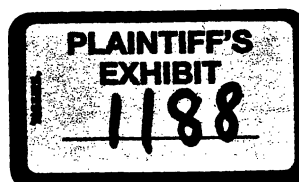


PROCESS DESCRIPTION FOR THE
MANUFACTURE OF

~~STYRENE & POLYSTYRENE~~

Aroclors & Pyranols

In Dept. A-246



NEV 024911

738166

SECTION I

AROCULOR & PYRANOL

MATERIALS HANDLING

BIPHENYL

Biphenyl is a flammable organic liquid received in tank cars from our Anniston, Alabama plant. It is melted and unloaded to storage tanks in Dept. 246. From storage it is transferred by pipeline to the chlorinators via a head tank through an essentially closed system. Prolonged breathing of diphenyl dust or vapor can cause damage to respiratory passages. For this reason avoid prolonged breathing of diphenyl vapor or wear a respirator or mask if necessary to work for short periods in strong vapors. Always wear goggles when transferring or sampling biphenyl from tank cars or storage tanks. If molten diphenyl is spilled on the skin it should be absorbed with a clean cloth and then washed with alcohol followed by copious quantities of water or if allowed to solidify it should be scraped off and then washed for further treatment. If spilled on the clothing, change to clean clothes. The flash point of Biphenyl is 115°C.

CHLORINE

Chlorine gas is delivered by pipeline from the chlorine department and is used to chlorinate diphenyl to produce the various aroclors.

At times, leaks occur which will liberate chlorine gas into the air. Gas masks are provided in Department 246 for use as protection against chlorine gas.

It is imperative for the operator to know the location of the gas masks at all times and that he be fully acquainted with their use and limitations. (In Dept. 246 a chlorine mask is kept in the control room at all times). If for some reason you are caught without a mask and large amounts of chlorine are liberated, you can do nothing but hold your breath and move crosswind as fast as possible until you are out of the gaseous area. Once you are out of the area, however, locate an emergency chlorine mask box and wear the mask to return to the area and assist in correcting the trouble. The nearest chlorine masks outside of Dept. 246 are located as follows:

1. Outside the building on the north end of Dept. P-222.
2. In the Chlorine Cell House, Dept. 234
3. Inside the Powerhouse.

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SECTION I (Cont'd.)

MATERIALS HANDLING (Cont'd.)

CHLORINE (Cont'd.)

The canisters of the chlorine mask will absorb chlorine out of the air you breathe for varying lengths of time depending on the strength of the gas. As the canister loses its absorptive power, you will notice an increasing amount of gas in the air entering the mask. Upon detecting these traces of chlorine you should leave the area and obtain a fresh canister for the mask. New canisters are available at the protective garment room. After using a mask, fill out the used gas mask form found inside the gas mask and mail it to the Safety Department. They will automatically replace the gas mask.

Insofar as first aid for fumes from chlorine gas is concerned, the first thing to do is to remove the victim from the gaseous area. The next thing is to take him to the dispensary where proper aid can be administered. If the concentration of chlorine vapors are strong enough, inhalation can be fatal.

HCl GAS

Hydrogen chloride gas is a by-product of the chlorination of diphenyl. The gas is carried via pipe line to Dept. F-218 and sewerred. In case of leaks and you are caught in an area where HCl fumes have been liberated and you do not have a mask, go crosswind until you are out of the gaseous area. Do not remain for any period of time in an area where enough HCl gas is present to cause discomfort in breathing. If necessary to work temporarily in a gaseous area, use a mask with an acid canister. If irritation from HCl fumes persist, wash thoroughly with water and report to dispensary.

ATTAPULGUS EARTH

Attapulgu earth is an inert material and is handled in drums or buckets. There should be no toxicity involved in handling this material, but as a matter of personal cleanliness it should be washed from the skin or brushed from the clothing after handling it. Do not blow it off your clothing with an air hose. This is against safety rules.

GLYCIDYL PHENOL ETHER (Phenoxy Propene Oxide)

Glycidyl Phenyl Ether is handled in drums and transferred to process tanks in Dept. 246 as an ingredient of certain aroclor mixes. Since it is a known skin sensitizer, always wear

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SECTION I (Cont'd.)

MATERIALS HANDLING (Cont'd.)

GLYCIDYL PHENOL ETHER (Cont'd.)

goggles and gloves when handling. Any material spilled on the skin or clothing should be washed off immediately with plenty of soap and water to avoid skin irritation.

TIN TETRAPHENYL

Not used

Tin Tetraphenyl is a powdered solid received in fiberpaks. It is charged to process tanks from the fiberpaks and is a part of certain pyranol mixes. Always wear goggles and gloves when handling and wash off any material that might be spilled on the skin or clothing. In case of skin contact, wash with soap and water.

XYLENE

Xylene is a flammable organic liquid used in certain aroclor mixes. It is handled in drums and no smoking is allowed in the department when this material is being handled. Avoid prolonged breathing of concentrated vapors to prevent irritation of respiratory organs and narcosis. Wear respirator and goggles when handling. Any material spilled on the skin or clothing should be washed off with copious quantities of water. The flash point of Xylene is 30°C.

