

BEFORE



AFTER

VACUUM CHAMBER PM TECHNIQUE LAM 9600 METAL ETCH

OBJECTIVE:

TO PM THE LAM 9600 METAL ETCH IN AN EFFECTIVE AND TIMELY MANNER, WHILE IMPROVING PARTICLE PERFORMANCE, TOOL RECOVERY AND MAXIMIZE TOOL UPTIME

Vacuum Chamber:

LAM 9600 METAL ETCH

Vacuum Chamber Process Residue:

PROCESS INDUCED RESIDUE

Vacuum Chamber Components:

CHAMBER, PUMP PORT, TURBO TUNNEL,
SLIT VALVE

Old Procedure:

ScotchBrite[®], DI water, wipers and IPA

New Procedure:

Foamtec products, DI water, MiraWIPES[®] and IPA

Vacuum Chamber Products:

- (1) [HT4754](#) UltraSOLV[®] Sponge
- (2) [HT4536D](#)-10-1 360 Grit Diamond ScrubPAD
- (1) [HT4513PD](#)-10-1 1350 Grit Diamond ScrubPAD
- (1) [HT174936D](#)-1 360 Grit Diamond ScrubTIP[®]
- (25) [HT5790S](#) MiraWIPES[®]

NOTE: INITIAL CLEAN MAY REQUIRE THE USE OF ADDITIONAL PRODUCTS TO EFFECTIVELY CLEAN CHAMBER BACK TO BARE METAL

EVALUATION: IMPORTANT TO USE **ENTIRE** FOAMTEC CLEANING TECHNIQUE ON A ROUND OF 2-3 PM'S ON SAME TOOL TO EFFECTIVELY MEET THE FOLLOWING OBJECTIVES

LAM 9600 METAL ETCH PM PROCEDURE:

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

- Step 1:** Using proper procedures and **safety guidelines** properly shutdown and vent entire Metal ETCH Chamber
- Step 2:** Reduce ETCH Chamber heater settings to 35 to 40 degrees C°
- Step 3:** Place [HT4754](#) UltraSOLV® Sponge, UltraSOLV® 360 Grit Diamond ScrubPAD in container with approximately 1 liter of DI water (See Fig 1)



Fig 1: 360 Grit Diamond ScrubPAD, sponge & 1 liter DI water

- Step 4:** Using the dampened UltraSOLV® Sponge, proceed to wipe down all areas throughout Metal ETCH Chamber, slit valve and turbo flange, as this will remove any flakes and gross deposition buildup (See Fig 2)



Fig 2: UltraSOLV® Sponge wiping Metal ETCH Chamber

- Step 5:** With UltraSOLV® Sponge, dampen and moisten a 6" to 8" scrubbing area within the chamber

LAM 9600 METAL ETCH PM PROCEDURE (CONT'D):

Step 6: With dampen UltraSOLV[®] 360 Grit Diamond ScrubPAD, proceed to scrub off deposition from moistened area (See Fig 3)

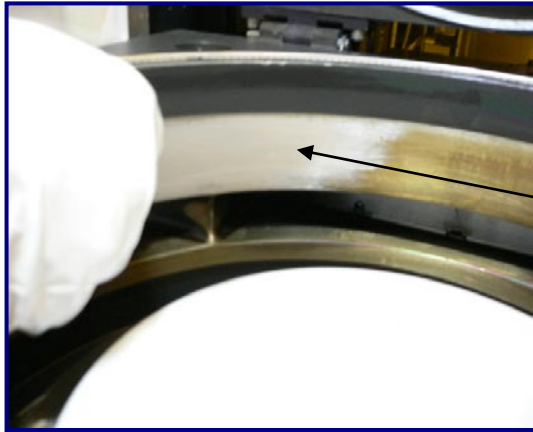


Fig 3: Diamond ScrubPAD removing deposition from ETCH Chamber

Step 7: To help unload ScrubPAD and UltraSOLV[®] Sponge of deposition continually return them back into container of DI water as necessary. It will also be effective to unload the ScrubPAD of deposition by pulling across the UltraSOLV[®] Sponge in one direction (See Fig 4, 5 & 6)

