

Abstract

The invention relates to an integrated process for preparing trioxane from formaldehyde, comprising the steps of:

- a) a stream A1 comprising water and formaldehyde and a recycle stream B2 consisting substantially of water and formaldehyde are fed to a trioxane synthesis reactor and allowed to react to obtain a product stream A2 comprising trioxane, water and formaldehyde;
- b) stream A2 is fed to a first low-pressure distillation column and distilled at a pressure of from 0.1 to 2.5 bar to obtain a stream B1 enriched in trioxane and additionally comprising water and formaldehyde, and the recycle stream B2 consisting substantially of formaldehyde and water;
- c) stream B1 and a recycle stream D1 comprising trioxane, water and formaldehyde are fed to a second low-pressure distillation column and distilled at a pressure of from 0.1 to 2.5 bar to obtain a stream C1 comprising predominantly trioxane and additionally formaldehyde and water, and a stream C2 consisting substantially of formaldehyde and water;
- d) stream C1 is fed to a high-pressure distillation column and distilled at a pressure of from 0.2 to 17.5 bar to obtain the recycle stream D1 and a product stream D2 consisting substantially of trioxane,

in which a removal of the low boilers present in streams B1 or C1 may be undertaken between steps b) and c) or c) and d).

(Figure 1)