

LI40-E930006-03-B

Facsimile Cover Sheet

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**Pages including this
cover page:** Five (5)

Comments:

Larry, the 12 welded and 72 non-welded coupons cleaned per the Oakite 33 procedure CLCOUP (Caltech's) shipped today the 28th by two (2) day UPS.

The cleaning was performed without using the steam jenny heater. The heating was accomplished very nearly as I had originally written it in revision one (1) of the procedure; i.e. using a metal drum partially filled with water and heating the rinse water and Oakite cleaning solutions within the sprayers while they were sitting in that water. Accordingly I revised the procedure again to reflect these differences. Changes are basically as follows:

1. Added items 4.6 and 4.7.
2. Revised item 4.8 (old item 4.6) and item 4.11 (old item 4.9).
3. Revised item 5.5 per our discussion.
4. revised items 5. 7 to reflect that we used a chemically inert catch basin.
5. Revised items 5.8 through 5.10 to items 5.8 through 5.12. Nearly identical to what I, had in revision #1.
6. Renumbered 5.11 through 5.13 to 5.13 through 5.15.
7. Deleted 5.16 and renumbered remainder. Added electric dryer to 5.16.



Chuck Sherlock - Houston Corp. Welding

cc: Marty T. CBITS



DOC. ID CLCOUP
REV. NO. 3
CONTRACT 930212

TITLE CLEANING OF WELDED AND PLAIN COUPONS
FOR OUTGASSING TESTS
CALTECH

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APPROVED

Engr Corp Weld Corp OA Const Mfg

	BY	DATE
PREPARED	CNS	12-7-93
REVISED	CNS	12-28-93
<u>AUTHORIZED</u>		
REFERENCED		
STANDARD		REV. NO.

1.0 SCOPE:

This procedure covers both the initial solvent cleaning of the plate material after it is ready for welding and the final Oakite 33 cleaning of the 0.115" x 1" x 18" coupons for the outgassing tests.

2.0 PERSONNEL:

Experienced personnel shall perform and supervise all cleaning performed in accordance with this 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 Packaging per Caltech instructions.

4.0 EQUIPMENT AND MATERIALS:

4.1 Stainless steel power brushes used only for stainless steel.

4.2 Industrial grade 99% mol isopropyl alcohol.

4.3 Lint free cloths or paper towels.

4.4 100 Watt blacklight with 3650 Angstrom unit wavelength.

4.5 Blacklight meter capable of measuring at least 800 $\mu\text{w}/\text{cm}^2$.

4.6 Electric hot air dryer.



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- 4.7 Litmus paper or ph meter.
- 4.8 One (1) five (5) gallon container of de-ionized water.
- 4.9 Oakite 33 mixed with the de-ionized water in a proportion of 2% by volume.
- 4.10 Oakite Enprox 714 for neutralizing the used oakite 33 cleaning solution.
- 4.11 One (1) metal drum and one (1) heater for heating the de-ionized water and the Oakite 33 cleaning solution.
- 4.12 Metal or glass tube thermometer with a range in excess of 160°F.
- 4.13 Recovery system for catching and retaining the used cleaning and rinse solutions.
- 4.14 Neoprene or other chemical resistant gloves and apron or coveralls, face shields or goggles with side shields and foot coverings as needed.
- 4.15 Two (2) chemical resistant plastic 1 1/2 to 3 gallon pump type sprayers and one five (5) or ten (10) gallon chemical resistant plastic bucket.

5.0 PROCEDURE:

Steps 5.1 through 5.5 is to be used only for test coupons. This is due to the possible hydrocarbon contamination that may be present as a result of the coupon shearing operation.

- 5.1 Turn on and warm up the blacklight for a minimum of five (5) minutes.
- 5.2 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 surface. If the examiner wears glasses or lenses, they shall not be photosensitive.
- 5.3 Confirm the maximum distance at which the blacklight produces 800 $\mu\text{w}/\text{cm}^2$ on the examination surface using the blacklight meter.



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- 5.4 In a darkened area, blacklight inspect the plate material that has been power brushed for welding back one inch (1") from each weld preparation edge. During the inspection, hold the blacklight no further from the examination surface than the distance established in step 5.3.
- 5.5 While being viewed under the blacklight, remove as much hydrocarbon contamination as possible from the power brushed plate material by flushing with isopropyl alcohol and wiping with lint free clothes or paper towels.
- 5.6 After all welding and shearing of coupons is complete, view all coupons, both welded and plain, in a darkened area with the blacklight. Repeat step 5.5 as necessary.
- 5.7 Arrange the coupons together in a chemically inert rack with a catch basin where the used Oakite 33 cleaning solution can be retained. If done outdoors, the cleaning area shall be covered and be protected from the wind so as to prevent contamination during and after cleaning.
- 5.8 Nearly fill both pump type sprayers with de-ionized water.
- 5.9 Mix a 2% by volume solution of Oakite 33 with the de-ionized water in one (1) of the pump type sprayers.
- 5.10 Place each pump type sprayer in a metal drum partially filled with tap water.
- 5.11 Heat the de-ionized water and the Oakite 33 cleaning solution in each of the pump type sprayers to a temperature of approximately 160°F by heating the tap water in the metal drum. Check the temperature of the de-ionized water and Oakite 33 cleaning solution with the thermometer.
- 5.12 With the pump type garden sprayer containing the 140°F to 160°F de-ionized water, thoroughly spray rinse the exposed surfaces of all coupons. While wearing clean neoprene rubber or chemical resistant gloves, turn over the coupons so that the opposite surface of the coupons is exposed. Then thoroughly spray those surfaces. Allow the used de-ionized water to run off into the catch basin.



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- 5.13 With the pump type sprayer containing the 140° to 160°F Oakite 33 cleaning solution, thoroughly spray the exposed surfaces of all coupons. While wearing clean neoprene rubber or chemical resistant gloves, turn over the coupons so that the opposite surface of the coupons is exposed. Then thoroughly spray those surfaces. Allow the used cleaning solution to run off into the catch basin.
- 5.14 Wait for five (5) minutes and repeat step 5.13. Any time the catch basin becomes nearly full of used Oakite 33 solution, pump the used cleaning solution from the catch basin into an empty plastic container.
- 5.15 After five (5) minutes have elapsed, repeat step 5.12.
- 5.16 While wearing clean neoprene rubber or chemical resistant gloves, turn the coupons while directing the heat from an electric hot air dryer on the coupons to ensure that all surfaces are dry.
- 5.17 When the coupons are thoroughly dry, package the coupons in accordance with the Caltech packaging instructions.
- 5.18 Add Oakite Enprox 714 to the catch basin or plastic container of used Oakite 33 cleaning solution until the solution is neutralized to a ph of 7 as indicated by the litmus paper remaining at its neutral color when dipped in the solution or by a ph meter.
- 5.19 When the used Oakite 33 cleaning solution is neutralized, drain it into the sanitary sewer. **DO NOT** drain it into the storm sewer.