

OVERVIEW OF NFPA REQUIREMENTS FOR HAZARDOUS MATERIALS

Most polyester resin users deal primarily with three chemicals which will be reviewed here: Styrene, MEKP (Methyl Ethyl Ketone Peroxide) and Acetone.

According to the NFPA Flammable and Combustible Liquids Code which is referred to by OSHA, Styrene is classified as a IC material, Acetone is IB, and MEKP is IIC, also falling under the classification of an Organic Peroxide.

IB and IC material must be stored in DOT *metal* spec. containers. Fiber drums, one way totes, etc. are *not* allowed for storage of flammable liquids -- even though the DOT allows the material to be transported in those containers!

MEKP should always be stored in a cool dark, place in its original plastic container to avoid contamination.

For more detailed information on storage requirements, it is recommended that you purchase NFPA 30, Flammable and Combustible Liquids Code, 2000 Edition and NFPA 432, Code for The Storage of Organic Peroxide Formulations, 1997 Edition. These can be ordered on-line at www.nfpa.org/catalog.

Storage Cabinets: Not more than 60 gallons of Class I or Class II liquids are allowed in a cabinet. The cabinets must be UL-approved or meet specific construction requirements. They must be labeled Flammable -- Keep Fire Away. No more than three storage cabinets are allowed per process area.

Inside Storage Rooms: Self-closing fire doors must be provided. The room must have 4-inch raised sills or ramps of non-combustible material by openings.

If there is no fire protection and the walls have a 2-hour fire resistant rating, the maximum size of the room allowed is 500 ft. with only 2,000 gallons of material being allowed.

The storage room would be considered a Class I, Division 2 hazard location when selecting wiring and electrical equipment according to the National Electrical Code.

Outside Storage: A maximum of 1,100 gallons of flammable or combustible liquid is allowed to be adjacent to the building. If quantities exceed that, they must be stored 10 ft. away from the building, but 50 ft. away from the property line.

There must be a spill containment curb of at least 6 inches and provisions for drainage with termination of drains at a safe location. Otherwise, the area must be graded so that spills are diverted from the building or other exposures.

There must be security provided to prevent tampering or trespassing.

Fire Control: Small hoses or portable fire extinguishers must be available at inside storage locations. Organic peroxide storage areas should have water or carbon dioxide extinguishers, not ABC.

At least one portable extinguisher having at least a 12-B rating must be located not less than 10 ft. nor more than 25 ft. from Class I or II liquid storage areas outside the room.

Class I, II or III liquids outside of storage areas: Only material in process is allowed, not to exceed 120 gallons. One portable tank instead is permitted.

Transferring liquids must be separated from other operations in the building by an adequate distance. Containers should be grounded and bonded while transferring flammable liquids. Drainage or other methods of spill control must be provided. Natural or mechanical ventilation must be provided.

Handling liquids at point of final use:

- flammable liquids must be kept in covered containers when not in actual use
- clean up leakage or spills promptly and safely
- Class I liquids may only be used when no sources of ignition are within the path of vapor
- Class I liquids must be properly grounded when being dispensed

The area where organic peroxides and polyester resins are used should be separated from the remainder of the building by a 2-hour rated fire-resistant wall.

Fire Protection: All resin spray application areas must be protected by an automatic sprinkler system that is designed for at least Ordinary Hazard, Group 2 occupancies. For more detailed information on requirements of “Styrene Cross-linked Composites Manufacturing”, it is recommended that you refer to Chapter 15 of NFPA 33, Standard for Spray Application Using Flammable or Combustible Materials, 2000 Edition.

Electrical Classifications and Requirements:

- Division I, Class 1 areas are considered to be up to 5 ft. in all directions where vapor is released
- Division I, Class 2 areas are within 25 ft. horizontally, 3 ft. vertically and up to 3 ft. above the floor beyond Class I, Division 1 areas
- Electrical wiring and utilization equipment located in resin application areas that do not collect combustible residues may be installed according to the requirements for ordinary hazard locations if the vapors do not exceed 25 % of the lower flammable limit (LFL for Styrene is equivalent to approximately 11,000 ppm)
- All metal parts of the area, such as exhaust ducts, ventilation fans, spray application equipment, etc. that receive the spray stream or convey flammable liquids must be

electrically grounded.

Housekeeping:

- control leakage
- clean up spills immediately
- in areas where chopper guns are used, paper or polyethylene film, etc. must be provided to cover the exposed surface of the walls and floor to allow overspray to be readily removed
- a single day's accumulation of overspray or 2 inches, whichever is greater, must be disposed of after a minimum curing time of 4 hours
- place waste and residue in covered receptacles and dispose of daily
- grounds around building must be free of weeds, trash and unnecessary combustibles

For more in-depth information on proper handling and storage of hazardous materials, please call Composites One's Department of Health, Safety & Environment at 800/621-8003.

STORAGE TANK PLANS

Regulations governing Underground Storage Tanks (USTs) were promulgated by the EPA on September 23, 1988. Most polyester resin users do not have USTs to be concerned about, but Aboveground Storage Tanks (ASTs) are used quite a lot in this industry. ASTs are not governed by the EPA with specific regulations as of yet -- only indirectly, such as eliminating stormwater run-off contamination and containment provisions, in general, to protect human health and the environment.

On the other hand, the National Fire Protection Association (NFPA), which OSHA incorporates by reference, has specific recommendations for bulk storage tanks. Whenever installing a tank, it is imperative to contact the local fire department, State fire marshal and local building codes since each municipality has its own provisions. Your insurance carrier should also be contacted.

Chapter 2 of the 2000 edition of the NFPA 30, Flammable and Combustible Liquids Code provides some insight as to what most municipalities and insurance carriers will require.

Outdoor Aboveground Storage Tanks: A tank installation that only has a canopy or roof over it that does not limit the dispersion of flammable vapors can be treated as an outdoor aboveground storage tank. Usually, those tanks must be set back from the property line by at least 25 ft. and must be provided with a diked area that has the volumetric capacity to contain all of the liquid that can be released from the largest tank. Certain construction and venting requirements for the tanks must be met.

Storage Tank Buildings: Storage tanks must be separated from the process area by at least a 2-hour fire-resistive wall. Distance from the property line is dependent on how large the tank is and what the fire-resistance rating of the surrounding walls are.

Access aisles of at least 3 ft. must be maintained in the building and a clearance of at least 3 ft. from the ceiling must be provided. Exit doors must be provided.

All electrical equipment and wiring must be installed according to the National Electrical Code. Usually, all equipment located below grade level must be suited for Class I, Division 1. Any area within 5 ft. of a tank opening must also be considered Class I, Division 1. Areas between 5 ft. and 8 ft. of any tank opening or areas up to 3 ft. above the floor within 5 ft. to 25 ft. horizontally from the tank opening must be considered Class I, Division 2 areas.

Fire prevention and control systems have many variables based on size, design and location of the building. The local authorities will have to be consulted. All tanks must be bonded or connected to a ground.

For more detailed information, please contact Composites One's Department of Health, Safety & Environment at 800/621-8003.