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| **Standard Cavity, Components, or Parts Degreasing Procedure** |
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| **Document Owner:** | A. Mitchell | **Department Owner:** | SRF Operations |

# Purpose

The purpose of this document is to describe the steps needed to clean a cavity or components

# Scope

This procedure applies to <enter text>.

This procedure does not apply to <enter text>.

# Terms and Definitions

The following terms have specific meanings within this procedure.

|  |  |
| --- | --- |
| **Term** | **Definition** |
| <Term 1> | <Definition> |
| <Term 2> | <Definition> |
|  |  |

# Roles and Responsibilities

The following roles have responsibilities described in this document.

|  |  |
| --- | --- |
| **Role** | **Responsibility** |
| <Job Title> | <Very short summary of activities this job title performs in this procedure.> |
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# Procedure

STP- Standard Traveler/Procedure:

This Standard Procedure is intended to be generalized such that it could apply to most cavity types at JLAB. The PI is encouraged to provide Project Specific Instructions to supplement this Procedure, which are to be attached to the applicable Traveler. If at any time the Project Specific Instructions change or modify the content of this Procedure, then a new Procedure will be required, to be approved through the normal processes at SRF and JLAB

SAFETY:

Individual 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 CP-STP-CAV-CHEM-DEGR-R3 January 26, 2017 2 of 15 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](https://mis.jlab.org/mis/apps/mis_forms/operational_safety_procedure_form.cfm?entry_id=102692) for specifics.

## Standard Cavity, Components, or Parts Degreasing Procedure

* For the simplicity of this procedure, the terms cavities, components, fasteners, and/or parts are considered interchangeable and will be generally referred to as “component”.
* If a component is a mix of the following metals or an unusual size or shape, the PI/SOTR and/or a supervisor should be consulted on the appropriate method to use.
* DI/UPW: Deionized (DI) and Ultra-Pure Water (UPW) are used interchangeably in this procedure.
* Cavity hardware should not be degreased in the same container or sonic as components or feedthroughs.

## Stainless Steel and Niobium

The following steps apply to stainless steel or niobium components. Only stainless steel or niobium is to be cleaned in the bath. Do not share the bath with other items. All components shall be completely disassembled and all gaskets removed prior to executing this procedure. To prevent excessive exposure to particulate in air, the user is to perform all actions within the laminar flow hood (when possible).

1. Don a new pair of nitrile gloves and appropriate safety glasses.
2. Inspect component(s) for excessive damage (chips/scratches). If component has pre-existing impairment, notify owner. Do not proceed until owner verifies through written acknowledgement of previous damage presence.
3. If the component(s) appears excessively soiled or greasy, perform the following:
	1. Wipe all oil and marker off with acetone.
	2. Measure a small amount of Micro90 into a small container.
	3. Use a TX 1009B AlphaWipe to apply detergent directly to the component’s exterior and/or interior. Additional wipers, brushes or other means may be necessary to pre-clean heavily soiled components.
	4. Alternatively, the components may be ultrasoniced in a secondary container.
	5. Thoroughly rinse component with DI water.
	6. Repeat until heavy soil, oil, etc. has been removed.
4. Components are usually cleaned in the Ultrasonic Cleaner (USC):

**NOTE: Position components in such a way as to prevent their surfaces from touching each other during the ultrasonic cleaning process; failure to do so could result in damage to the component.**

