Production of trioxane from formaldehyde

A simplified account

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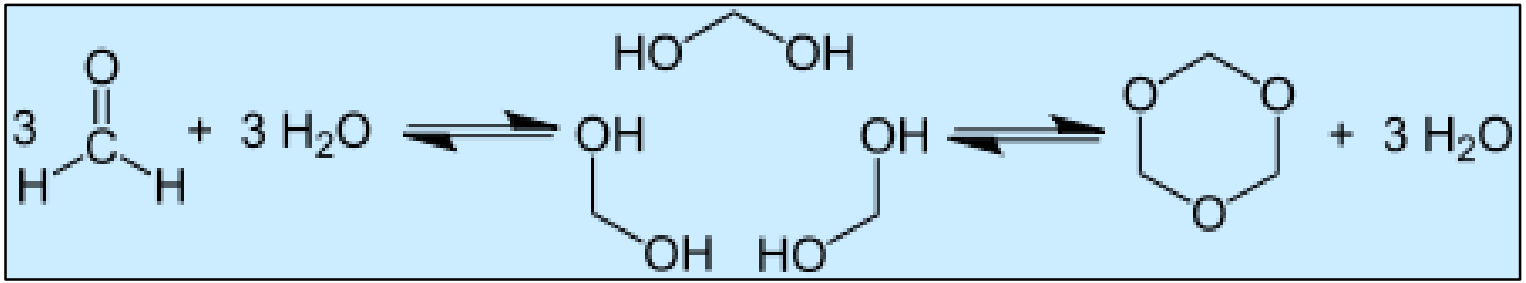
Formaldehyde

- The starting compound formaldehyde is one of the most important basic chemicals. It is required for the production of thousands of industrial and consumer products
- Formaldehyde is obtained from methanol, which originates from either methane or from renewable sources

C. Hobson, C. Márquez: Renewable methanol report; Methanol Institute (2018)

Trioxane from formaldehyde

- Formation of trioxane from formaldehyde in water under acidic conditions



C. Hobson, C. Márquez: Renewable methanol report; Methanol Institute (2018)

Trioxane recovery

- Trioxane has to be recovered from the reaction mixture (Trioxane, Water, Formaldehyde)
- Several methodologies are available
- Current methodologies aim at obtaining ultra-pure and water-free trioxane for the production of plastics (polyoxymethylene)

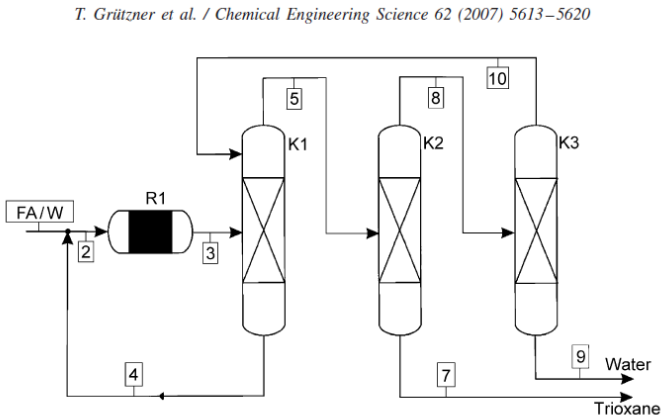


Fig. 5. Flow sheet of the new distillation based trioxane process.

T. Grützner et al.: Chem. Eng. Sci. 62 (2007) 5613-5620

New process for trioxane production

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- In the case of trioxane to be used as feedstock in fermentation processes, methodologies in the recovery of trioxane from mixtures will be relatively simple since remaining water is no issue
- A concept for a new process for trioxane production, that is adapted to the requirements of the use as fermentation feedstock, has been developed
- Productions costs will substantially decrease compared to polymer grade trioxane
- In depth analysis is currently going on