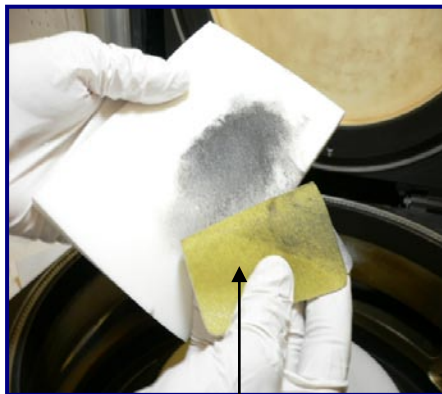


Fig 4: Loaded Diamond ScrubPAD

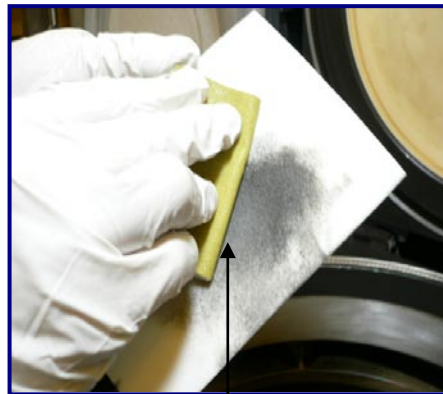


Fig 5: Unloading technique onto UltraSOLV[®] Sponge

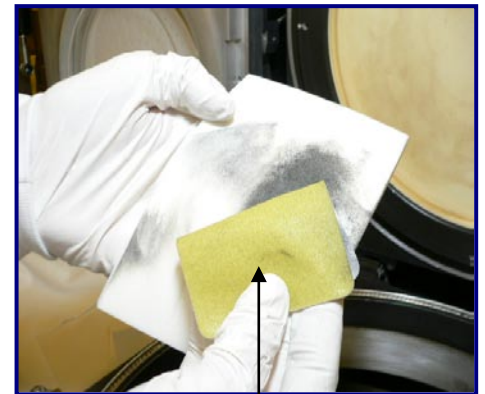


Fig 6: Clean, unloaded Diamond ScrubPAD

Step 8: Continue to repeat process throughout entire chamber, slit valves and turbo transition manifold until all deposition is removed. It is important to keep the ScrubPAD and chamber moist with DI water during clean

LAM 9600 METAL ETCH PM PROCEDURE (CONT'D):

Step 9: As UltraSOLV[®] Sponge becomes loaded with deposition, return to tub of DI water and rinse out as necessary (See Fig 7 & 8)

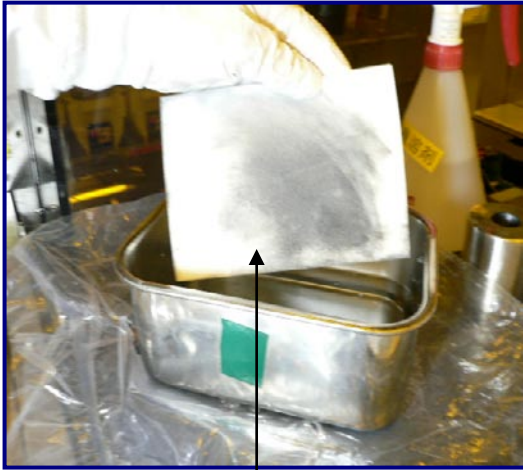


Fig 7: Loaded UltraSOLV[®] Sponge

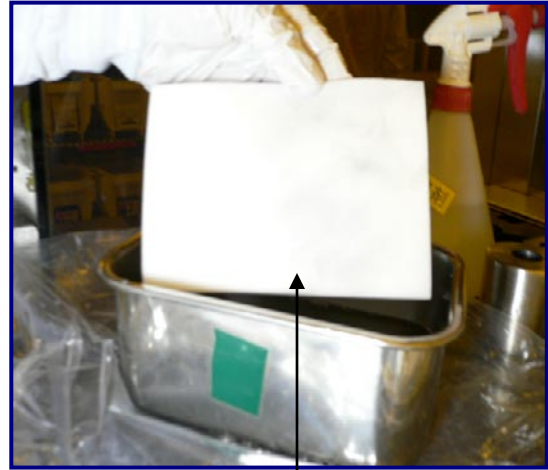


Fig 8: Un-loaded, rinsed-out UltraSOLV[®] Sponge

Step 10: Take the [HT174936D-1](#) 360 Grit Diamond ScrubTIP[®] and dampen with DI water, then proceed to remove all the deposition within the tight corners throughout around the e-chuck

Step 11: As water becomes filled with deposition, recommend disposing dirty DI water in appropriate hazardous waste collection tank and replacing with fresh DI water

Step 12: After all areas within entire chamber have been effectively cleaned, take freshly rinsed out UltraSOLV[®] Sponge and thoroughly wipe out and prep the chamber for Final Wipe Procedure

LAM 9600 METAL ETCH PM PROCEDURE (CONT'D):

FINAL WIPE PROCEDURE:

IMPORTANT NOTE

THE USE OF HT5790S MiraWIPES[®] DURING FINAL WIPE PORTION OF PROCEDURE IS A CRITICAL STEP TO EFFECTIVELY REMOVING PARTICLE DEFECTS FROM LAM 9600 METAL ETCH

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 9a & 9b)

Fig 9a: Current fab wiper after completely wiping LAM 9600



Fig 9b: 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 13: Using 100% IPA, dampen the HT5790S MiraWIPES[®] perform a **THOROUGH AND EFFECTIVE FINAL WIPE-DOWN** of the ETCH Chamber, chamber door, slit valve, turbo transition manifold, o-ring grooves and all sealing surfaces

IMPORTANT:

This important step must be effectively followed in order to achieve the maximum efficiency of tool recovery and performance. Continue to wipe-down all of the effected PM areas within the ETCH Chamber repeatedly until all MiraWIPES[®] no longer remove any more deposition. Ensure to wipe down all spare parts, including quartz pieces, ceramic rings and chamber shields that are placed back into the LAM 9600 Metal ETCH Chamber using additional IPA dampened HT5790S MiraWIPES[®]

LAM 9600 METAL ETCH PM PROCEDURE (CONT'D):

TOOL RECOVERY:

Step 14: Follow proper tool recovery guidelines as outlined by LAM Research Corporation

QUARTZ CLEANING PROCEDURE:

Step 15: Submerge quartz piece entirely in DI water or place under constant flow of DI water. Using [HT4513PD-10-1](#) 1350 Grit Diamond ScrubPAD, proceed to lightly remove deposition from quartz piece

Step 16: When complete wipe quartz piece with MiraWIPE[®] and IPA, then bake if possible