

## Recycling of Perfluoroheptane by Distillation

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A study on the recycling of perfluoroheptane( $C_7F_{16}$ ) by distillation was carried out under atmospheric pressure. Because of high decontamination efficiency, the ultrasonic method is applied to the loosely contaminated metal in a mixed solution of perfluoroheptane and anionic surfactant. To make a volume reduction of the secondary waste, recycling of the spent solution by distillation or filtration is necessary.  $Al_2O_3$  powders as a surrogate contaminant were added into a mixed solution of 99.9 vol% perfluoroheptane and 0.1 vol% anionic surfactant. The particle diameters of  $Al_2O_3$  powder were 0.05, 0.3, 1.0, 3.0 and 10.0  $\mu m$ , respectively. The tests were performed in the Liebig condenser with a heating mantle. Turbidity of each solution was measured before and after distillation. Irrespective of the particle diameter, all the  $Al_2O_3$  powders were fully separated from the perfluoroheptane by distillation. From the investigation of UV analysis, anionic surfactant was also separated. More than the 95 % of the PFC solution was recycled by distillation. As shown in Figure 1, the turbidity of PFC solution after 7 times of distillation is very low. This confirms that PFC can be reused many times without the loss of decontamination efficiency.

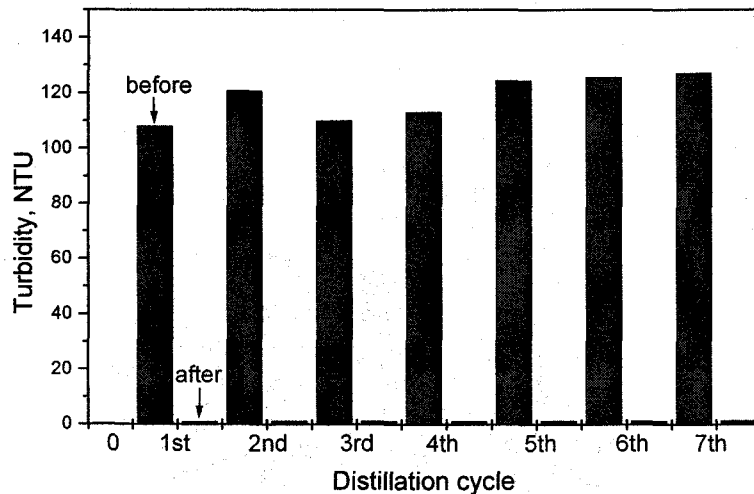


Figure 1. Variation of turbidity of PFC solution according to the distillation cycle.