Integrated process for preparing trioxane from formaldehyde

Abstract

The invention relates to an integrated process for preparing trioxane from formaldehyde in which 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 in which the formaldehyde is converted to trioxane to obtain a product stream A2 comprising trioxane, water and formaldehyde; stream A2 is fed to a first distillation column and distilled at a pressure in the range from 0.1 to 2.5 bar to obtain a stream B1 enriched in trioxane, and the stream B2 consisting substantially of water and formaldehyde; stream B1 and a recycle stream D1 comprising trioxane, water and formaldehyde are fed to a second distillation column and distilled at a pressure in the range from 0.2 to 17.5 bar to obtain a product stream C2 consisting substantially of trioxane, and a stream C1 comprising trioxane, water and formaldehyde; stream C1 is fed to a third distillation column and distilled at a pressure in the range from 0.1 to 2.5 bar to obtain the recycle stream D1 comprising trioxane, water and formaldehyde, and a stream D2 consisting substantially of water and formaldehyde.

(Figure 1)