* 1. Close drain valve of USC.
	2. Fill USC with DI/UPW at least five inches or enough to cover the component being cleaned. Carefully place component(s) into USC using baskets, sheets of plastic, or containers as necessary to protect and contain the component(s). If the components have sealing surfaces, place them face up whenever possible. The component(s) must be completely submerged for proper ultrasonic cleaning action. Ensure there are no trapped air pockets under or within the component(s).
	3. Usually about 300 ml (small USC) or 600 ml (large USC) of Micro90 detergent is added to the USC. If using the 200gal large USC, add roughly 1 L of Liquinox is used.
	4. Turn on the USC heater (the temperature is typically set o 130°F (54°C)).
	5. Turn on ultrasonics andallow the component(s) to ultrasonically clean for 50 minutes. This time may be adjusted if the water is preheated. ***NOTE: The UPW/detergent temperature shall be at least 130°F (54°C) for a minimum of 15 minutes.***
	6. Turn off the USC heater and ultrasonics. Don a new pair of nitrile gloves and inspect the component(s) for cleanliness. If the components do not appear to be clean, return the component(s) to the ultrasonic bath and re-clean as necessary. If the components appear to be clean, proceed.
1. Rinse components in DI/UPW using one or all of the following methods:
	1. Transfer the parts (in perforated containers if small parts) to the Quick Dump Rinser (QDR). Start the QDR and allow to run for its standard 3 cycles.
	2. Rinse components using DI/UPW until no soap bubbles are visible (approximately 5 minutes)
	3. Dip visibly clean component in the triple rinse sink from left to right.
	4. Ensure the components are thoroughly rinsed and water surface is free of soap bubbles. Repeat if necessary.
	5. Once thoroughly clean, dry parts on clean room wipe in the laminar flow hood or appropriately clean and allow components to dry if there is no immediate need. If parts are needed urgently, they may be dried with a solvent such as acetone, methanol, or isopropyl and blown dry with filtered N2.
		1. Dry all feedthroughs using filtered compressed nitrogen. Place feedthroughs on TX 1009B Alphawipes within the laminar flow hood.
	6. If components are bellows, valves or otherwise difficult to dry, they may need to be dried in the oven. This is typically set for 15 hours at 100°C in the nitrogen oven.
2. Bag the components:
3. Ensure components have dried completely before bagging
	1. If necessary, dry component with filtered nitrogen
4. Bag and seal each component separately.
5. Repeat process until all components are bagged.
6. Transport bagged components to the clean room pass-through or appropriate location.

## Uncoated Stainless Steel Fasteners (nuts, bolts & washers) and components

The following steps apply to uncoated stainless steel fasteners (nuts, bolts, washers). Only uncoated stainless steel fasteners are to be cleaned in the bath. Do not share the bath with other items. All fasteners shall be completely disassembled prior to executing this procedure. To prevent excessive exposure to particulate in air, the user is to perform all actions within the laminar flow hood (when possible).

1. Don a new pair of nitrile gloves and appropriate safety glasses;
2. Inspect fasteners for irregularities or damage (stripped heads or threads). Report questionable items to your supervisor.
3. If the fasteners appear excessively soiled or greasy, perform the following:
	1. Measure ~4 oz. of Micro90 into a small container.
	2. Use TX 1009B Alphawipe or small brush to apply detergent directly to the component’s exterior. Additional wipers, brushes or other means may be necessary to pre-clean heavily soiled components.
	3. Alternatively, the components may be ultrasoniced in a secondary container.
	4. Thoroughly rinse component with UPW.
	5. Repeat until heavy soil, oil, etc. has been removed.
4. All fasteners are typically cleaned in the Ultrasonic Cleaner (USC):
	1. Close drain valve of USC.
	2. Fill USC to the bottom of the plugged overflow port with UPW. Carefully load fasteners into containers or mesh baskets to contain and separate sizes. The fasteners must be completely submerged for proper ultrasonic cleaning action. Ensure there are no trapped air pockets under or within the fasteners.
	3. Add ~300 ml (small USC) or ~600 ml (large USC) of Micro90 detergent to the USC.
	4. Turn on the USC heater (the temperature is typically set o 130°F (54°C)).
	5. Turn on ultrasonics and allow the component(s) to ultrasonically clean for 50 minutes. This time may be reduced if water has been preheated. NOTE: The UPW/detergent temperature shall be at least 130°F (54°C) for a minimum of 15 minutes.
	6. Turn off the USC heater and ultrasonics. Don a new pair of nitrile gloves and inspect the component(s) for cleanliness. If the components do not appear to be clean, return the component(s) to the ultrasonic bath and re-clean. If the components appear to be clean, continue.
5. Rinse components in DI/UPW using one or all of the following methods:
	1. Transfer the parts (in perforated containers if small parts) to the Quick Dump Rinser (QDR). Start the QDR and allow to run for its standard 3 cycles.
	2. Rinse components using DI/UPW until no soap bubbles are visible (approximately 5 minutes) then dip visibly clean components in the triple rinse sink from left to right.
	3. Ensure the components are thoroughly rinsed and water surface is free of soap bubbles. Repeat if necessary.
	4. Once thoroughly clean, place on new, dry, clean room wipes within the laminar flow hood and allow components to dry if there is no immediate need. If parts are needed urgently, they may be dried with a solvent such as acetone, methanol, or isopropyl and blown dry with filtered N2.
6. Bag fasteners:
	1. Ensure all fasteners have dried completely before bagging
	2. If necessary, dry component with filtered nitrogen
	3. Bag each type/size separately, in its own bag and seal.
	4. Repeat process until all components are bagged.
	5. Transport bagged components to the clean room pass-through or appropriate location.

