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Polymer Coating Surface Property Investigation with Sustainability Considerations

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Polymer Coating Surface Property Investigation with Sustainability Considerations

A Major Qualifying Project

submitted to the Faculty of

WORCESTER POLYTECHNIC INSTITUTE

in partial fulfillment of the requirements for the

degree of Bachelor of Science in Chemical Engineering

By:

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Approved:

Professor Robert W. Thompson, Major Advisor

Department of Chemical Engineering



ABSTRACT

Consumer products often use plastics that need to have surface properties not germane to the plastic itself; so the part is coated with other materials. In coating these substrates, the process often uses volatile organic compounds or heavy metals. In a joint effort between leading plastics manufacturer, Nypro Inc., and WPI an investigation was conducted to evaluate coatings based on their environmental compatibility, surface properties, and future improvements and opportunities Nypro could undertake in order to improve their environmental compatibility while still providing a product comparable to that which they do on a daily basis.