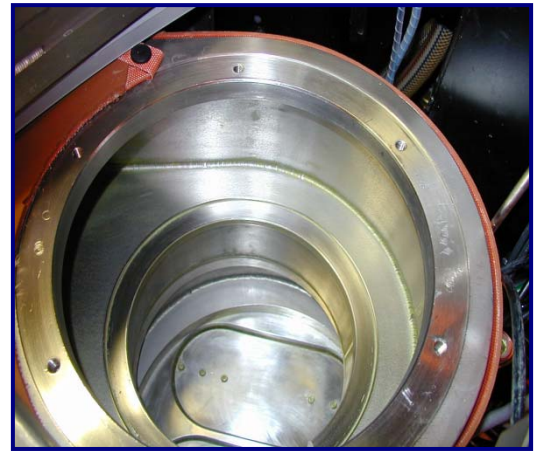


BEFORE



AFTER

VACUUM CHAMBER PM TECHNIQUE HITACHI METAL ETCHER

OBJECTIVE:

TO EFFECTIVELY PM THE HITACHI METAL ETCHER IN A TIMELY MANNER, WHILE IMPROVING TOOL RECOVERY AND PARTICLE PERFORMANCE

Vacuum Chamber:

HITACHI METAL ETCHER

Vacuum Chamber Process Residue:

PROCESS INDUCED RESIDUE

Vacuum Chamber Components:

CHAMBER, CHAMBER WALLS, VIEWPORT, PUMP PORT

Old Procedure:

Silicon carbide 600 grit & standard fab wipers

(From the build up found on the tool, it was evident that this method was not effective to get the surface back to bare metal)

New Procedure:

Diamond ScrubPAD, UltraSOLV[®] Sponge, DI water, and IPA for final wipe with MiraWIPES[®]

Vacuum Chamber Products:

- (1) [HT4754](#) UltraSOLV[®] Sponge
- (1) [FT901](#) ErgoSCRUB[®] Handle (with hook and loop)
- (2) [HT4528DC3](#)-1 280 Grit Diamond ScrubDISK[®]
- (2) [HT4528D](#)-10 280 Grit Diamond ScrubPAD
- (5) [HT175036D](#)-5 360 Grit Diamond ScrubTIP[®]
- (5) [HT4790](#)-5 UltraSOLV[®] Wipers
- (1) [HT4580D](#)-10 800 Grit Diamond ScrubPAD
- (5) [HT1702](#)-5 UltraSOLV[®] Swab
- (4) [HT5790S](#)-5 MiraWIPE[®] 9x9 wide sealed edge

HITACHI METAL ETCH PM PROCEDURE:

NOTE: INITIAL CLEAN MAY REQUIRE THE USE OF ADDITIONAL PRODUCTS TO EFFECTIVELY CLEAN CHAMBER BACK TO BARE METAL, IT IS RECOMMENDED TO PERFORM A ROUND OF 2-3 PM'S ON SAME TOOL TO ESTABLISH SUFFICIENT DATA FOR EVALUATION

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

- Step 1:** Using proper procedures and **safety guidelines**, shutdown and prepare Hitachi Metal Etch Chamber for wet clean
- Step 2:** Effectively place 4 or 5 MiraWIPES[®] over vacuum pump to protect from DI water
- Step 3:** Properly stage a container of DI water next to the chamber and place a [HT4528D](#) 280 Grit Diamond ScrubPAD and a [HT4754](#) UltraSOLV[®] Sponge into the container (See Fig 1)

Fig 1: ScrubPAD and UltraSOLV[®] Sponge in container of DI water



- Step 4:** While wearing breathing apparatus, take the [HT4754](#) UltraSOLV[®] Sponge and wipe the inside of the chamber to remove excess process residue
- Step 5:** Take the dampened 280 Grit Diamond ScrubPAD and scrub a 6" x 6" area within the chamber wall. Scrub this area until deposition is effectively removed

HITACHI METAL ETCH PM PROCEDURE (CONT'D):

Step 6: Wipe-down the affected chamber area using the DI water dampened UltraSOLV® sponge

Step 7: As necessary, unload the ScrubPADS of deposition by wiping the ScrubPADS with HT4754 UltraSOLV® Sponge in one direction (See Fig 2, 3 & 4)

