Title:
Investigation on the effect of monoglyceride concentration on palm oil-based alkyd resin preparation

Journal:
Journal of Oil Palm Research, Volume 33, Issue 2, June 2021.

Document Type:
Article (open access)

Authors:
Ramli, R.,
Ong, H.R.,
Hong, C.S.,
Khan, M.D.M.R.,
Yunus, R.M.,
Halim, R.M.,
Aziz, A.A.,
Ibrahim, Z.,
Islam, M.R.

Full text link:
Publisher : http://jopr.mpob.gov.my/investigation-on-the-effect-of-monoglyceride-concentration-on-palm-oil-based-alkyd-resin-preparation/

Scopus preview:
https://www.scopus.com/record/display.uri?eid=2-s2.0-85112547929&doi=10.21894%2fjopr.2020.0086&origin=inward&txGid=86467b9178b1d8b908863ed1e328ca13

Abstract:
Alcoholysis and esterification are useful methods to prepare polyalkyds from vegetable oils. Reaction parameters and different concentration of raw materials have showed a significant role on the properties of the formulated polyalkyds. The formation of monoglyceride (MG) and diglyceride (DG) during the synthesis and their ratio may have a significant role on the properties of the polyalkyds. The goal of the present article was to investigate the effect of MG to DG ratio on alkyd resin synthesised from palm oil by alcoholysis-polyesterification reactions catalysed by homo-hetero catalytic system. Different ratios of MG:DG were obtained from alcoholysis reaction by taking samples at different reaction times. The formation of the alkyd resin was confirmed by Fourier transform infrared spectroscopy (FTIR) with the presence of ester group (C-O-C). The molecular weight (M_w) of alkyd resin was determined by gel permeation chromatography (GPC). The alkyd resin prepared at higher MG:DG ratio exhibited higher initial rate of polyesterification reaction with higher M_w. In addition, the film of alkyd resin prepared from higher MG:DG ratio presented better pencil hardness and chemical resistivity.