ENVIPLAST®

Company
- Inter Aneka Lestari Kimia, PT

Employees
- 550

Production capacity
- 50,000 metric tons/annum

Business units
- Building & Construction Chemicals
- Masterbatch & Polymer Compounds
- Biopolymer compounds

Biopolymer compound products
- ENVIPLAST® Pellets
- ENVIPLAST® Bags

ENVIPLAST® key features
- Made mainly from natural starch, vegetable oil derivatives and other natural abundant resources
- Contains no polyolefin plastic
- Harmless when consumed by animals
- Safe for plant growth
- Good oxygen barrier
- Good antistatic property
- Recyclable with paper

Company

Inter Aneka Lestari Kimia, PT was founded in 1985 to manufacture building and construction related chemical products. To serve the growing plastic industries in the country, the masterbatch and polymer compound business unit was established in 1990. The Biopolymer compound business unit was set up in 2006.

Product

ENVIPLAST® as a bio-based polymer compound is introduced to the market after extensive research and development for over 6 years. ENVIPLAST® offers alternative solutions to the issues by introducing bio-based polymer compound pellets and bags in 2011 to the market. ENVIPLAST® having a sustainable lifecycle, mostly go back to nature in the form of CO_2, H_2O and biomass.

Shopping bag

ENVIPLAST® bags have a density of 1.27 – 1.32 g/cm^3, will soften in water, are consumable by macro and micro-organism, thus causing low pollution both on land and in marine environment.

ENVIPLAST® bags contain no polyolefin plastic. Its manufacturing process is similar to that of conventional PE bags, but the conventional PE blown film machines must be modified. Existing PE bags manufacturers can still continue operation with a low modification cost.

ENVIPLAST® pellets

Internal observation has shown that ENVIPLAST® bags – when accidentally disposed in nature – are consumed by land and aquatic animals (snails, worms, crickets, crayfish, to name a few). It passed the animal safety study as referred to the Assessment of Acute Oral Toxicity by WIL Research, The Netherlands, based on OECD No.423 (2001), EC No.440/2008 B1, EPA OPPTS 870.1100 (2002), JMAFF (2011).

ENVIPLAST® bags physical properties:

PROPERTY	UNIT	VALUE
Density	g/cm^3	1.27 – 1.32
Melt Flow Index of pellets (170 °C, 10 kg)	g/10 min	15 – 20
Tensile Strength	Mpa	8 – 14
Elongation	%	120 – 160

Immersion test of ENVIPLAST® bags:

MEDIA	CHANGE
Hot water ≥ 80 °C	Dissolved
Water (ambient temperature)	Weakened
10 % HCl solution	Dissolved
20 % NaOH solution	Weakened
Vegetable oil	No visual change
Mineral oil	No visual change
Alcohol	No visual change
Aromatic solvent	No visual change
Hydrocarbon solvent	No visual change

ENVIPLAST® films also have electrostatic dissipative property, with a surface resistivity (ASTM D257) of $10^{7.5}$–10^{10} ohm/cm^2 compared to HDPE/LDPE at 10^{13} ohm/cm^2. Hence ENVIPLAST will not attract dust when it used as wrapping material. It is also potential to be used as antistatic wrapping for electronic components, which are prone to interference caused by electrostatic.

Its good oxygen barrier (0,0235 mL/100in^2.day, ASTM D3985, at 0 % Relative Humidity, 23 °C) makes ENVIPLAST® potential to be used as a protective layer in food and healthcare multi-layer flexible packaging. However this property is influenced by the level of the air humidity.

Cassava plant

Lifecycle

ENVIPLAST® bags can be recycled together with paper products.

ENVIPLAST® bags as substitute for conventional single use PE plastic bags, are potentially applicable for supermarkets, hotels, hospitals, department stores, as well as industrial wrapping, animal waste bags and for those, who wish to contribute to a greener environment.

Potential applications:

- Shopping bag
- Garbage bag
- Laundry bag
- Disposable apron
- Electronic wrapping material
- Spare parts wrapping material (dry and lubricated)
- Multipurpose disposable packaging

ENVIPLAST® is continuously being developed to meet performance criteria in different applications.

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