

**DEGRADATION BEHAVIOUR OF THIN FILM OPTICAL RESIN BASED ON
EPOXIDISED SOY BEAN OIL UPON UV EXPOSURE**



**FACULTY OF APPLIED SCIENCES
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM, SELANGOR
MALAYSIA**

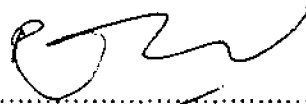
DISEDIAKAN OLEH :

**PROF MADYA DR RAHMAH MOHAMED
EN AHMAD FAIZA MOHD**

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PROJECT TEAM MEMBERS

PROF MADYA DR RAHMAH MOHAMED
Project Leader



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Signature

EN AHMAD FAIZA MOHD
Project Member



.....
Tandatangan

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ABSTRACT

Epoxidised soybean oil is a derivative of soybean oil having (epoxy) functional groups, which are products from epoxidation of carbon-carbon double bonds in soybean oil. Epoxidised soybean oils (ESO) are used as plasticizers, crosslinking agents, stabilizers and are intermediates for polyol production used in polyurethanes and plastics resin after the oxirane ring is opened by hydroxylation or alcoholysis. In this study, modified ESO had been used for various applications for surface coatings, composite and optical products. For light stabilized coating system, unsaturated monomer and UV absorber may be incorporated to increase UV stability and prevent prior degradation in transmission and thermal stability. Thermal stability through mass loss degradation profile was evaluated and analysed using thermal gravimetric analysis (TGA). Thermal kinetic profile with TGA showed faster reaction with high scan rate and degradation kinetic parameter taken at 600C showed higher E_a values for Photoinitiator A as compared to Photoinitiator B type. FTIR analysis done revealed the formation of acrylated ESO and transmission is affected under sunlight exposure. As for degradation upon pH changes when immersed in water according to ASTM D5402. Acrylated resin was most resistant in 0.01M alkaline medium rather than in water and same molarity of acidic solution.