

ABSTRACT

UPGRADING OF A RAW BLEND INTO A DIESEL FUEL SUBSTITUTE: POLY(DIMETHOXYMETHANE)

A method for forming poly(dimethoxymethane) includes a step of separating a formaldehyde-containing blend into a first bottom stream and a first top stream. The first formaldehyde-containing blend includes methanol, formaldehyde, and water while the first bottom stream includes water. The first top stream includes dimethoxymethane that is produced from the reaction between methanol and formaldehyde. The first top stream is separated into a second bottom stream and a second top stream. The second bottom stream includes poly(dimethoxymethane) while the second top stream includes dimethoxymethane, methanol, and ethanol. The second top stream is separated into a third bottom stream and a third top stream. Third bottom stream includes methanol and ethanol while the third top stream includes dimethoxymethane. The third top stream can be recycled to form additional poly(dimethoxymethane). A system that implements the method is also provided.

[Figure 1]