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Recovery and recycling of laminated packing materials

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It still remains a challenge to the recycling industry to develop an efficient, economical and environmentally-friendly commercial laminated packaging waste recycling system. Laminated packaging materials comprise a thin foil of aluminum, laminated in a matrix of paper and/or plastic layers, and are used for the packaging of consumer goods such as food, drinks, pet foods, toothpastes, and cosmetic products. Although few technical solutions were developed to reuse or recycle the waste, only one technology has been commercialized they have been largely impractical and not economically feasible for laminated packaging waste.

The objective of the research is to develop a recycling technique to segregate aluminum from component plastics and paper in post-consumer laminated packaging waste. The development of such a technique is essential in the recovery of valuable aluminum, cellulose fibers, and pure polymers. All these recovered materials are high valued products that are much cheaper to produce using this recycling method than conventional processes. In this project, recycling of laminated packaging waste using a solvent based delamination/dissolution would be examined. Plastics dissolution and recovery would be accomplished using organic solvents to reclaim the component polymers, typically polyethylene. Aluminum and paper would be recovered as the final insoluble residue after separating the plastics. This technique is expected to yield higher recovery rates and the reclaimed products quality would be in comparison with the virgin materials.

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