



## Large Dip Tank Protection

Metal working operations that produce medical device components often clean parts, coat, or otherwise dip materials in flammable and/or combustible liquids. These dipping processes may introduce severe fire or explosion hazards, depending on their arrangement and the materials involved. Liquids with flash points below 140°F are particularly hazardous.

The following safeguards should be used for various large dip tank operations (over 150 gallons):

- Dipping processes (see Figure 1) should be conducted in a detached one-story sprinklered building or in a separate fire-resistive sprinklered room away from main occupancy areas. Dipping processes should not be located in basements. The entire surrounding area should be kept clear of combustible stock. In confined areas where highly flammable or unstable liquids are used, structural explosion relief venting should be provided.
- No open flames, welding operations, spark producing devices, or heated surfaces having a temperature sufficient to ignite vapors should be permitted in or adjacent to any vapor area. Any processes which can generate static electricity should be properly grounded.
- Vapor areas should be confined to the smallest practical space by maintaining a properly designed system of mechanical ventilation arranged to move air from all directions toward the vapor area and then to a safe outside location away from all intake ducts. The vapor area should not extend more than five feet from the vapor source.
- Electrical fixtures and wiring within 5 feet of dipping should be Class I, Division 1 hazardous location type.
- Electrical fixtures and wiring within 20 feet of dipping should be Class I, Division 2 hazardous location type. The use of infrared lamps should be prohibited in any area within 20 feet of the liquid surface.

Large dip tanks should have trapped overflow pipes draining to a vented salvage tank or to a safe location outside of the building. NOTE: Check location regulations regarding permissible draining of hazardous materials. Many areas will not allow drainage to other than a salvage tank. Capacity of the salvage tank should be at least 25 percent greater than that of the dip tank. Curbs or dikes should be provided around the tank to contain any spillage or overflow. Minimum recommended other flow pipe sizes are based on the combined area of both the dip tank and its drainboard (refer to Table 1).

Table 1: Minimum Recommended Overflow and Bottom Drain Sizes	
Drain Size	Tank Size
3 inch pipe	areas up to 75 square feet or up to 750 gallons
4 inch pipe	areas from 76 to 150 square feet or up to 1,000 gallons
5 inch pipe	areas from 151 to 225 square feet or up to 2,500 gallons
6 inch pipe	areas from 151 to 225 square feet or up to 2,500 gallons

- An automatic and manually operated bottom drain should be provided on dip tanks having a capacity of over 500 gallons (refer to Table 1). The drain should discharge to a properly vented, buried salvage tank, preferably located outside. Suitable pumping facilities should be provided for emptying the salvage tank before refilling the dip tank.

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- Dip tanks should have automatic closing covers or be protected by an automatic extinguishing system. The protection may be by automatic sprinklers but only if the tank also has an automatic closing cover. Covers should be kept closed when tanks are not in use.
- Portable fire extinguishers suitable for flammable and combustible liquid fires with a minimum rating of 40B should be provided within 30 feet of large dip tanks.
- Monthly inspection and test of dip tank facilities should be made, including covers, overflow pipe inlets and discharge, bottom drains and valves, electrical wiring and equipment, grounding and bonding connections, ventilating facilities, and all extinguishing equipment. Any defects found should be promptly corrected.
- Signs indicating the following should be posted in the dipping area:

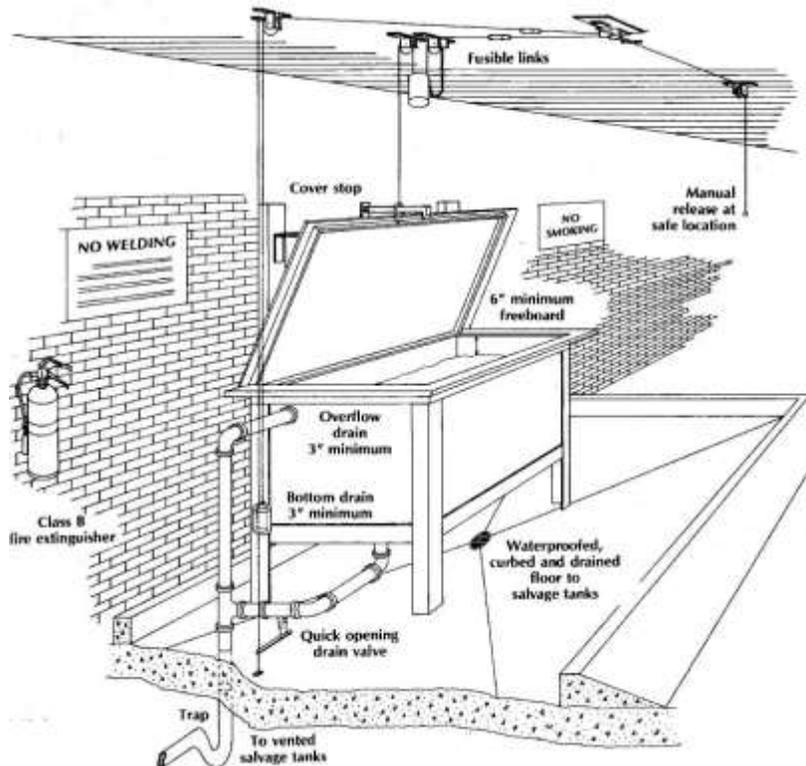


No Smoking



No Welding. The use of welding or cutting equipment in or near this area is dangerous. Welding or cutting shall be done only under the supervision of foreman in charge.

**Figure 1. Typical Large Dip Tank**



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