|  |  |  |  |
| --- | --- | --- | --- |
| C75 HOM Load Degreasing | | | |
| **Document Number:** | CP-C75-CPR-CHEM-HOML | **Approval Date:** | 18-June-2020 |
| **Revision Number:** | Initial Release | **Periodic Review Date:** | 18-June-2022 |
| **Document Owner:** | Gregory Grose |  |  |

## 

# Purpose and Scope

To clearly define the procedure for cleaning and degreasing C75 HOM Loads for use in cavity pair assemblies.

Within this document are instructions on proper inspection, pre-cleaning, detergent ultrasonic cleaning and solvent ultrasonic cleaning of HOM Loads.

**SAFETY:**

Individuals must keep safety as the first priority in the process; before beginning any job, the user must assure they have the correct PPE for the individual job. Maintaining the level of safety and secure nature of the work area is paramount. Assure personal safety by using caution in movement and taking necessary steps to avoid unnecessary personnel in the immediate area. Refer to the work-center OSP for specifics.

# References

[SRF-19-83800-OSP](https://mis.jlab.org/mis/apps/mis_forms/operational_safety_procedure_form.cfm?entry_id=83800) - OSP for Safe Operations in the Production Chemistry Room

[CP-STP-CAV-CHEM-DEGR](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-132364/CP-STP-CAV-CHEM-DEGR-R3.pdf) - Standard Cavity, Components, or Parts Degreasing Procedure

[CP-STP-CAV-CHEM-BAKE](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-212608/CP-STP-CAV-CHEM-BAKE-R1.docx) - Standard Baking in the Nitrogen Oven Procedure

# Terms and Definitions

* **DI/UPW**: Deionized (DI) and Ultra-Pure water (UPW) are used interchangeably in this procedure.
* **Ultrasonic, USC, and sonic:** are used interchangeably in this procedure. The container or tank may also be referred to as a bath, sink, or basin.
* **N2 / Nitrogen:** filtered nitrogen is most commonly used.

|  |  |  |  |
| --- | --- | --- | --- |
| **Items Used In This Procedure:** | | | |
| **Detergents** | **Solvents** | **Wipers** | **Containers** |
| Citranox | * Clean Room Isopropyl * Acetone | * TX1009B Alpha Wipe * TX2009 Beta Wipe | Solvent compatible plastic containers with lids |

# Process Details

**NOTE: The HOM Loads are extremely fragile and must be handled with extreme care.**



Figure 1 – HOM Load

## Prior to USC

**NOTE: To prevent excessive exposure to particulate in air, the technician is to perform all actions within the laminar flow hood (when possible).**

**NOTE: Some items may be serialized or labeled and it may be necessary to keep them together or retain that information throughout the cleaning process.**

### Inspection

1. Inspect HOM Loads for damage (chips/scratches); if part has pre-existing impairment notify PI/PM or supervisor.
   1. Do not proceed until written acknowledgement of previous damage presence has been received.
2. Make sure Loads are ready for cleaning; parts should not have any NCR’s present.
   1. All items shall be completely disassembled and all indium and/or washers removed prior to executing this procedure unless otherwise directed by the PI/PM. If indium residue exists, notify PI/PM or supervisor.
   2. Inspect HOM Loads for oils, inks and tape residues. If any residues exist, the HOM Load will need to be pre-cleaned prior to USC:

### Preparation

1. Ensure the workspace is clean and equipped with all necessary supplies.
2. Don appropriate PPE.
   1. Gloves should be worn whenever handling items, changed after cleaning, and as needed to maintain cleanliness.
3. Fill two USC sinks with enough DI water to satisfy USC minimum water level requirement and to completely submerge HOM Load.
   1. One sink will contain detergent and the other will contain DI water only.
   2. Turn on heaters on both USC sinks to pre-heat water prior to USC.

### Pre-Cleaning

1. Don appropriate PPE.
2. Carefully wipe all oils, inks and tape residues off with acetone and TX 1009B Alpha Wiper until there is no more residue transfer to the wiper.
3. Measure a small amount (~4 oz.) of Citranox Detergent into a small container.
4. Use a TX 1009B Alpha Wiper to apply the detergent directly to the HOM Load’s exterior and/or interior, including fastener holes and small crevices.
   1. Utilize a clean room swab if necessary.
5. Thoroughly rinse detergent off of HOM Load with DI water.
6. Dry HOM Load and re-inspect.
7. Repeat steps 4.1.2.1 – 4.1.2.6 until excessive oils, inks and tape residues have been removed.

