

ABSTRACT

A process for purifying trioxane comprising the steps of extracting with benzene a trioxan-containing distillate obtained by heating an aqueous formaldehyde solution, supplying the resulting trioxan-containing benzene solution as crude to a distillation column, distilling away benzene from the top of the column while continuously distilling and separating trioxan from the bottom of the column, said distillation column having 30 or more plates, characterized in that:

- (i) the trioxan-containing benzene solution is extracted with water;
- (ii) then the trioxan concentration X (wt%) in the liquid composition at the crude feed plate of the distillation column is kept within the range that satisfies the relation of the following formula (1):

$$100 - \frac{50}{\gamma - 0.5} - 2(\gamma - 1)^{0.2} \leq X \leq 100 - \frac{50}{\gamma - 0.5} - 2(\gamma - 1)^{0.2} + 2R^{0.5} \quad (1)$$

wherein R is a reflux ratio, and γ is a parameter defined by the following formula (2):

$$\gamma = \frac{R(1 - C/100) + q}{R(1 - C/100) - C/100 + q} \quad (2)$$

wherein q is a weight ratio of the liquid portion in the crude, and C is a trioxan concentration (wt%) in the crude; and

(iii) the temperature of the distillation column is adjusted so that in a temperature profile of the distillation column where temperature is plotted as abscissa and the number of column plates as ordinate, the inflection point of the temperature profile will appear at a position which is below the crude feed plate and at least 10 plates away from the crude feed plate and also at least 5 plates away from the bottom of the column.