TOLUOL

Not used

Toluol (Toluene) is a flammable liquid and must be kept away from flames and sparks. No smoking is allowed in the department when toluol is being handled. Avoid breathing concentrated toluol fumes for prolonged periods. Toluol spilled on the skin or clothing should be washed off with copious quantities of water. This material is handled in drums and in aroclor mixes in the department at certain times. Always wear goggles when transferring, drumming or sampling. The flash point of toluol is 32°C.

LIME

Lime is used in the aroclor distillation step and is handled in 50# bags. Any lime spilled on the skin or clothing should be washed off in the interest of sanitation. Always wear goggles and gloves when handling. Keep dust from eyes.

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Dept. 246 & A-246 - Operating InstructionsSECTION I (Cont'd.)MATERIALS HANDLING (Cont'd.)AROCLORS

Aroclors as manufactured in Dept. 246 are non-flammable liquids which vary greatly in their viscosity at room temperature. Aroclor 1242, for instance, is easily handled while Aroclor 1260 must be heated well above room temperature in order to be pumped. Contact with the skin should be avoided. In case of spills on the body, wash the affected areas with soap and water. Inhalation of Aroclor as well as Montars vapors and fumes should be avoided. If it becomes necessary to work in areas where the fumes are concentrated a gas mask suitable for organic vapors should be worn.

UNLOADING TANK CARS

Biphenyl, Aroclors and Pyranols are shipped in two types of insulated tank cars, both of which are either aluminum lined or zinc-tin metallized. One type of car has heating coils inside the tank which are in direct contact with the product. The other type of car is a double shell tank with heating coils between the inner and outer shells. Both types of tank cars are tested for 60 pounds pressure and their steam coils are tested for 200 pounds gauge pressure.

Before unloading Biphenyl or Aroclors, it is necessary to heat it to pumping temperature in the tank car (approximately 75 - 100°C, for aroclors 1254 and 1260), (biphenyl 75 - 90°C). Pyranols can be unloaded satisfactorily at temperatures of 40 - 75°C. If the temperatures of Biphenyl or Aroclor car upon arrival is below pumping temperature, caution must be used in heating the material to prevent pressure build-up and possible rupture of the tank shell. A satisfactory vent hole can be made by inserting a "hair pin" coil (1/2" dia. brass, galvanized, or stainless pipe) into the open dome of the car and introducing steam through the coil until the aroclor is fluid from top to bottom.

After the vent hole is melted through the material from top to bottom, steam may be introduced into the main coils. The steam coil outlet may be trapped or throttled with a valve. It is recommended that the steam pressures be limited to 100 pounds gauge pressure, particularly in the case where the coils are in direct contact with the aroclor. The car dome should be covered with a clean tarpaulin or oil cloth during the heating period to prevent contamination of the material with

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Dept. 246 & A-246 - Operating InstructionsSECTION I (Cont'd.)MATERIALS HANDLING (Cont'd.)UNLOADING TANK CARS (Cont'd.)

foreign particles or moisture. The car dome cover should not be tightened since venting will occur during the heating period. It will require from 8 hours to 20 hours to bring the material to pumping temperature, depending upon weather conditions. After the tank car has been emptied the steam coils must be blown clear of water. The caps for the ends of the steam coil should not be replaced.

Aroclors and Pyranols are top-unloaded by displacement with dry air (10 mmg. H_2O /cu. ft. max.) There are two or three connections on the tank car dome depending on the type of car. Where three connections exist, one is a 2 inch diameter unloading line which extends to the bottom of the car, the second is a 1 inch diameter air inlet connection and the third is a two inch diameter rupture disc which is designed to release any pressure in excess of 45 pounds gauge. The vent connection is hooded for protection. Where only two connections exist on the dome, one is the 2" diameter unloading line and the other is the safety vent. On these cars, it is necessary to remove the safety vent and introduce the displacement air through that connection. When unloading is complete, all connections must be replaced as received. It is essential that the empty tank car be sealed immediately after the car is unloaded in order to keep the tank filled with dry air during return shipment.

When the material has been heated to pumping temperature a 1/2" diameter pipe "cross" arrangement containing a pressure gauge, air inlet, pressure relief valve to relieve at 35 psig or less if none is provided on the car, and vent connections, should be connected to the dome air pipe. After checking to see that the stand pipe is open, the unloading line should be connected and the dome cover tightened down so that the tank may be pressurized. Dry air is then introduced into the car and pressure built up to 15 pounds gauge. The 2" valve cock on the standpipe is opened and the discharge pipe observed to be sure the Aroclor is being unloaded. Do not exceed 35 pounds pressure to protect the seams in the tank car.

When the tank car is empty, the air pressure will gradually drop off and air will blow out the vent on the receiving tank. The air may be stopped at this point and the tank car pressure released through the vent valve on the "cross" arrangement. Steam should be released from the car coils and all

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Dept. 246 & A-246 - Operating InstructionsSECTION I (Cont'd)MATERIALS HANDLING (Cont'd.)UNLOADING TANK CARS (Cont'd.)

condensate removed from the coils by blowing with air with the steam trap by-passed. After inspecting the car to be sure that it has been completely unloaded, all connections and dome cover should be closed tightly before being released for the return trip.

UNLOADING DRUMS OF FLAMMABLE MATERIAL

When drums of flammable material are being unloaded each drum must be grounded by a "clamp on" cable which prevents sparking due to a static electricity. Be sure good contact is made between cable and drum and no paint is causing a poor contact.

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