It is desired to have a simple and economical process to stabilize carbohydrate feedstocks in storage and in transport. It is desired to have a process which does not introduce unnecessary and/or undesirable agents into the feedstock, particularly agents which adversely affect the quality of biorefinery products, such as ethanol.

The present invention meets these needs.

SUMMARY OF THE INVENTION

A process to preserve a carbohydrate feedstock against contaminant microorganisms comprises or consists essentially of or consists of contacting the carbohydrate feedstock with a stabilized chlorine dioxide at a pH of at least 2.6. The concentration of the carbohydrate in the feedstock is at least 1% and preferably ranges from 1 to 70%, by weight, based on the total feedstock weight. The amount of stabilized chlorine dioxide is 10 to 10000 mg/kg, as available chlorine dioxide, based on the total feedstock weight. The carbohydrate feedstock preferably comprises a naturally-occurring carbohydrate. Surprisingly, the process is effective in the absence of added acid or oxidant to generate chlorine dioxide.

In one aspect, there is provided a process to preserve a carbohydrate feedstock against microorganisms comprising contacting the carbohydrate feedstock in a unit operation, wherein said unit operation is storage, or transport, or a step taken prior to the use of the carbohydrate feedstock, with a stabilized chlorine dioxide at a pH of at least 2.6 wherein the concentration of the carbohydrate is at least 1%, by weight of the feedstock, and the amount of stabilized chlorine dioxide added is 10 to 10000 mg/kg as ClO_2, based on total feedstock weight, wherein microbial population in the feedstock does not increase more than 1 $\log_{10}$ CFU/ml or 1 $\log_{10}$ CFU/g over a period of at least one month.

DETAILED DESCRIPTION

Trademarks herein are denoted in upper case.

The present invention comprises a process to preserve a carbohydrate feedstock against deterioration by contaminant microorganisms. The carbohydrate feedstock may be a carbohydrate solution or suspension in an aqueous medium. By the term "aqueous medium" as used herein is meant the medium is substantially water, such as for example greater than 80% water, preferably greater than 90% water, more preferably greater than 95% water. The aqueous medium can be greater than 99% water.

The process comprises or consists essentially of or consists of contacting the carbohydrate solution or suspension with a stabilized chlorine dioxide at a pH of at least 2.6, preferably at least 3, preferably at least pH 3.5, preferably at least pH 4, preferably at least pH 4.5 and preferably not greater than pH 9. The concentration of the carbohydrate is