## Silver Plated Stainless Steel Fasteners and components

The following steps apply to silver plated stainless steel fasteners (nuts, bolts, washers). Only silver plated stainless steel fasteners are to be cleaned in the bath. Do not share the bath with other items. All fasteners shall be completely disassembled prior to executing this procedure. To prevent excessive exposure to particulate in air, the user is to perform all actions within the laminar flow hood (when possible).

* + - 1. Don a new pair of nitrile gloves and appropriate safety glasses;
			2. Inspect fasteners for irregularities or damage (stripped heads, threads, flaking of silver plating, etc.). Report questionable items to your supervisor.
			3. If the fasteners appear excessively soiled or greasy, perform the following:
				1. Measure ~4 oz. of Micro90 into a small container.
				2. Use TX 1009B Alphawipe or small brush to apply detergent directly to the component’s exterior. Additional wipers, brushes or other means may be necessary to pre-clean heavily soiled components.
				3. Alternatively, the components may be ultrasoniced in a secondary container.
				4. Thoroughly rinse component with UPW.
				5. Repeat until heavy soil, oil, etc. has been removed.
			4. All fasteners need to be cleaned in the Ultrasonic Cleaner (USC):
				1. Close drain valve of USC.
				2. Fill USC to the bottom of the plugged overflow port with UPW. Carefully load fasteners into containers or mesh baskets as needed. The fasteners must be completely submerged for proper ultrasonic cleaning action. Ensure there are no trapped air pockets.
				3. Add ~300 ml (small USC) or ~600 ml (large USC) of Micro90 detergent to the USC.
				4. Turn on the USC heater (the temperature is typically set o 130°F (54°C)).
				5. Turn on ultrasonics and allow the component(s) to ultrasonically clean for 50 minutes. This time may be adjusted if the water is preheated. **NOTE: The UPW/detergent temperature shall be at least 130°F (54°C) for a minimum of 15 minutes.**
				6. Turn off the USC heater and ultrasonics. Don a new pair of nitrile gloves and inspect the fasteners for cleanliness. If the components do not appear to be clean, return the component(s) to the ultrasonic bath and re-clean. If the components appear to be clean, continue.
			5. Rinse components in DI/UPW using one or all of the following methods:
				1. Transfer the parts (in perforated containers if small parts) to the Quick Dump Rinser (QDR). Start the QDR and allow to run for its standard 3 cycles.
				2. Rinse components using DI/UPW until no soap bubbles are visible (approximately 5 minutes) then dip visibly clean components in the triple rinse sink from left to right.
				3. Ensure the components are thoroughly rinsed and water surface is free of soap bubbles. Repeat if necessary.
				4. Once thoroughly clean, dry parts on clean room wipe(s) in the laminar flow hood if there is no immediate need. If parts are needed urgently, they may be dried with a solvent such as acetone, methanol, or isopropyl and blown dry with filtered N2.
			6. Bag fasteners:
				1. Ensure all fasteners have dried completely before bagging
				2. If necessary, dry component with filtered nitrogen
				3. Bag each type/size separately, in its own bag and seal.
				4. Repeat process until all components are bagged.
				5. Transport bagged components to the clean room pass-through or appropriate location.

## Copper & Silicon Bronze Components

The following steps apply to copper (probe tips, washers, etc.) and silicon bronze (nuts, etc) parts. Only copper or silicon bronze items are to be cleaned in the bath. Do not share the bath with other items. All components shall be completely disassembled prior to executing this procedure. To prevent excessive exposure to particulate in air, the user is to perform all actions within the laminar flow hood (when possible).

