Gel-PROBE™ REFINE

Probe Polishing Wafer

TECHNICAL DATASHEET

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MATERIAL AND USAGE OVERVIEW

Gel-Pak®'s Gel-Probe REFINE™ polishing wafer consists of a proprietary Gel elastomer material that is uniformly blended with abrasive particles then laminated to a silicon wafer that meets SEMI specifications for physical, dimensional, thermal and electrical properties, as outlined in the SEMI standard. Gel-Probe REFINE polishing wafers are designed for flat, rounded, and radius micro-cantilevered probe tips; vertical probe cards with pointed, wedge, and crown-tip style probes; and advanced MEMs style probe card technologies. The Gel-Probe REFINE™ polishing wafer is intended for use in both on-line and off-line probe polishing applications.

Gel-Probe REFINE™ polishing wafers efficiently remove embedded and bonded debris from probe tips, capture adherent loose particles that are created during the probing process, and lightly polish the entire probe surface, tip length, and shaft in a non-destructive manner.

The polishing Gel elastomer only exerts forces on the probes in the Z (vertical) direction and the overall force is less than that imparted during normal test conditions. No lateral force is applied to the probe tips during polishing.

PRODUCT FEATURES

PRODUCT	ABRASIVE LOADING	NOMINAL STACK HEIGHT	OPERATING TEMP
Gel-Probe REFINE L3	Low Load (~70%) 3µm SiC	200mm = 958 ± 30µm 300mm = 1008 ± 30µm	-60˚C to +200˚C
Gel-Probe REFINE M3	Medium Load (~99%) 3µm SiC	200mm = 958 ± 30µm 300mm = 1008 ± 30µm	-60˚C to +200˚C
Gel-Probe REFINE H3	High Load (~150%) 3µm SiC	200mm = 958 ± 30µm 300mm = 1008 ± 30µm	-60˚C to +200˚C
Gel-Probe REFINE U3	Ultra-High Load (~300%) 3µm SiC	200mm = 958 ± 30µm 300mm = 1008 ± 30µm	-60˚C to +200˚C
Gel-Probe REFINE H5	High Load (~150%) 5µm SiC	200mm = 958 ± 30µm 300mm = 1008 ± 30µm	-60˚C to +200˚C
Gel-Probe REFINE H10	High Load (~150%) 10µm SiC	200mm = 958 ± 30µm 300mm = 1008 ± 30µm	-60˚C to +200˚C

- Standard: 200mm and 300mm SEMI Standard Silicon Wafer
  - Gel-Pak's silicon wafers comply with SEMI standards for physical, dimensional, thermal and electrical specifications, guaranteeing material thickness, hardness, and tackiness for maintaining accurate electrical measurements to assess cleaning results.
- Optional: 150mm SEMI Standard Silicon wafer (Nominal wafer stack height = 908um ± 30um)
  Note: Contact factory for other wafer size options
- Non-conductive, non-corrosive
- Operating temperature: -60˚C to +200˚C
- Does not transfer residue to probes or bond pads
- CoC for wafer total stack install height (w/o coversheet) included with each wafer

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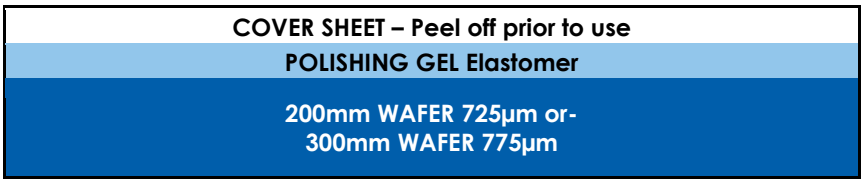
POLISHING WAFER CROSS SECTION



Nominal Wafer stack height:

200mm Wafer stack height: 958 ± 30µm

300mm Wafer stack height: 1008 ± 30µm

*Graphic not to scale

INSTALLATION

1. Once the wafer has been installed into the prober, use the small corner tab on the coversheet to carefully peel back and remove the coversheet to expose the polishing surface.
   Important *- Do not remove the protective coversheet from the polishing surface until the wafer has been placed into the prober wafer tray.*
2. The installed thickness of a Gel-Probe REFINE™ polishing wafer is provided on the product label. *Failure to properly define the cleaning contact height for the prober may result in excessive penetration of the elastomer causing damage to the polishing material and/or probes.*
3. Adjust the cleaning parameters so that the cleaning overtravel is equal to the probing overtravel or up to 25um greater than the probing overtravel. For the highly compliant elastomer, AOT = POT due to the tips penetrating the Gel layer. It is recommended to confirm with the probe card supplier regarding the allowable overtravel limits.

CLEANING RECIPE GUIDANCE

Cleaning recipe optimization is typically performed based on the individual customer test requirements. Gel-Pak can provide a starting point for the cleaning recipe development.

CLEANING RECIPE PARAMETER	STARTING RECOMMENDATION FOR ALUMINUM PADS
Cleaning Frequency	• T < 25˚C: Cleaning is recommended at LOT start; and more frequently during the probing process, as needed. • T = 25˚C: Cleaning is recommended at LOT start; and more frequently during the probing process, as needed. • T > 25˚C: Cleaning is recommended at LOT start; and more frequently during the probing process, as needed. *Number of cleaning touchdowns is adjusted based on the debris accumulation and electrical requirements.*
Cleaning Insertions per Cycle	• T < 25˚C: 20 to 50 clean insertions • T = 25˚C: 20 to 50 clean insertions • T > 25˚C: 20 to 50 clean insertions *Number of cleaning insertions per cycle is typically increased until the probe tip is clean and free of adherent debris.*
Cleaning Index	Index between insertions by 25µm / 25µm in the X and Y directions. Rotation angle of the cleaning wafer 10 to 20-degrees each cleaning cycle execution. *Cleaning surface should be frequently inspected during regular usage.*
Utilization	*The Gel elastomer does not break down easily when repeatedly used in the same location; however, the probe type, and amount of debris generated will affect the total number of cleaning rotations before the cleaning performance is affected.*