



Oxo Biodegradable Masterbatches

Merging Ideas

Largest Manufacturer & Exporter of Color and Additive Plastics Masterbatches in India.

Presented by : A Marketing Team Presentation

Date : 2nd Sept. 2010

Place : Mumbai



Environment Friendly Product



Plastics Waste Management - An Issue

- **Plastics are durable**, useful and economic materials for use in commodity as well as industrial applications.
- **Plastics are not biodegradable**, thus even though plastics are durable they can cause major problem when disposal is required.
- **Plastic waste** can accumulate in the environment for decades resulting in severe environmental problems.



Solution To The Problem

- **Solution** to this problem is to ensure biodegradation of plastics material
- **Biodegradation** of plastics can accelerated using catalytic amount of metal salts in polymer during processing stage or with use of starch as a filler in plastics



Definition of Degradation

- According to ISO 472:1988 – It is defined as a permanent change in the chemical structure of a plastic involving a deterioration in the physical properties of the plastic.
- The chemical, physical, and/or biological process which leads to disintegration of the plastic



Degradable Plastic

- Is a plastic designed to undergo a significant change in its chemical structure under specific environmental conditions resulting in a loss of some properties



Degradable Plastics

1. Photodegradable
2. Thermal degradable
3. Oxo-degradable
4. Biodegradable- Starch/polymer Blends
5. Compostable- Derived from Starch- PLA,PHA,PHB
6. Water Soluble- PVOH

How Plastics Degradе?

- **Photo Degradable Plastics** - Degradation results from the action of natural daylight.
- **Thermal Degradable Plastics** - Degradation results from the action of heat.
- **Oxo-Biodegradable Plastics** - Degradation results from the action of sun light and/or heat and by the action of micro organism.



How Plastic Degrade?

- **Biodegradable Plastics** - Degradation results from the action of naturally occurring micro organisms such as bacteria, fungi and algae.
- **Hydrolytically degradable Plastics** – Degradation results from hydrolysis



Plastiblends Degradable Additive MB

- This is an Oxo-biodegradable additive M.B. It is developed in technical collaboration with Willow Ridge Plastics – USA.
- The degradation process undergo in two steps, initially by an oxidation process that is promoted by the inclusion of pro-degradant additive & subsequently by biodegradation.
- The addition of the M.B. to polyolefin promotes the degradation of the polyolefin under certain conditions to CO₂, H₂O & biomass.



Plastiblends Degradable Additive MB

- The degradation process can be initiated with either or both of the following conditions. Heat and/or UV rays emitted from Sun. These processes are referred to as Thermal oxidative & Photo oxidative.
- As the oxidation process progresses, the molecular weight of the polyolefin is reduced by break down of the polymer chain. At a point the microorganisms feed on the break down product. The end product is carbon dioxide, water & biomass.
- The life of the polyolefin film can be controlled by increasing or decreasing the percentage of the M.B. in to the plastic material.

Products We Offer

- D 48/10/402 – carrier resin PE, Natural color
- D 48/10/404 - carrier resin PE, Natural color
(more concentrated than 402)
- D 50/10/401 – carrier resin PP, Natural color
- D 48/BL/21 – carrier resin PE, Black color.
Dosage 3 -10 %

Products We Offer

NEWLY INTRODUCED
ECONOMICAL

- D 48/10/411 – Carrier Resin PE
- D 48/10/412 – Carrier Resin PE
- D 48/10/411 T – Carrier Resin PE
- D 48/10/412 T – Carrier Resin PE

Products We Offer

SR. NO	GRADES	REMARKS
01	D 50/10/401	FOR PPTQ, BOPP FILMS & THERMOFORMING APPLICATION. ADDITION LEVEL IS 1-5%
02	D 48/10/402	FOR CARRY BAGS, LINERS & GARBAGS BAGS. ADDITION LEVEL IS 1-5 %
03	D 48/10/404	FOR CARRY BAGS, LINERS & GARBAGS BAGS. ADDITION LEVEL IS 1-3 %
04	D 48/BL/21	BLACK MB FOR GARBAGS BAGS & AGRICULTURE FILM ADDTION LEVEL IS 8-10 %
01	D 48/10/411	FOR CARRY BAGS, LINERS & GARBAGS BAGS. ADDITION LEVEL IS 5 %
02	D 48/10//412	FOR CARRY BAGS, LINERS & GARBAGS BAGS. ADDITION LEVEL IS 10 %
03	D 48/10/411 T	TRANSPARENT FILM THAN 411 & 412. ADDITION LEVEL IS 5%
04	D 48/10/412 T	TRANSPARENT FILM THAN 411 & 412 . ADDITION LEVEL IS 10%

Oxo Bio Degradation





How To Determine Degradability?