***NOTE: Copper waste water should be saved and disposed of appropriately.***

1. Don a new pair of nitrile gloves and appropriate safety glasses.
2. Inspect components for irregularities or damage (dings, nicks, scratches, etc.). Report questionable items to your supervisor.
3. Perform applicable oxide stripping step for the type of metal:

**NOTE: Position copper probe tips in such a way as to prevent their surfaces from touching each other during the oxide stripping process; failure to do so could result in damage to the component.**

* 1. Copper Probe Tips (or similar components):
		1. It may be necessary to manually clean the copper before placing in the USC. Using a TX 1009B Alphawipe or small brush to apply detergent directly to the component until all visible oxides have been removed. Additional wipers, brushes or other means may be necessary to pre-clean heavily soiled components.
		2. Once oxides have been satisfactorily removed, immediately rinse in UPW. ***Note: Oxides form on the surface of copper very quickly. Do not allow probe tips to dry between steps.***
	2. Silicon bronze nuts and copper washers:
		1. ***Note: Silicon bronze nuts and copper washers can be cleaned together in an appropriately sized container.***
		2. Add an appropriate amount of Micro90 into an appropriately sized container or basket (container volume in ml x .2 = ml of Micro90 needed). Add components to the container and top off with UPW to achieve a 20% concentration.
	3. Close drain valve of USC.
	4. Fill USC roughly to the bottom of the plugged overflow port with UPW. Place container(s) with Micro90 and components into USC bath.
	5. Turn on the USC heater (temperature set typically to 130°F (54°C)).
	6. Turn on ultrasonics and allow the component(s) to ultrasonically clean for 50 minutes. This time may be shortened if water is preheated. ***NOTE: The UPW/detergent temperature shall be at least 130°F (54°C) for a minimum of 15 minutes.***
	7. Turn off the USC heater and ultrasonics. Don a new pair of nitrile gloves and inspect the component(s) for cleanliness. If the components do not appear to be have all the oxide removed, repeat cleaning process. When the oxide layer is no longer visible, continue.
1. Perform final ultrasonic cleaning (particulate removal):

***NOTE: Position components in such a way as to prevent copper probe tips from touching each other during the ultrasonic cleaning process; failure to do so could result in damage to the component.***

* 1. Rinse components with UPW.
	2. Follow metal specific procedure:
		1. Copper probe tips: Place probe tips into a small plastic container with locking lid or other appropriate container. Add appropriate amounts of Micro90 or Citranox and UPW to container to achieve a ~2% concentration (UPW volume in ml x .02 = ml of detergent needed).
		2. Copper washers & silicon bronze nuts: Carefully load them into mesh basket or other container for use in USC.
	3. Add ~300 ml (small USC) or ~600 ml (large USC) of Citranox or Micro90 detergent to the USC.
	4. Add components to USC.
	5. Turn on the USC heater (the temperature is typically set o 130°F (54°C)).
	6. Turn on ultrasonics and allow the component(s) to ultrasonically clean for 50 minutes. This time may be reduced if water has been preheated. NOTE: The UPW/detergent temperature shall be at least 130°F (54°C) for a minimum of 15 minutes.
	7. Turn off the USC heater and ultrasonics. Don a new pair of nitrile gloves and inspect the component(s) for cleanliness. If the components do not appear to be clean, return the component(s) to the ultrasonic bath and reclean. If the components appear to be clean, continue.
1. After ultrasonically cleaning the components, rinse them in UPW as follows:
	1. Copper probe tips: Remove probe tip(s) from container and immediately rinse in UPW for at least five minutes. ***Note: Oxides form on the surface of copper very quickly. Do not allow probe tips to dry between steps.***
		1. Thoroughly dry with filtered ionized N2.
		2. Immediately bag probe tip(s) in its own bag filled with N2 and seal.
		3. Transport bagged components to the clean room pass-through or an appropriate location.
	2. Silicon bronze nuts and copper washers:
		1. Transfer container and components to the Quick Dump Rinser (QDR). Start the QDR. Note: A minimum of three rinse and dumps shall be performed in the QDR.The components may also be cleaned by rinsing with UPW and/or dipping in the triple rinse sink.
		2. Ensure the components are thoroughly rinsed.
2. Place nuts and washers on new, dry, clean room wipes within the laminar flow hood and allow components to dry if there is no immediate need. If parts are needed urgently, they may be dried with a solvent such as acetone, methanol, or isopropyl and blown dry with filtered N2.
3. Bag components:
	1. Ensure all components have dried completely before bagging
		1. If necessary, dry component with filtered nitrogen
	2. Bag each item type separately and seal.
	3. Repeat process until all components are bagged.
	4. Transport bagged components to the clean room pass-through or appropriate location.

