

Preparing Equipment to Switch to *EnSolv*[®]

Prior to switching over to *EnSolv*[®] it is essential that your equipment be thoroughly cleaned so that any existing acidity is neutralized and cross-contamination with your existing solvent is prevented. Cross-contamination creates the possibility of non-optimal performance of the *EnSolv*[®] and the possibility of interactions between the former product's inhibitor package and the inhibitor package contained in *EnSolv*[®].

The following are general procedures for clean out and set-up of your cleaning equipment. Your cleaning equipment manufacturer's operating manual should be consulted and instructions particular to your equipment should be followed, if available, in place of these general instructions. Should you have any questions, please do not hesitate to call one of our product support specialists, who will be happy to assist you.

GENERAL INSTRUCTIONS FOR CLEANING A VAPOR DEGREASER

1. Unplug all electrical connections to the unit. (NOTE: A notice should be placed on the switches stating that personnel are working inside the unit and the controls must not be touched.) Following approved company safety standards, open and drain solvent from all tanks, reservoirs, lines and sumps.
2. Remove all dirt, sludge and metal chips from the bottom of each sump with a scraper. It may be necessary for company maintenance personnel to enter some units. Such entry should be permitted only when the degreaser is thoroughly ventilated and personnel are suitably protected. Always follow the manufacturer's approved standards for ventilation and maintenance.
3. When the degreaser is thoroughly empty and ventilated, a maintenance worker equipped with a harness, lifeline and approved respiratory protection may enter the degreaser (only under the constant supervision of a second person in attendance outside the degreaser) and clean out the condensing trough, condensing coils and walls of each compartment. Care should be exercised to avoid damaging the corrosion-resistant finish on the interior of the unit. The unit should be checked for rusted areas and the conveyor systems, if applicable, inspected for defects.
4. Brush or scrape all surfaces to remove residues. Take care during scraping operations to avoid damage to heaters, sensors and condensing coils.
5. Re-assemble the clean-out door, preferably with new joints and sealing compound. Ensure that all valves and drain plugs are in place.

NEUTRALIZING THE DEGREASING TANK

This procedure must be followed to remove any acidic residues in the bath.

1. Mix a solution of 1% by weight sodium carbonate (Na_2CO_3) in water and fill the tank (10 grams per liter or 1.3 oz. per gallon). **NOTE: Do not use caustic soda (NaOH) solution or other strong alkali!!**
2. Heat the unit to approximately 125°F and maintain this temperature for 3 hours, allowing all tank surfaces, pipe work, water separators, filters and any other solvent-wetted areas to be flooded with solution.

3. Allow system to cool to a safe working temperature (<100°F) then scrub the walls and bottom of the tanks with a brush to remove any sediment.
4. Completely drain the sodium carbonate solution from all compartments of the degreaser.
5. Refill the system with fresh water, then heat the unit to 125°F or boiling, if possible, and maintain this temperature for 1 hour. Ensure that all tank surfaces, pipe work, water separators, filters and any other solvent-wetted areas are flooded with water.
6. Scrub the bottom and sides of the tank with a brush to remove any remaining residues.
7. Drain all water out of the system. Purge and dry the tank, pipe work, water separators, pumps and filter housings as much as possible.
8. Use a small amount of *EnSolv*[®] to flush the tank, pipe work, water separators and pumps. Drain and discard this material.
9. Turn on the refrigeration, and then fill the tanks and the water separator with *EnSolv*[®] to the appropriate fill level.
10. Check all gaskets, valves and joints for leaks (replace with Viton and/or Teflon only). **NOTE:** If any leaks have appeared during the neutralization process, remake joints and seals – this is important because the surface tension of *EnSolv*[®] is much lower than that of water.
11. Turn on the heat and check refrigeration temperatures. Check *EnSolv*[®] levels in the boil sump frequently during the first hour of operation.

FILLING THE TANK

1. Fill the water separator and/or rinse tanks and reservoirs with *EnSolv*[®] solution until they overflow into the degreasing tank.
2. Charge the main tank with *EnSolv*[®] solution. Measure the bath level accurately in order to maintain it at a constant level. Preferably, the liquid should be filled until it touches the bottom of the work support grid.
3. Turn on the refrigeration and ensure proper operation before turning on the heater.

Recommended Vapor Degreaser Settings:

Heater: 165°F

Refrigeration: 40-50°F

High Temp Heater Safety Control (boil sump thermocouple): 185°F

Safety Vapor Control (thermocouple above refrigeration coil): 145°F

4. Check solvent levels frequently during the first hour of operation.

NOTE: If the vapor degreaser had previously been used for trichloroethylene, it may be necessary to reduce the heat input to the machine. The boiling rate should be maintained without excessive agitation and should maintain the vapor level within the work zone while the cooling coils are operating. The heating

system will preferably be fitted with a form of energy control that is activated whenever the vapor level is established on the coils.

RECOMMENDATIONS

It is strongly recommended that the degreaser be fitted with a refrigeration-cooled, re-circulated water chiller operating at 40°F. This should run continuously while the tank is in operation.

When the degreaser is operating, loss of solvent by diffusion will be reduced, and when the heat is turned off, the cold air blanket suppresses evaporation.

*Details of these systems are available from your Enviro Tech Representative or from **EnSolv**[®] approved distributors.*

WARNING

Use only **EnSolv**[®] for filling and topping off the bath. **EnSolv**[®] is specifically formulated to ensure long term stability in use, and the addition of any other materials may seriously affect its performance, may result in rapid deterioration of the cleaning process, and could lead to the formation of corrosive and toxic by-products.

DAILY OPERATION

1. Turn on the cooling/condensation system. Check to ensure that it is operating before proceeding.
2. Turn on the lip extraction system.
3. Turn on the heat.
4. Remove the covers or lid.
5. Once the solvent has begun to boil, check the bath levels and add **EnSolv**[®] as necessary.
6. Check the cooling water temperature. The outlet temperature should always be less than 55°F.

SHUTTING DOWN

1. Turn off the heat.
2. Once the vapor level has fallen below the coils, turn off the cooling system. Whenever the ambient temperature is above 65°F it is recommended that cooling be maintained to minimize losses by evaporation. See RECOMMENDATIONS.
3. Switch off lip extraction.
4. Cover or close the tank.
5. If the bath has a sump cooling system, turn it on.

The information above is believed to be correct, but Enviro Tech International, Inc. cannot guarantee its completeness or accuracy. Enviro Tech International, Inc. does not assume or undertake any duty imposed on any other party by law or regulation. It is the user's responsibility to determine the suitability of the process outlined in this document.

For additional information, consult ASTM Standards D4579: Standard Practice for Handling an Acid Degreaser or Still and ASTM D3698: Standard Practice for Solvent Vapor Degreasing Operations.