

9.1.3 Company C³

These data are based on limited plant experience in implementing Research and Development recommendations. The reduction in vinyl chloride has been achieved by increasing thermal input, vacuum, time, or combinations of these parameters during the monomer recovery step.

Suspension Resins 1974 - Residual Vinyl Chloride Monomer

	Homopolymer Low M.W.	Homopolymer High M.W.	Copolymer All
Into dryer	500 ppm	200-300	100-150
Out of dryer	100 ppm	100	50
Dryer emission factor 1b VCM/ 100 1b PVC	0.04	0.015	0.0075

Dispersion^{1/} 1974 - Residual Vinyl Chloride Monomer

Into dryer	8,000-22,000 ppm
Out of dryer	15-50 ppm
Dryer emission factor 1b VCM/ 100 1b PVC	1.50

^{1/}Wacher process

9.1.4

One company has reported residual monomer levels in their dispersion resins to 300 ppm dry basis on a laboratory basis. The stripping equipment and conditions to achieve this level have not been reported, as they are considered proprietary. On a commercial scale, the company has been able to reduce monomer levels to 2000 ppm with a 20% production loss.⁷

9.2 CARBON ADSORPTION

9.2.1 Vendor Data⁴

One vendor of activated carbon has submitted data from laboratory studies

on the control of vinyl chloride by carbon adsorption. The conclusions of the studies were: activated carbon readily absorbs vinyl chloride in concentrations ranging from 50 parts per million (ppm) to over 30 percent by volume (300,000 ppm); one hundred percent removal of vinyl chloride is technically feasible using dual beds of activated carbon; activated carbon saturated with vinyl chloride can be regenerated in-place using either steam or hot nitrogen to desorb the vinyl chloride; and after 15 cycles of operation (saturation, desorption, and drying), no polymerization of vinyl chloride had occurred on the bed.

The following data were developed by this vendor in their study of the applicability of carbon adsorption to vinyl chloride recovery. The discussion and data are from the company's Bulletin 23-200.

"Cyclic Test Results"

The data in table I represent the results of tests conducted to determine the adsorption and desorption characteristics of activated carbon for a proposed VCM recovery system. A nitrogen stream containing 1 percent by volume VCM was passed through a 4.5-inch deep bed of Pittsburgh Type PBL 6x16 mesh activated carbon at ambient temperature and pressure at a flow of 30 feet per minute (fpm) until VCM breakthrough occurred. At this point, the VCM was desorbed by passing either steam or nitrogen at 300°F through the carbon bed. The system was operated for fifteen cycles-using steam as the regenerant for the first ten cycles and hot nitrogen for the last five.

As the data in table I indicate, no loss in adsorptive capacity was observed over the entire 15 cycles of