## Copper Gaskets/Seals

1. Put on fresh pair of vinyl gloves and safety glasses.
2. If copper seals are tarnished, follow instructions for copper components.
3. If copper seals are clean and tarnish free in a manufacturer’s bag, wipe bag with isopropanol on an Alpha Wipe

## Aluminum

The following steps apply to aluminum components. Only aluminum is to be cleaned in the bath. Do not share the bath with other items. All components shall be completely disassembled and all gaskets removed prior to executing this procedure. To prevent excessive exposure to particulate in air, the user is to perform all actions within the laminar flow hood (when possible).

***NOTE: Do not clean Aluminum with Micro90 and heat, it will tarnish the components.***

1. Don a new pair of nitrile gloves and appropriate safety glasses.
2. Inspect component(s) for excessive damage (chips/scratches); if component has pre-existing impairment notify owner. Do not proceed until owner verifies through written acknowledgement of previous damage presence.
3. If the component(s) appears excessively soiled or greasy, perform the following:
	1. Wipe all oil and marker off with acetone.
	2. Measure a small amount of Citranox into a small container.
	3. Use a TX 1009B AlphaWipe to apply detergent directly to the component’s exterior and/or interior. Additional wipers, brushes or other means may be necessary to pre-clean heavily soiled components.
	4. Thoroughly rinse component with DI water.
	5. Repeat until heavy soil, oil, etc. has been removed.
4. Components are usually cleaned in the Ultrasonic Cleaner (USC):

***NOTE: Position components in such a way as to prevent their surfaces from touching each other during the ultrasonic cleaning process; failure to do so could result in damage to the component.***

* 1. Close drain valve of USC.
	2. Fill USC with DI/UPW at least five inches or enough to cover the component being cleaned. Carefully place component(s) into USC using baskets, sheets of plastic, or containers as necessary to protect and contain the component(s). If the components have sealing surfaces, place them face up whenever possible. The component(s) must be completely submerged for proper ultrasonic cleaning action. Ensure there are no trapped air pockets under or within the component(s).
	3. Usually about 300 ml (small USC) or ~600 ml (large USC) of Citranox detergent is added to the USC. If using the 200gal large USC, add roughly 1 L of Liquinox is used.
	4. Turn on the USC heater (the temperature is typically set o 130°F (54°C)).
	5. Turn on ultrasonics and allow the component(s) to ultrasonically clean for 50 minutes. This time may be adjusted if the water is preheated. ***NOTE: The UPW/detergent temperature shall be at least 130°F (54°C) for a minimum of 15 minutes.***
	6. Turn off the USC heater and ultrasonics. Don a new pair of nitrile gloves and inspect the component(s) for cleanliness. If the components do not appear to be clean, return the component(s) to the ultrasonic bath and re-clean as necessary. If the components appear to be clean, proceed.
1. Rinse components in DI/UPW using one or all of the following methods:
	1. Transfer the parts (in perforated containers if small parts) to the Quick Dump Rinser (QDR). Start the QDR and allow to run for its standard 3 cycles.
	2. Rinse components using DI/UPW until no soap bubbles are visible (approximately 5 minutes)
	3. Dip visibly clean component in the triple rinse sink from left to right.
	4. Ensure the components are thoroughly rinsed and water surface is free of soap bubbles. Repeat if necessary.
	5. Once thoroughly clean, dry parts on clean room wipe in the laminar flow hood or appropriately clean and allow components to dry if there is no immediate need. If parts are needed urgently, they may be dried with a solvent such as acetone, methanol, or isopropyl and blown dry with filtered N2.
		1. Dry all feedthroughs using filtered compressed nitrogen. Place feedthroughs on TX 1009B Alphawipes within the laminar flow hood.
	6. If components are bellows, valves or otherwise difficult to dry, they may need to be dried in the oven. This is typically set for 15 hours at 100°C in the nitrogen oven.
2. Bag the components:
	1. Ensure components have dried completely before bagging
		1. If necessary, dry component with filtered nitrogen
	2. Bag and seal each component separately.
	3. Repeat process until all components are bagged.
	4. Transport bagged components to the clean room pass-through or appropriate location.

## Aluminum-magnesium gasket/seal cleaning

The following steps apply to aluminum-magnesium gaskets. Aluminum-magnesium gaskets do not need ultra-sonic cleaning. To prevent excessive exposure to particulate in air, the user is to perform all actions within the laminar flow hood (when possible).

