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CBI Facsimile Cover Sheet

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Comments:

Larry, let's try it again. Here is draft #3 of procedure CLCOUPAO. I have incorporated all of your latest comments. I didn't get the other two procedures done; that is the revised one for Oakite 33 and the next draft of the one for Mirachem 500.

Please look this procedure over and call me. In the meantime I'll get the other two done and be ready with any additional comments.

A copy of the latest drafts of the leak testing procedures went out overnight. You should have them by tomorrow the 4th.

Regards,

Chuck

Chuck Sherlock

cc: Marty Tellalian - Plainfield CBITS - NOE
Ken Flessas - CBILCH

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Draft 3
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CLEANING OF PLAIN COUPONS
BY ALTERNATE METHOD #0
FOR SURFACE ANALYSIS AND OUTGASSING TEST
CALTECH

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CNS 02-03-94

1.0 SCOPE:

This alternate coupon cleaning procedure covers both the initial hydrocarbon contamination of the plate material and the cleaning of a piece of that plate material approximately 0.115" x 2" x 5" in size for after cleaning EDM cutting into four (4) 0.115" x 1 cm x 1 cm coupons for the surface analysis by XPS, SIMS and Auger methods and the cleaning of the forty eight (48) 0.115" x 1" x 18" coupons for the final outgassing test.

2.0 PERSONNEL:

Experienced personnel shall perform and supervise all cleaning performed in accordance with this alternate procedure.

3.0 REFERENCES:

3.1 California Institute of Technology Technical Specification Number 1100004 for Beam Tube Modules and Number 1100007 for Type 304L Stainless Steel Vacuum Products.

3.2 ASTM Designation A 380 Standard Practice for Cleaning and Descaling Stainless Steel Parts, Equipment and Systems (as a guide).

3.3 Package and ship per Caltech instructions (see step 5.15 of this procedure).

4.0 EQUIPMENT AND MATERIALS:

4.1 Lint free cloths or paper towels.

4.2 100 Watt blacklight with 3650 Angstrom unit wavelength.

4.3 Blacklight meter capable of measuring at least 800 $\mu w/cm^2$.

4.4 Electric hot air dryer.

4.5 Steam cleaner (Jenny) with a heater coil and a dead man type hand held sprayer.

4.6 Vinyl polyester recovery containment pallet system for catching and retaining the used cleaning and rinse solutions.

4.7 Clean neoprene or other chemical resistant (such as polyethylene) gloves and apron or coveralls, face shields or goggles with side shields and foot coverings as needed.

4.8 Caltech supplied Ameristat packaging plastic.

4.9 Electrical tie wraps.

4.10 Chevron Delo 400 Motor Oil SAE 30.

4.11 Clean metal handling tongs. One medium size and one small size.

4.12 One small clean plastic container with a snap lid.

4.13 Stainless steel 304L heat treated material supplied by Caltech for the test coupons.

5.0 PROCEDURE:

5.1 Before shearing the coupons from the Caltech supplied sheets of heat treated 304L stainless steel, lay out the cut lines for the 0.115" x 1" x 18" coupons and the 2" x 5" piece for post clean EDM cutting the 0.115" x 1 cm x 1 cm surface analysis coupons. Then brush motor oil across the cut lines on the steel sheet surface in a pattern that will result in approximately half of the surface of one side of each of the 1" x 18"coupons and all of the surface of one side of the 1 cm x 1 cm coupons being coated with the residue of the motor oil after it has been sheared.

5.2 Wipe the excess motor oil from the surface of the sheet steel with clean clothes or paper towels until it feels dry to the touch.

5.3 Shear the coupons from the steel sheet following the cut lines.

5.4 Adjacent to the steam jenny, place a vinyl ployester recovery containment pallet system to catch and retain the used condensed steam liquid. This is in a protected area.

5.5 Turn on the steam cleaner heating coils.

5.6 Spray water from the steam cleaner spray nozzle into the sanitary sewer drain until it reaches the boiling point (turns to steam).

5.7 With the steam cleaner sprayer held only a few inches away, thoroughly spray the two pallet grids of the vinyl polyester recovery containment system to remove any dirt or other contaminants from its surface. Remove one pallet grid from the recovery containment system and place it edge nearby. This will prevent the pallet grids from becoming contaminated with the condensed steam run-off.

5.8 Attach a thermocouple to the surface of one of the 1" x 18" coupons approximately in the middle of the 18" length and attach another thermocouple to the surface of the 2" x 5" piece toward the one end.

5.9 To steam clean the single piece and the coupons, hold one coupon at a time by the cleaner end with a set of clean tongs. Hold the 2" x 5" piece by two of its edges with a set of clean tongs. When spraying with the steam cleaner, hold the coupon or the 2" x 5" piece over the area of the recovery containment system from which the grid was removed. With the steam cleaner sprayer held only a few inches away, thoroughly spray all the surfaces of the coupon or the piece being held with the tongs for a minimum of fifteen (15) seconds to a maximum of twenty (20) seconds. Also monitor the thermocouple reading during the steam cleaning of that coupon or the 2" x 5" piece and record the maximum coupon surface temperature noted.

