UNION CARBIDE VINYL RESINS

BAKELITE VINYL CHLORIDE MONOMER

PRODUCT STANDARDS

DESCRIPTION

Vinyl Chloride Monomer is a clear, colorless gas at room temperature. Without inhibitor, Vinyl Chloride Monomer is characterized by a faintly sweet odor. With inhibitor, the odor becomes faintly phenolic.

Since it can be easily liquified, Vinyl Chloride Monomer is shipped and stored in liquid form. It is mildly toxic, highly flammable, explosive, and must be handled carefully.

APPLICATIONS

Vinyl Chloride Monomer polymerizes readily, making it particularly useful for manufacturing vinyl resins. It is also used for organic synthesis and as an aerosol propellant ingredient.

Properties of

BAKELITE Vinyl Chloride Monomer

Properties	Test Method WC-294-E, Sections	Typical Values
Appearance	XI and XII	Clear, free of suspended matter
Normal Acetylene, ppm.	II	Less than 1
Acetylenic Compounds, ppm.	III	Less than 5
Acidity, as HCl, ppm.	I	Nil
Aldehydes, ppm.	IV	Nil
Iron, nonfilterable, ppm.	V	0.1
Sulfur, as S, ppm.	VI	Nil
Conjugated Compounds, including Chloroprene and Butadiene, ppm.	III	Less than 5
1,2-Dichloroethane and other Compounds Boiling Above 25°C., ppm.	III	Less than 5
Total Organic Impurities, ppm.	III	50
Peroxides, as H_2O_2, ppm.	VII	0.01
Inhibitor, Phenol, ppm.	VIII	Nil
Water, ppm.	IX	50
Nonvolatile Matter, ppm.	X	25
Average Weight per Gallon, lb.		
at 20°C.		7.59
at 15.6°C. (60°F.)		7.66
Flash Point	Open Cup	Below 20°F.
Dangerous Article Description	----	Red gas label

(continued)

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TEST METHODS

Designated tests are made in acc rdance with current issues of UNION CARBIDE Standard Testing Methods. They are available from Union Carbide Corporation upon request.

PRECAUTIONARY LABELING

BAKELITE® Vinyl Chloride Monomer

DANGER! EXTREMELY FLAMMABLE LIQUID AND GAS UNDER PRESSURE
Keep away from heat, sparks, and open flame.
Keep container closed.
Use with adequate ventilation.
Avoid prolonged breathing of vapor.
FOR INDUSTRY USE ONLY

STORAGE AND HANDLING

Inhibited vinyl chloride monomer may be stored at normal atmospheric temperatures in steel pressure vessels. Uninhibited monomer may be stored either under refrigeration or at normal atmospheric temperatures in the absence of air, sunlight, or other catalyst for relatively short periods of time. All tanks, piping, instrument leads, relief valves, and equipment in contact with the monomer should be of steel and designed to have a working pressure of at least 125 psig. corresponding to the vapor pressure of vinyl chloride at approximately 150°F.. No copper or copper bearing alloys should be used in the storage facilities in contact with the monomer or its vapors. Cast iron is not recommended for use due to the relatively poor strength of this material under stock loads.

All liquid inlet lines should enter the bottom of the tanks or extend to the bottom of the tanks to prevent the accumulation of static charges on filling. In addition, all parts of the system should be bonded electrically to one another and to a common ground source so that electrical charges will be dissipated before they can accumulate to a serious degree.

The tanks should be equipped with a combination rupture disk and pressure relief valve. In case excess pressure ruptures the safety disk, the pressure relief valve will prevent the loss of the entire contents of the tank after the excess pressure has been relieved. The tanks should be designed for surface temperatures up to approximately 130°F. In localities where surface temperatures may go above the value, the tanks may be cooled with a water spray system. The tanks should not be filled to more than 90 per cent of volume capacity. A blanket of inert gas or vinyl chloride vapor must be maintained in the tanks at all times. No air should be allowed to enter the tanks at any time. Relief valve sizes should be selected t maintain the pressure within the vessel at not greater than 10 per cent of

the allowable w rking pressure when discharging under emergency verpressure conditions and to maintain the pressure within the vessel at n t greater than 20 per cent f the allowable working pressure under fire exp sure conditions. A.S.M.E. and local c de regulations should be followed in the design and construction of the tanks and relief devices.

Adequate diking and drainage should be provided under the tanks to confine and dispose of the liquid in case of vessel rupture. Local c des and insurance regulations should be consulted to determine how many tanks and what total storage volume will be permitted in a single diked area. A water deluge system is recommended to keep the tank shells cool in the event of fire exposure.

All outlet-lines from storage tanks should contain check valves to prevent contamination of tank contents. Before a tank is put into vinyl chloride monomer service, it should be purged with an inert gas until free of air. Tanks of less than 30,000 gallons capacity are most ec nomically constructed in the form of horizontal cylinders.

Outlet lines from the storage tanks should contain excess flow and fusible link shut-off valves for further protection in case of fire exposure.

Transfer lines should be of carbon steel and joined by welds or flanges, particularly if they are two-inches in diameter or over. "Teflon" gaskets are preferred. A centrifugal pump, with an explosion pr f electric motor drive, is recommended for this service. The pump should be equipped with a suitable mechanical seal; stuffing box type pumps are not recommended for vinyl chloride service.

Air, oxygen, ozone, peroxides, and certain organo-metallic compounds act as catalysts for polymerization and must be excluded from the storage system. Additional information on vinyl chloride is given in the Manufacturing Chemists' Association Chemical Safety Data Sheet SD-56.