1. Don a new pair of nitrile gloves and appropriate safety glasses;
2. Inspect gaskets for irregularities or damage (dings, nicks, scratches, etc.). Report questionable gaskets to your supervisor.
3. Wipe down gasket with acetone soaked TX 1009B Alphawipe
4. Wipe down gasket with isopropyl alcohol soaked TX 1009B Alphawipe.
5. Bag components promptly:
	1. Ensure all gaskets have dried completely before bagging
	2. If necessary, dry component with filtered nitrogen
	3. Bag each item separately.
	4. Repeat process until all gaskets are bagged.
	5. Transport bagged components to the clean room pass-through or appropriate location.

## Rubber Gaskets/Seals

The following steps apply to rubber gaskets or seals. They do not need ultra-sonic cleaning. To prevent excessive exposure to particulate in air, the user is to perform all actions within the laminar flow hood (when possible).

1. Don fresh pair of poly gloves and appropriate safety goggles.
2. Parts will need to be bagged in nylon material:
	1. Cut appropriate length/width nylon bag for each part.
	2. Seal one end of bag with sealing machine.
	3. Set bags under hood in a dry place.
3. Wipe down rubber seals with Isopropanol using TX 1009 AlphaWipes.
4. Dry parts with nitrogen (N2) gun.
5. Place dried rubber seals on clean wipes under hood.
6. Bag seals in nylon bag:
	1. Only bag if part is COMPLETELY dry and no stains appear on surface.
	2. Place part in bag.
	3. Seal opposite end of bag with sealing machine.

## Burst Disks

1. Apply proper PPE before beginning process.
2. Place part in a container that is compatible with solvents (HDPE or glass); the container must also have a lid, or be capable of being covered by something.

***NOTE: Always use new solvents when degreasing burst disk. NEVER place burst disk into USC, doing so will permanently damage the part.***

1. Submerge the disk completely in acetone, making sure to remove any trapped air bubbles.
2. Place lid on container to prevent solvent evaporation and unnecessary fume exposure to operator.
3. Allow to soak for 2 hours.
4. Once timer expires, remove disk from solvent.
5. Place burst disk under hood on clean wipe and inspect part for any stains or residue.
6. If stains or residue are present, use a clean wipe soaked in acetone to remove the stain/residue. If the acetone clean wipe cannot remove stain, re-clean disk.
7. Dry ***component at a distance with nitrogen gun (N2) after degreasing is satisfactorily completed. NOTE: Do NOT blow into the burst plate with N2!!***
8. Use nylon bagging material once part in dry:
	1. Only bag if part is COMPLETELY dry and devoid of stains.
	2. Place part in bag, seal.

## Ceramic Windows (or like components)

1. Put on fresh pair of vinyl gloves and appropriate safety glasses.
2. Inspect ceramic windows for excessive damage (chips/scratches); if part has pre-existing impairment notify owner. Do not clean until owner verifies through written acknowledgement of previous damage presence.
3. Ceramic windows are very fragile and delicate. User should always exercise a conscious effort to maintain the structural integrity of the window by being cautious and focused. ***NOTE: It is paramount they are placed on their side during both USC procedures and whenever placed on a flat surface (i.e. under the hood). Direct force from nitrogen (N2) gun or DI water hose is never acceptable.***
4. Material’s surface may be dirty. Impurities on surface should be removed by doing the following:
	1. Measure ~4 oz of Micro 90 detergent into a small container.
	2. Fill remainder of container with DI water at “rinse only” wetbench side.
	3. Use TX 2009 BetaWipes to apply mixture directly onto part.
	4. Avoid direct contact of TX 2009 BetaWipes with ceramic window itself; if necessary do so with great vigilance.
	5. Rinse with DI water.
5. Place parts in container; typically, five can fit into a given container, making sure they are on their side. Parts need to be cleaned in ultrasonic cleaner (USC) basin, accomplished as follows:
	1. Place container in USC.
	2. Close drain system of USC.
	3. Fill container ¾ full of DI water (each part needs to be completely submerged for USC cleaning to successfully be performed).
	4. Fill USC with at least 5 inches of DI water to prevent motors from overheating (thereby causing permanent damage to the USC).
	5. Disperse ~4 oz. of Micro 90 into container.
	6. Set USC timer for 15 minutes.
6. Parts will need to be bagged in nylon material:
	1. Cut appropriate length/width nylon bag for each part.
	2. Seal one end of bag with sealing machine.
	3. Sets bags under hood in a dry place.
	4. Repeat process to make duplicate bags for each part as user will need to re-bag parts in the R&D Chemroom. Place duplicates into a larger bag for transportation.
7. Put on fresh pair of vinyl gloves.
8. Remove containers from USC after timer expires. After USC cleaning all particulate needs to be rinsed away from parts:
	1. Rinse with DI water hose thoroughly.
	2. Agitate in first rinse basin 3 times.
	3. Agitate in second rinse basin 3 times.
	4. Agitate in third rinse basin 3 times.
	5. Rinse again with DI water hose.
9. Place ceramic windows on their side under the laminar flow hood on clean wipes.
10. Dry ceramic windows:
	1. Allow windows to air dry if enough time or no immediate need.
	2. Ceramic windows can be manually dried using N2 gun without putting direct force on window itself from N2 gun.
	3. Examine each part for water spots or other blemishes prior to bagging.
	4. If water spots are found remove them with DI water and anAlphaWipes, then repeat the drying process.
11. Bag ceramic windows:
	1. Only bag if part is COMPLETELY dry and no stains appear on surface.
	2. Place each part in its own bag and seal.
12. Place bagged parts into a container that can sufficiently hold them without a chance of damage. Transport container to the R&D Chemroom, along with bag containing duplicate nylon baggies.

