



VACUUM CHAMBER PM TECHNIQUE HITACHI STR M712 NON-METAL ETCH

OBJECTIVE:

TO EFFECTIVELY PM THE AMAT ETCH IN A TIMELY MANNER, WHILE HELPING TO MINIMIZE PARTICLE ISSUES, IMPROVE TOOL PERFORMANCE AND REDUCE HAZARDOUS WASTE

Vacuum Chamber: HITACHI STR M712 ETCH
Vacuum Chamber Process Residue: BY PRODUCT OF STR ETCH
Vacuum Chamber Components: CHAMBER, CHAMBER WALLS, TUNNEL, TURBO TOP PLATE, AND TUNNEL DOOR

Old Procedure: Silicon carbide 600 grit, 1200 grit & wipers
Using the old procedure, the PM is taking 4 to 6 hours to complete with an abundance of 200+ Alpha wipers and 10 to 12 SiC pads
Solvent: DI water, IPA (only)
Safety: Breathing apparatus to prevent breathing in dangerous fumes upon initial entry of chamber and proper exhaust stationed

New Procedure: Diamond ScrubPAD, DI water, MiraWIPES®, IPA and UltraSOLV® Sponge

Vacuum Chamber Products:

- (1) [HT4754](#) UltraSOLV® Sponge
- (1) [FT901](#) ErgoSCRUB® soft handle (with hook and loop)
- (1) [HT4580DC3](#)-1 800 Grit Diamond ScrubDISK®
- (1) [HT4580D](#)-10-1 800 Grit Diamond ScrubPAD
- (1) [HT5790S](#)-25 MiraWIPE® 9X9 wide-sealed edge
- DI water & IPA

HITACHI NON-METAL ETCHER PM PROCEDURE:

View "How to" instructional videos on <http://www.foamtecintlwcc.com/flash/>

- Step 1:** Using all **safety procedures** and guidelines, remove the parts that are required to be removed from within the tool to prepare for PM

- Step 2:** Dampen the [HT4754](#) UltraSOLV[®] Sponge with DI water and effectively wipe the inside of the chamber to remove excess deposition

- Step 3:** Appropriately place the [HT4580DC3-1](#) 800 Grit Diamond ScrubDISK[®] onto the [FT901](#) ErgoSCRUB[®] soft handle w/hook & loop

- Step 4:** Using a DI water lightly dampened [HT4580DC3-1](#) ScrubDISK[®], proceed to scrub approximately 12"x12" area within the chamber walls

- Step 5:** Wipe-down the effected chamber area using the DI water dampened [HT4754](#) UltraSOLV[®] sponge

- Step 6:** As necessary, unload the ScrubDISK[®] of deposition by wiping the ScrubDISK[®] with [HT4754](#) UltraSOLV[®] Sponge in one direction (See Fig 1, 2 & 3)



Fig 1: ScrubDISK[®] loaded with deposition



Fig 2: Pull & twist ScrubDISK[®] across UltraSOLV[®] Sponge

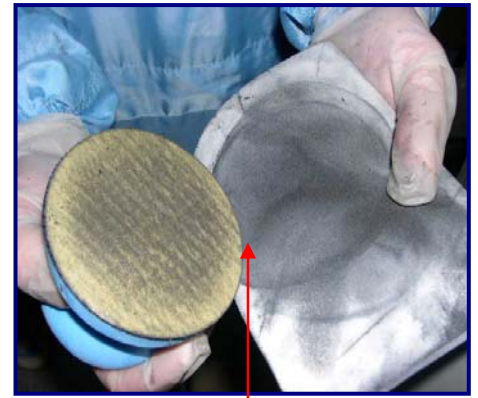


Fig 3: Unloaded ScrubDISK[®]

HITACHI NON-METAL ETCHER PM PROCEDURE (CONT'D):

Step 7: Unload the [HT4754](#) UltraSOLV® Sponge by moistening with DI water and ringing out into a properly labeled HazMat container (See Fig 4 & 5)



Fig 4: UltraSOLV®
Sponge loaded with
deposition

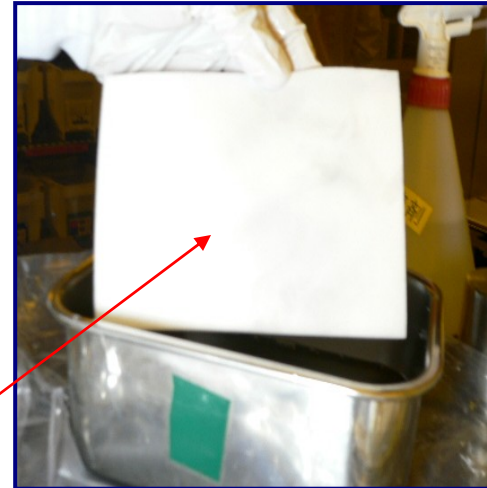


Fig 5: UltraSOLV®
Sponge free of
deposition after rinse in
DI water

Step 8: Using the [HT4580DC3-1](#) 800 Grit Diamond ScrubDISK® and the [HT4754](#) UltraSOLV® sponge, continue to remove deposition from affected areas throughout the chamber. Use same method described in steps 4 – 7

Step 9: Using the [HT4580D-10-1](#) 800 Grit Diamond ScrubPAD continue to remove deposition from the remaining areas throughout the chamber using the same method described in steps 4 – 7. May be necessary to fold ScrubPAD to reach tight corners

Step 10: Continue scrubbing method into the remaining areas; including tunnel, tunnel door and top turbo plate

HITACHI NON-METAL ETCHER PM PROCEDURE (CONT'D):

IMPORTANT NOTE

THE USE OF HT5790S MiraWIPES[®] DURING FINAL WIPE PORTION OF PROCEDURE IS A CRITICAL STEP TO EFFECTIVELY REMOVING PARTICLE DEFECTS

NOTE: Figure below shows how much more deposition the Foamtec International MiraWIPE[®] can remove from a critical surface compared to the standard fab wiper, making the MiraWIPE[®] FINAL WIPE PROCEDURE the most CRITICAL STEP of the PM procedure (See Fig 6a & 6b)

Fig 6a: Current fab wiper after completely wiping chamber



Fig 6b: Particles picked up using HT5790S MiraWIPES[®] after completely wiping with current fab wiper

MiraWIPES[®] are the KEY STEP for DEFECT REDUCTION and IMPROVED TOOL RECOVERY

Step 11: Using IPA, dampen the HT5790S MiraWIPES[®] and perform a thorough and effective final wipe-down of the entire chamber area; including tunnel, tunnel door and top turbo plate

NOTE: This important step must be effectively followed in order to achieve the maximum efficiency of tool recovery and performance. Continue to wipe all of the effected PM areas within the Hitachi Non-Metal Etcher repeatedly until all MiraWIPES[®] have been effectively used

Step 12: For added efficiency wipe down all spare parts to be placed back into the Hitachi Non-Metal Etcher using additional IPA dampened HT5790S MiraWIPES[®]