

**CERTIFICATE OF ANALYSIS**

<p>Product Name : Plaslife Oxo-biodegradable Plastic Masterbatch          Product Code : Plaslife LD100          Product Type : Polymer Plastic Masterbatch          Production Date : 15.07.2011          Production Reference No : 000303</p>	
<p><b>Description</b></p>	
<p>Plaslife LD100 oxo-biodegradable masterbatch is used to produce environmentally friendly plastics. It is suitable for polyethylene and polypropylene products which need short shelf life and may cause pollution on land.</p> <p><b>Certified</b> by SP Sweden, based on <b>ASTM D6954</b> international standards "Exposing and Testing Plastics that Degrade in the Environment by a Combination of Oxidation and Biodegradation".</p> <p>Active material (P-life) is a patented technology based on US Patent No.6482872 "Process for Manufacturing a Biodegradable Polymeric Composition". P-life is a specially formulated proprietary mixture of catalysts, fatty acids derived from palm tree oils.</p>	
<p><b>Physical Properties</b></p>	
<p><b>Carrier Resin</b>          Type : LLDPE          Melt Index : 1.0 g/10min. (ASTM D 1238)          Density : 0.918 g/cm<sup>3</sup> (ASTM D 1505)</p>	<p><b>P-life Active Material</b>          Melt Indeks : 6-7 g/10min. (ASTM D 1238)          % Moisture : ≤0.10%          % Volatiles (25°) : None          Theoretical Density : 0.93 g/cm<sup>3</sup>          Color : Light Beige</p>
<p><b>Application Conditions</b>          Usage Rate : 1-3%          Application Methods : Injection, Blown film, Extrusion</p>	<p><b>Packaging</b>          Package Type : PE coex bag (White/Black)          Weight : 25 Kg</p>
<p><b>ASTM Standards Testing Methods for Accelerated Degradation Testing</b></p> <ul style="list-style-type: none"> <li>✓ Oxidative-Degradation Testing : D5510 "Heat Aging of Oxidatively Degradable Plastics", Conditions : 80°C oven, forced air-ventilation</li> <li>✓ Photo-Degradation Testing : G154 "Operating Fluorescent Light Apparatus for UV Exposure of Non-Metallic Materials", Condition : 340nm UV lamp, 20 Hrs UV, 4 Hrs condensation, 50°C</li> <li>✓ Tensile Testing : D3826 "Degradation End Point Using a Tensile Test" Elongation and Tensile Strength : Machine Direction (MD)              Samples : 2" length, N=5(4), Test speed : 20"/min</li> </ul>	

<b>FDA Approvals</b>			<b>FDA Migration Tests (FDA 21CFR 177.1520)</b>			
<b>P-life</b>	<b>%</b>	<b>FDA</b>	<b>Testing Items</b>	<b>Results</b>	<b>Pass Criteria</b>	<b>Remarks</b>
Metal Salt of Fatty Acid A	50-70	21CFR 175.300	Extractable fraction in N-hexane	2.2%	6.4%	Pass
Metal Salt of Fatty Acid B	10-20	21CFR 178.2010	Extractable fraction in Xylene	5.2%	9.8%	Pass
Lubricant	10-20	21CFR 175.105				
<p align="center"><b>RoHS and Heavy Metal</b></p> <p>Complies with Rohs directives and does not contain heavy metals. Please inquiry related reports.</p>			<p><i>Testing Body : Hong Kong Productivity Council</i></p>			
<b>Properties of Plaslife Dosed PE Film</b>						
<b>Properties</b>	<b>Plaslife HDPE</b>		<b>HDPE 100%</b>			
Tensile Strength at Break (kg/cm <sup>2</sup> ) MD	763		741			
Elongation at Break (%) MD	85		92			
Dart Impact (g)	200		170			
Tear Strength (g) MD	64		51			
<i>Thickness of films:0.015mm, Blowing Temperature: 190c</i>						
<b>Storage Conditions</b>						
<p>Dry and unhumid environment.</p> <p>It is highly recommended to store under the room temperature (21°C).</p> <p>Do not expose to direct sunlight.</p> <p>Keep it closed in original package and on pallet.</p> <p>In recommended storage conditions, shelf life is 4 months for unopened product, 2 months for opened product.</p>						
<b>Hazards Identification</b>						
<p>Routes of Entry : Eyes, Ingestion, Inhalation, Skin.</p> <p>Target Organs : Central nervous system, eyes, skin, respiratory system, lungs, mucous membranes.</p> <p>Cancer Information : This product (or components) is not listed as a carcinogen according to OSHA, NTP, IARC and ACGIH</p> <p>Inhalation : May cause respiratory irritation, central nervous system effects. Over exposure may cause drowsiness, dizziness, nausea, vomiting and headache.</p> <p>Eyes : May cause eye irritation and damage to the eye if not removed promptly.</p>						

**Skin :** Direct contact may cause moderate to severe irritation with drying, redness cracking and blistering. Solvents may be absorbed through the skin and cause adverse effects.

**Ingestion :** Ingestion may cause gastrointestinal irritation (nausea, vomiting, diarrhea). Aspiration of the material into the lungs can cause lung damage. Ventricular fibrillation may occur. Prolonged exposure may result in gastrointestinal burns.

**Medical Conditions Aggravated by Exposure :** May aggravate pre-existing respiratory and skin disorders and allergies.

### **First Aid Measures**

**Eyes :** IMMEDIATELY flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. GET MEDICAL ATTENTION IMMEDIATELY.

**Skin :** Remove contaminated clothing and shoes promptly. Wash thoroughly with soap and water and large amounts of water until no evidence of chemical remains (approximately 15 minutes). Wash clothing before reuse. IF IRRITATION OR REDNESS OCCURS, GET MEDICAL ATTENTION.

**Inhalation :** Remove to fresh air. If breathing is difficult, have trained person administer oxygen. If respiration stops, have a trained person administer artificial respiration. GET MEDICAL ATTENTION IMMEDIATELY.

**Ingestion :** Get medical attention immediately. Do not induce vomiting. If vomiting occurs, keep head lower than hips to prevent aspiration.

**Notes to Physician :** None.

### **Toxicological Information**

None found for this product.

### **Ecological Information**

Metal compounds are known to have detrimental effects on aquatic organisms.

### **Disposal Considerations**

Dispose in closed containers, at an approved landfill, in accordance with local, state and federal regulations. Material may also be flushed with water to a wastewater treatment.

The information and recommendations made herein (including data and statements) are based upon our research and are believed to be accurate, but no guarantee, either expressed or implied, is made with respect thereto or with respect to the infringement of any patent. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with any other materials or in any process. In all cases, it is the responsibility of the user to determine the applicability of such information or the suitability of any products for their own particular purpose.