

PREPARATION AND CHARACTERIZATION
OF RICE STARCH AND TRANSITION METAL
STEARATES FILLED POLYPROPYLENE

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Master of Science

UNIVERSITI MALAYSIA PAHANG



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I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

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LIST OF SYMBOLS

| | |
|------------|--|
| T_c | Crystallization temperature |
| T_m | Melting temperature |
| T_g | Glass transition temperature |
| rpm | Rotation per minute |
| w_f | Final weight of sample |
| w_i | Initial weight of sample |
| σ_t | Tensile strength (MPa) |
| F_{max} | Maximum load (N) |
| A | Cross sectional area of sample |
| L | Length at breaking point of sample |
| L_o | Initial length of sample |
| w_d | Final weight of sample |
| wt % | weight percentage |
| T_{max} | Maximum temperature at decomposition of sample |

LIST OF ABBREVIATIONS

| | |
|-------------------|--|
| ASTM | American Society for Testing and Materials |
| AWM | Accelerated Weathering Machine |
| AWT | Accelerated Weathering Test |
| CoSt ₃ | Cobalt Stearate |
| DSC | Differential Scanning Calorimetry |
| EB | Percentage of Elongation at Break |
| ED | Enzymatic Degradation |
| FeSt ₃ | Iron Stearate |
| FTIR | Fourier Transforms Infrared Spectroscopy |
| MAPP | Maleic Anhydride Polypropylene |
| PCL | Poly (ϵ - Caprolactone) |
| PE | Polyethylene |
| WT % | Per Hundred Resin |
| PLA | Poly Lactic Acid |
| PP | Polypropylene |
| PS | Polystyrene |
| PVC | Polyvinyl Chloride |
| RS | Rice Starch |
| SEM | Scanning Electron Microscopy |
| TGA | Thermo Gravimetric Analysis |
| TM | Tensile Modulus |
| TMS | Transition Metal Stearates |
| TRS | Treated Rice Starch |
| TS | Tensile Strength |
| URS | Untreated Rice Starch |
| UV | Ultra Violet |
| WA | Water Absorption |