

Solvent vapor degreasing refers to boiling liquid cleaning systems utilizing trichloroethylene, perchloroethylene, methylene chloride, freons® or other halogenated hydrocarbons. Cleaning action is accomplished by the condensation of the solvent vapors in contact with the work surface producing a continuous liquid rinsing action. Cleaning ceases when the temperature of the work reaches the temperature of the surrounding solvent vapors. Since halogenated hydrocarbons are somewhat similar in their physical, chemical and toxic characteristics, the following safeguards should be provided to prevent the creation of a health or life hazard:

1. Vapor degreasing tanks should be equipped with a condenser or vapor level thermostat to keep the vapor level below the top edge of the tank by a distance equal to one-half the tank width or 36 inches, whichever is shorter.
2. Where water type condensers are used, inlet water temperature should not exceed 80°F (27°C) and the outlet temperature should not exceed 110°. For some solvent, lower water temperatures may be required.
3. Degreasers should be equipped with a boiling liquid thermostat to regulate the rate of vapor generation, and with a safety control at an appropriate height above the vapor line to prevent the escape of solvent in case of malfunction.
4. Tanks or machines of more than 4 ft<sup>2</sup> of vapor area should be equipped with suitable gasketed cleanout or sludge doors, located near the bottom, to facilitate cleaning.
5. Work should be placed in and removed slowly from the degreaser, at a rate of no greater than 11 fpm., to prevent sudden disturbances of the vapor level.
6. CARE MUST BE TAKEN TO PREVENT DIRECT SOLVENT CARRYOUT DUE TO THE SHAPE OF THE PART.
7. Maximum rated workloads as determined by the rate of heat transfer (surface area and specific heat) should not be exceeded.
8. Special precautions should be taken where natural gas or other open flames are used to heat the solvent to prevent vapors\* from entering the combustion air supply.
9. Heating elements should be designed and maintained so that their surface temperature will not cause the solvent or mixture to breakdown\* or produce excessive vapors.
10. Degreasers should be located in such a manner that vapors\* will not reach or be drawn into atmospheres used for gas or electrical arc welding, high temperature heat treating, combustion air or open electric motors.
11. Whenever spray or other mechanical means are used to disperse solvent liquids, sufficient enclosure or baffling should be provided to prevent direct release of air-born vapor to the top of the tank.
12. An emergency quick-drenching facility should be located in near proximity to the degreaser for use in the event of accidental eye contact with the degreasing liquid.

\*Electric arcs, open flames and hot surfaces will thermally decompose halogenated hydrocarbons to toxic and corrosive substances (such as hydrochloric and/or hydrofluoric acid). Under some circumstances, phosgene may be formed.



TITLE

## SOLVENT VAPOR DEGREASING

FIGURE

VS-70-21

DATE

1-91