

## **CELLOPHANE**

Cellophane is the oldest transparent packaging product used to encase cookies, candies, and nuts. First marketed in the United States in 1924, cellophane was the major packaging film used until the 1960s. In the more environmentally-conscious market of today, cellophane is returning in popularity. As cellophane is 100% biodegradable, it is seen as a more earth-friendly alternative to existing wrappings. Cellophane also has an average water vapor rating and excellent machinability and heat sealability, adding to its current popularity in the food-wrapping market.

Unlike the man-made polymers in plastics, which are largely derived from petroleum, cellophane is a natural polymer made from cellulose, a component of plants and trees. Cellophane is not made from rainforest trees, but rather from trees farmed and harvested specifically for cellophane production.

Cellophane is made by digesting wood and cotton pulps in a series of chemical baths that remove impurities and break the long fiber chains in this raw material. Regenerated as a clear, shiny film, with plasticizing chemicals added for flexibility, cellophane is still comprised largely of crystalline cellulose molecules. This means that it can be broken down by micro-organisms in the soil just as leaves and plants are.

Cellulose belongs to a class of compounds known in organic chemistry as carbohydrates. The base unit of cellulose is the glucose molecule. Thousands of these glucose molecules are brought together in the plant growth cycle to form long chains, termed cellulose. These chains are in turn broken down in the production process to form cellulose film used in either an uncoated or coated form in packaging.

When buried, uncoated cellulose film is generally found to degrade within 10 to 30 days; PVDC-coated film is found to degrade in 90 to 120 days and nitrocellulose-coated cellulose is found to degrade in 60 to 90 days.

Tests have shown that the average total time for complete bio-degradation of cellulose film is from 28 to 60 days for uncoated products, and from 80 to 120 days for coated cellulose products. In lake water, the rate of bio-degradation is 10 days for uncoated film and 30 days for coated cellulose film. Even materials which are thought of as highly degradable, like paper and green leaves, take longer to degrade than cellulose film products. Conversely, plastics, polyvinyl chloride, polyethylene, polyethylene terephthalate, and oriented-polypropylene show almost no sign of degradation after long periods of burial.

Cellophane films are used in a wide variety of packaging applications, including:

- Confectionery, especially twist wrap
- Board lamination
- Yeast
- Soft Cheese
- Tampon wrap
- Variety of industrial applications, such as a base for self-adhesive tapes, a semi-permeable membrane in certain types of batteries and as a release agent in the manufacture of fibreglass and rubber products.

- Food Grade
- Nitrocellulose coated
- PVDC Coated
- Medicine packaging
- Adhesive tapes
- Colored films