International Journal of ChemTech Research
CODEN (USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.12 No.1, pp 290-295, 2019

Characterization and application of diaion adsorbent (Sepabeds SP 700) for organic compounds removal from waste water of clove oil industry

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Abstract : Diaion SP-700 adsorbent (Sepabeads^{TM} SP700) was evaluated as adsorbent to removal of organic compound from wastewater of essential oil industry. This research used waste of clove oil was produced from hydrodistillation process of *Syzigium aromaticum*. Diaion resin was used in the experiment without any chemical treatment. Identification of functional group from diaion SP-700 used infra red (IR) spectroscopy. The potential use of diaion adsorbent for removal organic compounds were investigated as chemical oxygen demand (COD) that indicated the organic matter that found in the wastewater. The result showed the spectrum of IR from diaion adsorbent with wavenumber were 3020 cm^{-1}, 2923 cm^{-1}, 1601 cm^{-1}, 1486 cm^{-1}, 1360 cm^{-1}, 893 cm^{-1}, 827 cm^{-1}, 791 cm^{-1}, 707 cm^{-1}, 568 cm^{-1}. The functional group were found as C-H and N-H (3000 cm^{-1}), group of C-O, C-S, and C-Cl (650-1000 cm^{-1}). The result showed variation of volume from wastewater can decrease of COD content. Variation of volume from wastewater were 10 to 20 ml can decrease of COD content from 5447.12 mg/L to 5248.32 mg/L. Dose of adsorben was 0.5 gram can decrease of COD from 5334,5 to 310,128 mg/L but if dose of resin was increase to 2 gram caused the increase of COD value to 8524.54. The recovery of clove oil from diaion resin resulted of eugenol, eugenol acetate dan methyl ester with composition of 73,31 %, 6,21% , and 0,43 %, respectively.
Keywords : Diaion resin, organic compound, waste water, clove oil.

Askal Maimulyanti *et al* /International Journal of ChemTech Research, 2019,12(1): 290-295.

DOI= http://dx.doi.org/10.20902/IJCTR.2019.120134

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