- Loss of physical properties is the primary way to measure degradation in plastic.
- ASTM- standards to measure degradability of plastic & to classify the degradable plastic.
- ASTM-D 3826-91 - uses a Tensile test & Elongation test for determining the degradation end point in PE & PP films.
- These are all accelerated test methods.



Degradability Test Certification

Following Institutes perform the degradability tests as per ASTM standards.

1. CIPET– Chennai.
2. Sriram Institute for Industrial Research.- Delhi.
3. Council for Scientific & Institutional Research.(CSIR)

Degradation speed

0 Days



After 30 Days



After 55 Days



Degradation Speed

It is mainly dependent on

- Concentration of Degradable Additive M.B
- The thickness of film
- Type of resin carrier – LDPE, PP,HDPE
- Level of antioxidant / UV absorber present in the carrier resin.
- Presence & level of colored pigments such as carbon black, TiO₂ and colorants.
- Temperature of processing.
- Type of exposure-underground/above the ground.
- Type of printing ink and solvent used.



Test Certification For Food Contact

1. The active are listed comply to requirements in section B of EC Directive 2002/72/EC on “Use in dry food contact applications”
1. CFTRI-Mysore & IIP-Mumbai -The M.B. tested for overall migration test as per BIS-9845-1998 and the data obtained being within the tolerance limit.
2. Institute for Toxicological Studies, Pune - The M.B. is also tested for Toxicological test as per USP – XXIV. The results obtained complies with the test



Advantages of Oxo-Degradable MB

- Environmentally friendly.
- Cost effective.
- Can be processed on existing machinery/ equipment.
- The dual action MB D48/10/402 & D50/10/401 can provide clear film.
- The degradation speed & intensity can be controlled without sacrificing the strength, clarity and physical properties of the film.
- Tumble blending of the MB in dosage suggested is adequate.



Advantages of Oxo-Degradable MB

- Polymeric part of biodegradable plastics blended with starch remains in the soil even after starch is degraded completely.
- Oxo biodegradable plastics completely degrades into CO_2 , water and Biomass leaving no polymeric behind.



Advantages of Oxo-Degradable MB

- Avoids the emission of methane
- No odor smells after degradation compared to other biodegradable products
- Won't hurt forestland and reduce biodiversity
- Very low cost
- Great tensile strength and leak proof
- Does not use footstock and has no impact on footstock prices or availability
- No specialized storage or handling required



Application Areas

What products are currently manufactured using MB ?

- Carry bags, Jhabla bags, shopping bags.
- Agricultural mulch film, raffia bags.
- Compost bags, refuse bags, trash bags.
- Garbage bags
- Nursery bags
- Hygiene films - hospital bags
- Specialty films – air bubble film, stretch wrap film.
- Lamination films .
- PPTQ film – hosiery bags, textile wrap



Application Areas


What products are currently manufactured using MB ?

- Branded carrier bags
- Checkout bags - Used in supermarkets globally
- Plastic film for wrapping newspapers and magazines.
- Bread bags Frozen food bags
- Wrappers for cigarette packets
- Shrink-wrap and pallet-wrap

Price List

Sr. No.	Grade	Prices * Rs / Kg	Minimum Order Qty
01	D 50/10/401	163	Min 300 Kg
02	D 48/10/402	169	XSTK
03	D 48/10/404	209	Min 300 Kg
04	D 48/BL/21	179	Min 300 Kg
01	D 48/10/411	76	XSTK
02	D 48/10//412	70	Min 300 Kg
03	D 48/10/411 T	83	Min 300 Kg
04	D 48/10/412 T	76	Min 300 Kg

* Prices are as per 12th August 2010 Price List please refer latest pricelist for effective prices at the time of placing your requirements with us.



For more details regarding the technical specifications and trial samples
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THANK YOU