## USC Cleaning:

**NOTE: When using the USC, there is a minimum of 5” of water required in the basin to prevent damage to the USC equipment.**

**NOTE: Multiple HOM Loads may be cleaned together, but should not be allowed to contact each other during USC or during transport as this could cause damage to components.**

### Detergent USC

1. Don appropriate PPE.
   1. Gloves should be worn whenever handling items, changed after cleaning, and as needed to maintain cleanliness.
2. Place HOM Load into basin of first USC and ensure HOM Load is safe and secure on nylon mat or in plastic container.
   1. Ensure there are no trapped air pockets under or within the HOM Load when submerged.
3. Add enough Citranox Detergent to the first USC to create a 2% solution.
4. Turn on first USC and allow to run for **30 minutes with pre-heated water**.
5. After allotted time, turn off USC and heater and remove HOM Load and throughly rinse with DI water to remove detergent.
   1. Do not allow soapy water to dry on the loads.
6. Once all detergent has been removed, proceed to next step.

### DI Water USC

1. In second USC sink:
   1. Place rinsed HOM Load into basin and ensure HOM Load is safe and secure on nylon mat or in plastic container.
   2. Ensure there are no trapped air pockets under or within the HOM Load when submerged.
   3. Inspect for soap suds in DI water. If soap suds exist, drain and rinse basin until no soap suds exist. If drain and rinse is required, refill basin to appropriate level and allow water to preheat prior to starting USC.
2. Turn on USC and leave in for **30 minutes with pre-heated water**.
3. Remove HOM Load and thoroughly rinse with DI water to remove any remaining contaminants.
4. Proceed to next step.

### Solvent USC

**NOTE: Solvent USC is performed in the R&D Chem Room, in the Flammable Hood. HOM Loads must be kept particle-free and clean during transport to and from the R&D Chem Room. This may be accomplished by transporting them in a clean room bag or a clean container with a lid.**

* + - 1. Gather necessary supplies:
         1. Two clean, solvent compatible containers, one container for acetone, one for isopropyl alcohol.
         2. Enough new/unused acetone and isopropyl to completely cover the HOM Load(s) in their containers.
         3. Optional: solvent compatible funnel, timer.
      2. Transport HOM Loads and supplies to the R&D Chem Room.

**NOTE: User must log work in the R&D log book before and after any work is performed.**

* + - 1. Don appropriate PPE.
      2. Place **first plastic container** with HOM Load(s) into Solvent USC and fill container with enough **Acetone** to completely cover the HOM Load.
      3. Fill Solvent USC with enough water to satisfy USC minimum water level requirement.
         1. DO NOT allow water to enter HOM Load container.

**NOTE: Container with HOM Load may start to float within Solvent USC. Ensure container is stable and HOM Load is not at risk of becoming damaged.**

* + - 1. Set timer for 5 minutes and turn on USC.

**NOTE: Do not allow solvent to be in USC more than 5 minutes as this may cause a volatile situation with the highly flammable solvent.**

* + - 1. Once 5 minute timer is up, manually turn off USC.
      2. Don clean gloves
      3. Remove container containing HOM Load and solvent from USC.

1. Remove HOM Load from acetone and place into **second clean container**.

**NOTE: Water level may need to be adjusted after placing container with HOM Loads in USC, to reduce the risk of the container floating around or tipping.**

1. Repeat steps 4.2.3.1 – 4.2.3.7 with **Isopropyl Alcohol** and **second clean container** instead of acetone and first container.
2. Don clean gloves.
3. Remove HOM Load from solvent and place into clean transport container and cover.
4. Return solvents to appropriate containers and install cap.
   1. Label returned solvent as used, this is usually done by drawing an X on the container.
5. Drain water from USC and return R&D to original state.
6. Transport HOM Loads and supplies back to the Production Chemistry Room.

## Bake

1. Don proper PPE.
2. Remove HOM Load from transport container.
3. Dry HOM Load with filtered N2.
4. Place HOM Load in oven and bake.
   1. [CP-STP-CAV-CHEM-BAKE](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-212608/CP-STP-CAV-CHEM-BAKE-R1.docx) - Standard Baking in the Nitrogen Oven Procedure.

**NOTE: Typically the bake will finish overnight and the next steps will take place the following work day.**

1. Once bake is complete and items are cool enough to handle, don clean gloves.
2. Remove HOM Loads and inspect for blemishes or damage.
   1. If blemishes or damage exist, notify PI/PM and Supervisor.
3. Carefully bag and seal each HOM Load in clean room bag and place into clean plastic container with lid.
4. Transport HOM Load to next work center.

# **Revision History**

|  |  |  |
| --- | --- | --- |
| Rev # | Revision or update: | Effective: |
| Release | Initial Release | 18-June-2020 |
|  |  |  |

# **Approvals**

|  |  |  |
| --- | --- | --- |
| Approved by: | Signature: | Date: |
| **Document Owner** | Gregory Grose | 18-June-2020 |
| **Reviewer** | Ashley Mitchell |  |
| Scientific Lead | Gianluigi Ciovati |  |
| Project Lead | Kurt Macha |  |