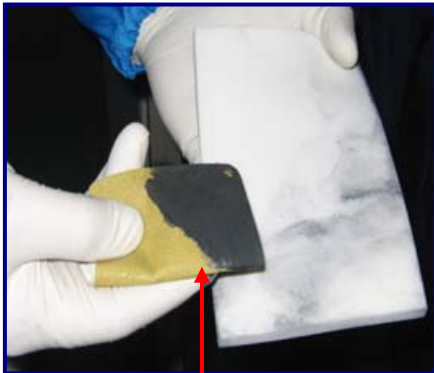


Fig 2: ScrubPAD loaded with deposition water

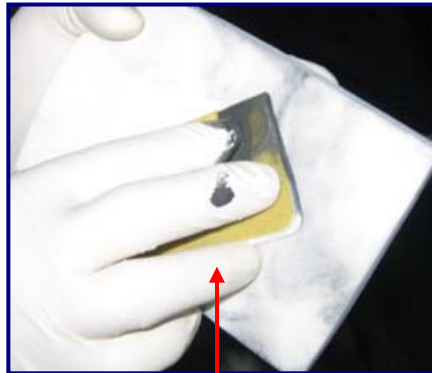


Fig 3: Pull ScrubPAD across a damp UltraSOLV® Sponge

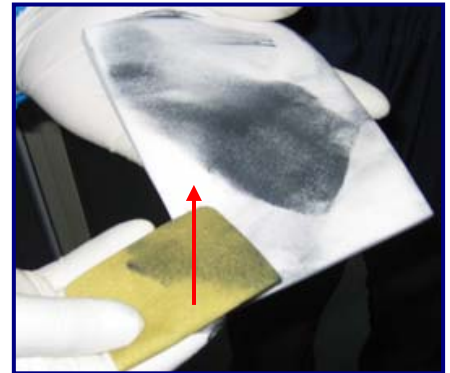


Fig 4: Unloaded ScrubPAD

NOTE: REMEMBER TO UNLOAD UltraSOLV® SPONGE WHEN IT BECOMES LOADED WITH DEPOSITION BY RINSING SPONGE IN CONTAINER OF DI WATER (See Fig 5 & 6)



Fig 5: UltraSOLV® Sponge loaded with deposition

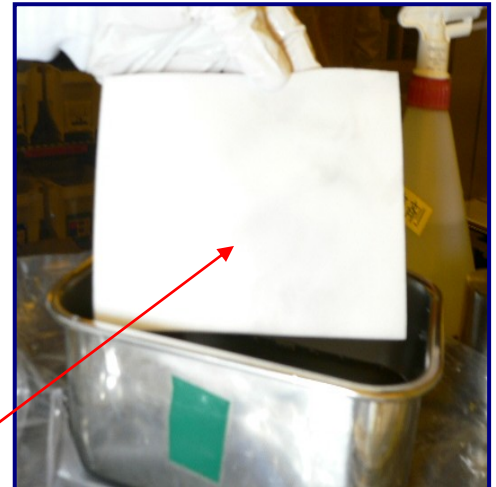


Fig 6: UltraSOLV® Sponge free of deposition after rinse in DI water

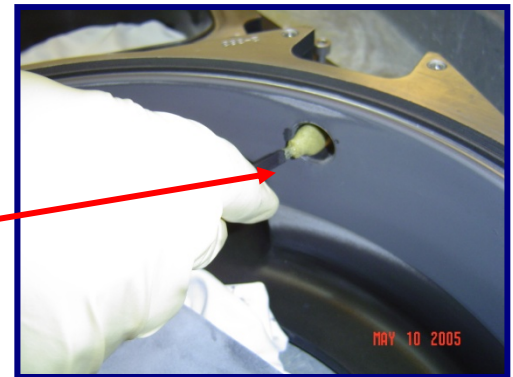
Step 8: Repeat steps 5 – 7 to remove remaining process residue from affected area in the chamber, tunnel, and vacuum chamber walls using the same method as described above

HITACHI METAL ETCH PM PROCEDURE (CONT'D):

Step 9: In order to remove deposition from the remaining hard to reach areas (such as the o-ring grooves and corners), use the [HT175036D](#) 360 Grit Diamond ScrubTIP[®] to effectively reach these areas (See Fig 7 & 8)



Fig 7 & 8: Using Diamond ScrubTIP[®] to clean hard to reach areas and o-ring grooves



NOTE: **Unload the ScrubTIP[®] as necessary, using the same method as described above in step 7 to unload the ScrubPADS**

Step 10: For the flatter surfaces, of the chamber, tunnel or vacuum chamber, apply the [HT4528DC3](#) 280 Grit Diamond ScrubDISK[®] to the [FT901](#) ErgoSCRUB[®] Handle. Dampen the ScrubDISK[®] with DI water and scrub affected area. Unload excess deposition from the ScrubDISK[®], using the same method as the ScrubPADS described in step 7 above

Step 11: Use the [HT4580D](#) 800 Grit Diamond ScrubPAD to effectively polish all of the previously scrubbed surfaces within the chamber. Unload the ScrubPAD as described in step 7 as necessary

Step 12: Using IPA with the [HT4790](#) UltraSOLV[®] Wipers and [HT1702](#) UltraSOLV[®] Swab, perform a **THOROUGH AND EFFECTIVE WIPE-DOWN** of the main chamber, vacuum chamber and tunnel, so that all remaining flakes are removed

HITACHI 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

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: What the MiraWIPE® was able to remove, AFTER the standard fab wiper



Fig 9b: The last standard fab wiper used to wipe the

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

Step 13: Using the HT5790S MiraWIPES®, moistened with IPA, wipe the entire Hitachi Chamber

Step 14: Ensure to wipe down the main chamber, vacuum chamber, and tunnel area with the MiraWIPES®. Be sure to include all pump ports, view ports, vacuum seal surfaces, o-rings and **any parts to be placed back** into the Hitachi Chamber

Step 15: Perform Hitachi Metal Etch tool recovery as outlined by manufacturer