***NOTE: R&D Chemroom requires user to follow the OSP and record activity in the log book prior to beginning any work.***

1. Don fresh pair of poly gloves along with safety goggles.
2. Transport materials over to the solvent USC. To finalize the degreasing of the ceramic windows, they need to be USC cleaned in acetone:
	1. Remove ceramic windows from nylon bags making sure to place them in a clean acetone approved container on their side.
	2. Fill USC with a small amount of water in the basin area. DO NOT EMPTY WATER AT ANY POINT.
	3. Fill container with enough new acetone to completely cover the parts.
	4. Place acetone filled container into solvent USC basin.
	5. Fill USC with a sufficient amount of water.
	6. Set solvent USC timer for 5 minutes (NOTE: Do not run for more than 5 minutes as this may cause volatile situation with the highly flammable solvent).
3. Don fresh pair of poly gloves.
4. Once USC timer expires, windows will need to be dried/bagged:
	1. Dry ceramic windows:
		1. Remove part from Acetone.
		2. Dry each individual ceramic window carefully with N2 gun.
		3. Place component on a TX 2009 BetaWipes once completely dry.
	2. Dispose of used acetone in the correct manner (usually by pouring back into “used” acetone bottle and marking with an additional “X”).
	3. Bag ceramic windows:
		1. Only bag if part is COMPLETELY dry and no stains appear on surface.
		2. Place part in its own bag and seal.
		3. Wrap each individually bagged part additionally with aluminum foil.

## Pressure Washer

Occasionally, parts may be too large for the ultrasonic cleaners or otherwise need to be pressure washed.

1. Apply proper PPE before beginning process.
2. Secure the part so that it will not move when hit with high pressure water.
3. Attach the appropriate nozzle on the pressure washer.
4. Turn on the UPW then the pressure washer.
5. Rinse the part, getting closer or further away as necessary to clean without damaging the part.
6. Once finished, turn off the pressure washer and the water. Depress the handle on the handle to release any pressure, and return the hose to the hose reel.
7. Move the part to a clean location to air dry or manually dry as appropriate.

# References

|  |  |
| --- | --- |
| **Document No.** | **Title** |
|  | [Alconox User’s Manual](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-73545/Alconox-UserManual.pdf): User’s manual for Alconox detergents |
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# Release and Revision History

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| --- | --- | --- |
| **Rev #** | **Major Changes** | **Effective Date:** |
| 1 | Initial version | DD Mmm YYY |
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# Approvals

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| --- | --- | --- | --- |
| **Approved by:** | **Name:** | **Signature:** | **Date:** |
| Document Owner | <First Last Name> |  | DD Mmm YYY |
| Subject Matter Expert | <First Last Name> |  | DD Mmm YYY |
| Work Center Lead  | <First Last Name> |  | DD Mmm YYY |
| Project Leader  | <First Last Name> |  | DD Mmm YYY |