

## Recommended Procedures for using Probe Polish™ (PN 134-209) Cleaning Materials

**Probe Polish™ (PN 134-209)** is designed to remove embedded or bonded debris from probe tips as well as collect any loose debris generated during probing. Spatially distributed abrasive particles within the polymer matrix effectively remove accumulated contaminants and lightly polish the probe tip and contact area. However, the material is not so aggressive that it will alter the probe tip shape. The cleaning material has an effective operating temperature range of -50° C to +200° C.

### GENERAL

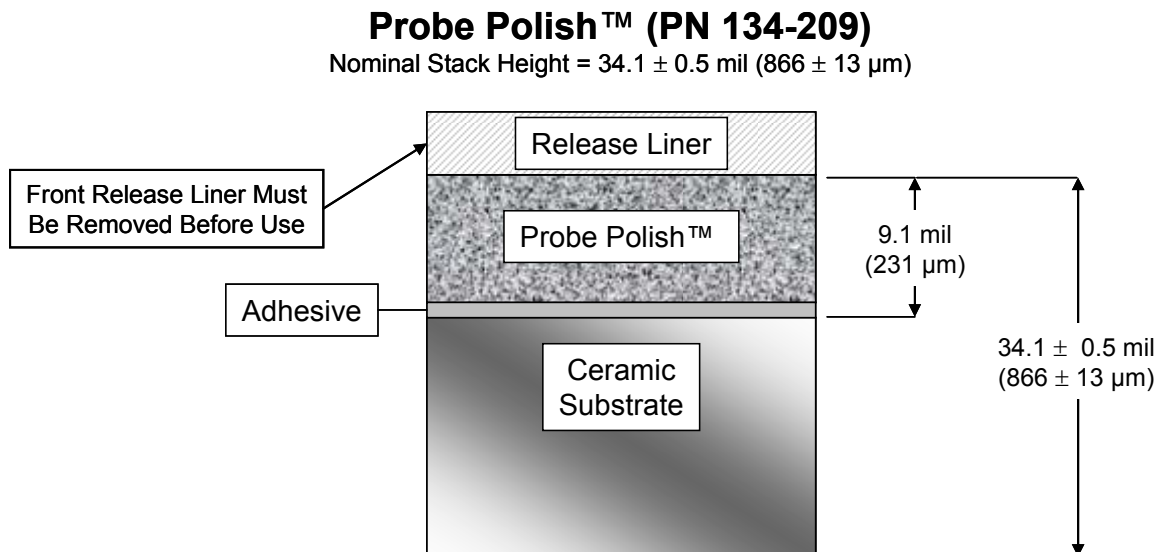
In general, the probe cleaning is dictated by the amount of debris accumulation and build-up of contaminants that cause increased contact resistance and poor measurement repeatability. Frequent use of the **Probe Polish™** will reduce the number of touchdowns required to remove the embedded or bonded debris. Probe needle cleaning frequency and number of cleaning insertions varies according to the specific testing environment. To maintain low and stable contact resistance, cleaning may be required as often as every 10 touchdowns and as infrequently as every 4,000 touchdowns. During the cleaning operations, an overtravel of 100 microns (~4 mils) will allow the probe to

penetrate into the polymer material. The maximum depth of penetration into the cleaning polymer should not exceed 200 µm (~8.0 mils). The number of touchdowns per cleaning cycle is generally 10 touchdowns while indexing to a new location between each cleaning insertion.

The cleaning motion with **Probe Polish™** is only in the Z direction. Very low lateral forces are applied to the probes as the polymer is penetrated. The total forces exerted on the probe when cleaning are typically less than those experienced during normal testing operations. The maximum penetration depth

In addition to the light polishing action, polymer layer also collects and traps the debris generated during cleaning. It is important to inspect the polymer surface from time to time to ensure that it does not become overloaded with debris. Multiple insertions into of the same location are possible; however, the cleaning efficiency of the material may be reduced. To achieve maximum cleaning efficiency, each cleaning insertion should be offset approximately 2 times the probe diameter in the X and Y directions, giving consideration to the probe layout, tip size, and overall orientation.

### CROSS SECTION



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PPOLISH-0705I

All specifications and data subject to change without notice.

# Application Note



## RECOMMENDED USAGE

**CAUTION: Latex gloves are recommended for handling the cleaning materials to prevent working surface contamination from fingerprints and exposure to unapproved materials.**

1. Place the cleaning substrate ceramic side down onto one of the auxiliary chucks.
2. Turn on the appropriate auxiliary chuck vacuum.
3. Carefully remove the protective front release liner to expose the cleaning polymer surface without damaging the edges. The cover can be re-installed back onto the cleaning surface.
  - a. Tweezer method – lift a corner of the front release liner, gently peel it from the polymer working surface to expose the polymer surface.
  - b. Transparent tape (3M Brand Scotch Tape) method – touch the edge of the front release liner and gently peel the cover off to expose the polymer surface.
4. Overdrive the probe needle into the cleaning material at least 100  $\mu\text{m}$  (~ 4 mils) to penetrate into the polymer layer. The cleaning material layer is 9.1 mils thick and additional overtravel can be applied; however, care must be taken to not damage the probe needle assembly.
  - a. Cleaning overtravel, probe cleaning frequency and number of cleaning insertions varies according to the specific testing environment.
5. As a start, perform 10 insertions at a new location for each cleaning cycle. Offset the touchdown point by 2X the probe diameter in the “+Y” direction and 2X the probe diameter in the “+X” direction each touchdown.
  - a. Increase the number of insertions and/or the overtravel until the probe tip has been cleaned and is debris free. DO NOT excessively overtravel onto the lapping film.

## POLYMER MAINTENANCE PRACTICES

1. On regular basis perform a careful visual inspection (while wearing latex gloves) of the polymer working surface for any debris, defects, and damage such as tears, lifted edges, bubbles, shredded material, or significant surface discontinuities. If excessive damage is observed, the cleaning material should be discarded and replaced.
2. Loose debris (such as dust or other air-borne particulates) can be cleaned from the polymer surface by gently flooding the polymer surface with IPA. With a folded lint free clean-room cloth carefully and gently wipe the IPA across the surface in one direction to avoid redistributing debris. Air-dry the polymer for at least 1 to 2 hours (24-hours, if possible) to volatilize any residual IPA.
3. More tenacious and slightly embedded contaminants (such as aluminum “tails” and solder residuals) can be removed using a very light natural fiber (i.e., sable, yak, etc.) brush.

## CONTACT INFORMATION

For questions regarding the proper operation, contact your local **Cascade Microtech** customer support representative. For questions regarding the cleaning material, contact **International Test Solutions** applications engineering.

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