5.10 While still holding the steam cleaned coupon or 2" x 5" piece with the tongs, stand it on end by placing one end of the coupon or 2" x 5" piece in one of the grooves between the in-place vinyl polyester pallet grid and the interstices of the vinyl polyester recovery containment system.

5.11 Repeat steps 5.9 and 5.10 for each coupon and the 2" x 5" piece. When standing them on end to dry, set them 2" to 3" inches apart.

5.12 Allow the coupons and 2" x 5" piece to air dry. Only use the electric hot air dryer if the humidity is so high as to prevent rapid drying.

5.13 When the coupons and 2" x 5" piece are thoroughly dry, while wearing clean neoprene rubber or chemical resistant gloves, wrap all of them in a piece of the Caltech supplied Ameristat plastic for shipping and carry them to a darkened lab room.

5.14 Blacklight inspect all coupons and the 2" x 5" piece for hydrocarbon contamination as follows:

5.14.1 Turn on and warm up the blacklight for a minimum of five (5) minutes.

5.14.2 The examiner shall be in the darkened area for at least five (5) minutes to allow time for eye adaptation to the darkness prior to viewing the coupon surfaces. If the examiner wears glasses or lenses, they shall not be photosensitive.

5.14.3 Confirm the maximum distance at which the blacklight produces 800 $\mu w/cm^2$ on the examination surface using the blacklight meter.

5.14.4 In a darkened area, blacklight inspect all surfaces of all coupons. During the inspection, hold the blacklight no further or no closer from the examination surface than the distance established in step 5.14.3.

5.14.5 If the blacklight inspection reveals no hydrocarbon contamination (no fluorescent glow at 800 $\mu w/cm^2$) on the surfaces of the coupons or the 2" x 5" piece, proceed to step 5.15. If the blacklight inspection reveals residual amounts of hydrocarbon contamination, this cleaning method shall be considered inadequate and this procedure shall be voided.

5.15 The 2" x 5" piece of cleaned material shall be EDM cut as follows:

5.15.1 Place a piece of Ameristat film inside of a small clean plastic container with the inside surface of the roll upward to serve as a liner in the container.

5.15.2 Handle the 2" x 5" cleaned piece of plate material with clean neoprene rubber or chemical resistant (such as polyethylene)when placing it on the Ameristat film inside the container. Fold the Ameristat film over the cleaned piece of plate material and snap the lid on the container.

5.15.3 Carry the container to a company called Reliable EDM. Provide them with clean neoprene rubber or chemical resistant gloves to use in handling the cleaned piece of material.

5.15.4 Instruct them and personnally observe that they fixture the piece of material on a clean bench on the end that will not be used. Ensure that the fluid used is only clean tap water or de-ionized (distilled) water.

5.15.5 After the material has been cut, pick each 0.115" x 1 cm x 1 cm analysis coupon up with a clean set of small clean tongs and dry them with the hair dryer while being careful not to heat the metal.

5.15.6 After each one is dried, place them in the Ameristat lined container. When they are all in the lined container, fold the Ameristat film over the cleaned surface analysis coupons and snap the lid on the container.

5.15.7 Return to CBI with the closed lined container containing the cleaned surface analysis coupons. When removing the surface analysis coupons from the closed lined container, recheck them with the blacklight in accordance with step 5.14 to ensure that no hydrocarbon contamination occurred as a result of the EDM cutting.

5.16 Package and ship the outgassing coupons to Larry Jones at Caltech and ship the surface analysis coupons to Rainer Weiss at MIT in accordance with the Caltech packaging and shipping instructions given as follows:

5.16.1 Place a piece of Ameristat film on a bench with the inside surface of the roll turned upward to provide a clean work surface.

5.16.2 Handle all coupons and film with clean neoprene rubber or chemical resistant (such as polethylene) gloves.

5.16.3 Wrap twelve (12) outgassing coupons to a bundle. Wrap the six (6) surface analysis coupons in a separate bundle.

5.16.4 Keep the inside surface of the film roll toward the inside surface of the package being wrapped. Limit film handling to outside edges only.

5.16.5 Wrap coupons with at least two (2) layers of film so that the outside edges do not come in direct contact with the coupons. Accomplish this by rolling the film around the short dimension of the coupons. Then fold the outer edges of the film to the middle.

5.16.6 Secure the film around the bundle with two (2) or more electrical tie wraps.

5.16.7 Label each bundle with the date wrapped, the identification of the cleaning procedure used to clean the coupons and the maximum coupon surface temperature noted during cleaning.

5.16.8 Pack the wrapped 0.115" x 1" x 18" outgassing coupon bundles in a separate corrugated box. Add filler material as necessary for protection against possible shipping damage.

5.16.9 Label this box and ship these outgassing coupons via Airborne, Fedex or UPS to:

California Institute of Technology
Attention: Larry K. Jones
102 - 33 Bridge Laboratory
Pasadena, CA 91125

5.16.10 Pack the wrapped 0.115" x 1 cm x 1 cm surface analysis coupons in a second corrugated box. Add filler packing material as necessary for protection against possible shipping damage.

5.16.11 Label this box and ship these surface analysis coupons via Airborne, Fedex or UPS to:

Attention: Rainer Weiss
Room 20B145
Massachusettes Institute of Technology
18 Vassar Street
Cambridge, MA 02139