Preliminary study on formation of ex situ fouling deposit from palm-based coconut milk substitute and RBD palm oil

ABSTRACT

Fouling deposit and cleaning processes present a major impact to the manufacturing industry in terms of economics, product quality, product safety and plant efficiency. An efficient cleaning process is essential in order to remove fouling deposit to maintain quality and safety of production process as well as the product. Thus, cleaning should be done with minimum cost and time, and understanding soil properties and how cleaning happened, will help in achieving the industrial goal of minimizing its costs. This study aims to identify the characteristics of fat-based fouling deposit through crystallization freeze fouling deposition method. Selected materials for fat-based fouling deposit physical models are palm-based coconut milk substitute (PBCMS) and the refined, bleached and deodorized palm oil (RBDPO). Deposit's density, hardness, adhesiveness are among the physical characteristics investigated. Ex situ crystallization method was done at three temperatures (5, 15 and 25°C) where fouling deposits appearances was found changes from gel-like form to semi-solid as the temperature increased. As the ingredient of palm-based coconut milk substitute is RBDPO, fouling formation using this material was also done through crystallization fouling to further understand the deposit's characteristics. Similar analyses were done on the RBDPO fouling deposit and comparison was made between the two fouling deposits. Significance and how these characteristics will affect its cleaning processes were discussed.

Keyword: Fouling; Crystallization: Fat-based: Physical characteristics; RBDPO