

How to choose slip masterbatch for blown film manufacturers

Cas, Genuine Plastic,

September 8,2019

It is a common problem for film manufacturers: plastic film adhesion, migratory of slip masterbatch influence heat seal printing performance.

Reason: It is mainly that the film is in a vacuum tight state after the film is closed, and it is difficult to separate.

Solution: Add slip masterbatch; for films with a heat seal and printing requirements, chose non-migratory low friction coefficient anti-stick masterbatch.

Effectation of slip masterbatch:

1. Make film unwinding and winding easily.
2. easy to open during the use of the film.

The consists of slip masterbatch:

The slip masterbatch is composed of a carrier resin, an anti-adhesive agent or a slip agent and various auxiliary agents. The anti-adhesive agent and the slip agent mainly include: oleic acid amide, erucamide, SiO₂.

How to choose slip masterbatch?

To answer this question, we will introduce as following parts:

- (1). How to meet the film performance requirements.
- (2). How Common packaging film products chose slip masterbatch.

1.General principle in choosing slip masterbatch

In addition to considering its excellent open anti-sticking effect, the selection of slip masterbatch mainly includes the following points:

- (1). Optical properties: To obtain the best transparency and the lowest haze, the opening slip agent must use a refractive index and resin similar (1.49), narrow particle size distribution, suitable particle size, the amount of addition can achieve the desired effect.
- (2). Dispersibility: The particle size of the anti-blocking agent is critical. Smaller size, the better the dispersion. The large particle size will affect the apparent and optical properties of the film. The particle size of the anti-blocking agent is generally 2-10 microns. Masterbatch producers need to have highly dispersed twin-screw units and extensive masterbatch dispersion production experience.
- (3). Heat sealing and printing performance: Generally speaking, the film is

corona or flame treated before heat sealing and printing to increase the surface tension and surface energy of the film, but an unsuitable amount of slip agent will migrate to the surface of the film to affect the heat sealing of the film. Printing performance, resulting in low peel strength between the film and weak ink adhesion, the film manufacturers can choose low friction coefficient, non-migrating open smooth masterbatch.

(4). Metalized film anti-scratch performance: To prevent the inorganic anti-adhesive agent from piercing the film, weaken the water vapor and oxygen barrier property, the anti-adhesive agent can be selected from round and soft particles to ensure better barrier properties of the film.

(5). Reduce wear on the machine: Some inorganic anti-adhesives have higher hardness, which increasing wear on the machine.

(6). Filter plugging problem: If the manufacturer encounters a situation that the pressure difference of the filter rises very high or the pressure difference suddenly rises, it may be necessary to consider replacing masterbatch.

(7). Price: Cost is also an important consideration.

2. Here list some common Choice

Aluminized film



Many food packagings use aluminized film, which has excellent oxygen barrier properties. Aluminized film can prevent oxidation and the loss of aroma. It also has anti-ultraviolet light and prevents the loss of vitamins. Under very high vacuum conditions, when aluminum reaches the temperature 1500 °C, it will vaporize, and then the surface of the treated film will be coated with a very thin aluminum film. In order to ensure the adhesion of the metal and the film, the film must have a high wetting tension, and the aluminized film opening is

smooth and smooth.

Selection requirements:

- (1). Use high wetting tension masterbatch.
- (2). The migration of the smooth slip masterbatch must be disabled.
- (3). The film's anti-stick and smoothing effect must be achieved by adding anti-stick masterbatch.
- (4). The particle size of the anti-adhesive agent depends on the thickness of the film surface layer.
- (5). The anti-adhesive agent must be round and soft, so as not to pierce the aluminum layer.

2.Cigarette packaging film

The tobacco film material is biaxially oriented polypropylene (BOPP), which is co-extruded and biaxially stretched from a variety of polypropylene functional materials. The friction coefficient use to measuring the sliding characteristics of BOPP smoke film. The friction coefficient on both sides of the film must be different. The differential sliding characteristics of the inner surface and the outer surface of the film must be formed.

Selection requirements:

- (1). the masterbatch must continue to maintain a low coefficient of friction at high temperatures.
- (2). the masterbatch has non-migratory.
- (3). the opening is smooth and has the characteristics of non-selection shifting low friction coefficient.
- (4). does not affect the gloss and transparency of the smoke film.
- (5). does not affect the stiffness and shrinkage of the smoke film.

POF shrink film



POF full name multi-layer co-extruded polyolefin heat-shrinkable film, which uses linear low density polyethylene as the intermediate layer (LLDPE), copolypropylene (PP) as the inner and outer layers, plasticized and extruded through three extruders, then processed by special processes such as die forming and bubble inflation. It is a new type of environmentally-friendly shrink film, which is the most widely used and rapidly developed in the world.

Selection requirements:

- (1). Long lasting effect.
- (2). Good gloss.
- (3). Excellent transparency, very low haze.
- (4). It helps the puncture resistance of the film.
- (5). When the film is wound, it does not go wrong.
- (6). Helps shrink film.
- (7). It does not affect the printing of film.
- (8). FDA food certification.
- (9). Price.

Fruit bagging film

Fruit bagging is divided into PE film bag, paper bag, film + paper bag. The PE fruit film bag's thickness only about 0.05 mm, which greatly reduces the cost. However, the thinner the film, the easier it is to stick together. Therefore, the selection of the smooth and smooth masterbatch of the fruit bag film is required.

Selection requirements:

- (1). The content of slip agent is high, and the addition of all the masterbatch follows the principle that the thinner the film is, the more amount of addition required.
- (2). Masterbatch can not contain inorganic fillers, if added, in the natural environment, the film is easy to be bad.
- (3). The thinner the film, the easier static electricity to absorb the dust, the masterbatch requires anti-static effect.
- (4). In line with FDA food certification.

General packaging film

The usual washing powder bags, milk films, courier bags, food packaging bags, etc. These common packaging films are all co-extruded through a single layer, three or five layers, and then blown, flowed, stretched, etc, they become a common bag in our real life. While obtaining a coefficient of friction of less than 0.2, these films must take into account whether the open smooth masterbatch will affect the heat sealing and printing properties of the film.