method that is suitable for use in an ISO class 5 cleanroom.	
	b. Provide dimensions / size / tolerances / performance specifications for the item.*	
	The photoblanks must conform to SEMI Spec SEMI P1-0708: "SPECIFICATION FOR HARD SURFACE PHOTOMASK SUBSTRATES". i. Material: Soda lime glass ii. Size: Min 151.6 mm, Max 152.4 mm (nominal 6") iii. Thickness: 3.05 +/- 0.1 mm (nominal 0.12") iv. Squareness: < 8 parts/thousand v. The following must be met in a circle of quality of 100 mm diameter	

		<ol style="list-style-type: none"> 1. Flatness: 15 μm or better 2. Cr nominal thickness: 95 nm -115 nm 3. Cr thickness variation: < 10 nm 4. Optical density: > 3 @ 365 nm 5. Pinholes: 0 > 5 μm 6. Photoresist: AZ1350 or equivalent – 500 nm thick 7. Surface particles: 0 > 10 μm
		<p>c. List required materials needed to make the product, including materials of product components.*</p>
		<ol style="list-style-type: none"> i. Photoblanks: <ol style="list-style-type: none"> 1. Optical quality soda-lime glass 2. Chrome 3. DNQ/Novalak based Photoresist ii. Heavy Industrial equipment required to make: <ol style="list-style-type: none"> 1. Glass 2. Semiconductor tools 3. Chemistry required for DNQ/Novalak based Photoresist
	<p>2. Summary of Technical Specifications and Performance Requirements cont:</p>	<p>d. Are there applicable certification requirements?* <input type="checkbox"/> Yes <input type="checkbox"/> No Please explain</p> <p>Yes, the photoblanks must meet SEMI Spec SEMI P1-0708: "SPECIFICATION FORWARD SURFACE PHOTOMASK SUBSTRATES" and the requirements listed above.</p> <p>e. Are there applicable regulations?* <input type="checkbox"/> Yes <input type="checkbox"/> No Please explain</p> <p>N/A</p> <p>f. Are there any other standards, requirements, etc.?* <input type="checkbox"/> Yes <input type="checkbox"/> No Please explain</p> <p>N/A</p> <p>g. Additional Comments: Is there other information that would impact the item's performance or usefulness? Please explain.</p> <p>It is very important that the reticle blanks you the similar chrome and photoresist so we do not have to develop all new processes for processing the photoblanks.</p>
<p>BUSINESS INFORMATION:</p>	<p>3. Volume and Pricing</p>	<p>3a. Estimated potential business volume (i.e., # Units Per Day, Month, Year) *:</p> <p>Between 800 and 1600 per year.</p> <p>b. Estimated target price / unit cost information (flexible and negotiable <u>not</u> accepted) *:</p> <p>About \$100 a plate.</p> <p>4. Delivery Requirements:</p> <p>a. When is it needed by? (Immediate, 30 Days, 6 months, etc.)*</p> <p>1-3 Months</p> <p>b. Describe packaging requirements (i.e., individually/group packaging)*</p> <p>Must be light tight to prevent plates from being exposed. Must be packaged for use in an ISO class 5 cleanroom.</p>

■		c. Where will this item be shipped? *
		325 Broadway MS 680.09 Boulder, CO 80305
■	5. Additional Comments:	Is there other information you would like to include?
		These reticles are used in the BMF's ASML 5500/100 wafer stepper, a ~\$3M tool. This tool is used in much of the BMF's mission critical work. In the past, we have damaged the tool using cheaper photoblanks that did not meet SEMI Spec SEMI P1-0708. The tool is under service contract with ASML and they said that they would repair it that one time, but if we used photoblank that did not meet SEMI Spec SEMI P1-0708 in the future, they would not repair the tool. Therefore, we must use plates that meet SEMI Spec SEMI P1-0708.

Photos or diagrams of the item (helpful but not required).

Technical Information:

1. Supplier Information

- a. Type of supplier being sought:
 - i. Manufacture or Distributor
- b. Reason for scouting submission:
 - i. Find US manufacture

2. Summary of Technical Specifications and Performance Requirements:

a. Describe the Manufacturing process:

Optical quality soda-lime glass is cut into 6" x 6" x .12" inch pieces with a squareness of greater than 8 parts per thousand. Low reflective chrome is deposited on the glass. Then, the chrome is covered with photoresist. Unit are then packaged and shipped in a method that is suitable for use in an ISO class 5 cleanroom.

b. Provide dimensions/size/tolerances/performance specifications for the item:

The photoblanks must conform to SEMI Spec SEMI P1-0708: "SPECIFICATION FOR HARD SURFACE PHOTOMASK SUBSTRATES".

- i. Material: Soda lime glass
- ii. Size: Min 151.6 mm Max 152.4 mm (nominal 6")
- iii. Thickness: 3.05 +/- 0.1 mm (nominal 0.12")
- iv. Squareness: < 8 parts/thousand
- v. The following must be met in a circle of quality of 100 mm diameter
 1. Flatness: 15 µm or better
 2. Cr nominal thickness: 95 nm -115 nm
 3. Cr thickness variation: < 10 nm
 4. Optical density: > 3 @ 365 nm
 5. Pinholes: 0 > 5µm
 6. Photoresist: AZ1350 or equivalent – 500 nm thick
 7. Surface particles: 0 > 10 µm

c. List required materials needed to make the product, including materials of product components:

- i. Photoblanks:
 1. Optical quality soda-lime glass
 2. Chrome
 3. DNQ/Novalak based Photoresist
- ii. Heavy Industrial equipment required to make:
 1. Glass
 2. Semiconductor tools
 3. Chemistry required for DNQ/Novalak based Photoresist

- d. Are there applicable certification requirements?:
 - i. Yes, the photoblanks must meet SEMI Spec SEMI P1-0708: “SPECIFICATION FOR HARD SURFACE PHOTOMASK SUBSTRATES” and the requirements listed above.
 - e. Are there applicable regulations?
 - i. No
 - f. Are there are other standards, requirements?
 - i. No
 - g. Additional Comments:
 - i. It is very important that the reticle blanks you the similar chrome and photoresist so we do not have to develop all new processes for processing the photoblanks.
3. Volume and Pricing
- a. Estimated potential business volume (i.e. # Units per day, Month, Year)
 - i. Between 800 and 1600 per year.
 - b. Estimate target price / unit cost information:
 - i. About \$100 a plate.
4. Delivery requirements:
- a. When is it needed by:
 - i. 1 – 3 months
 - b. Describe packaging requirements:
 - i. Must be light tight to prevent plates from being exposed. Must be packaged for use in an ISO class 5 cleanroom.
 - c. Where will this item be shipped:
 - i. 325 Broadway MS 680.09 Boulder, CO 80305
5. Additional Comments:
- a. Is there other information you would like to include?
 - i. These reticles are used in the BMF’s ASML 5500/100 wafer stepper, a ~\$3M tool. This tool is used in much of the BMF’s mission critical work. In the past, we have damaged the tool using cheaper photoblanks that did not meet SEMI Spec SEMI P1-0708. The tool is under service contract with ASML and they said that they would repair it that one time, but if we used photobblank that did not meet SEMI Spec SEMI P1-0708 in the future, they would not repair the tool. Therefore, we must use plates that meet SEMI Spec SEMI P1-0708.