



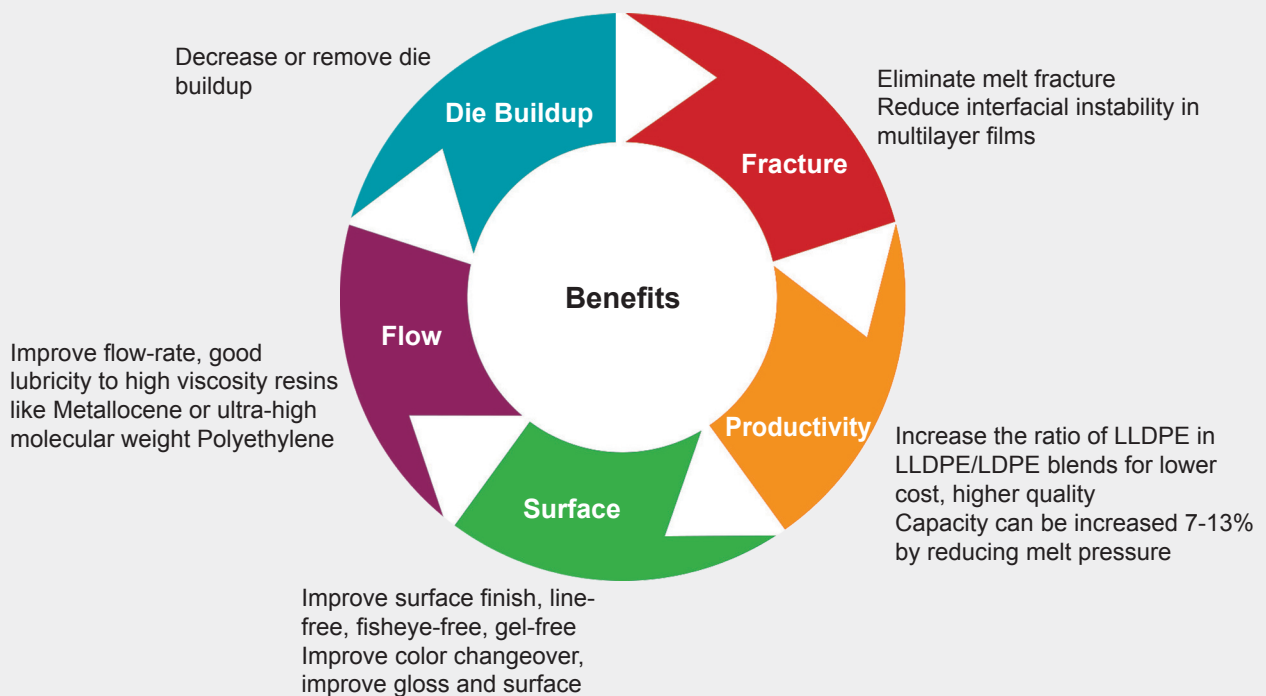
METALTEK
Metalurji Sanayi ve Ticaret A.Ş.

PPA POLYMER PROCESSING AIDS ACTIVE AGENT FOR FILM APPLICATION

INTRODUCTION

Polymer Processing Additives function by creating a dynamic, temporary fluoropolymer coating on the die surface. The coating provides a low surface energy interface between the metal wall and the molten polymer stream. This reduces stress in the die, prevents drag and allows the melt to slip through the die more easily and without sticking- thereby eliminating melt fracture. In addition, the lowered apparent viscosity allows the polymer melt to flow more freely through the die, providing easier flow and pressure reduction.

some of the many ways you could benefit from the use of PPAs:

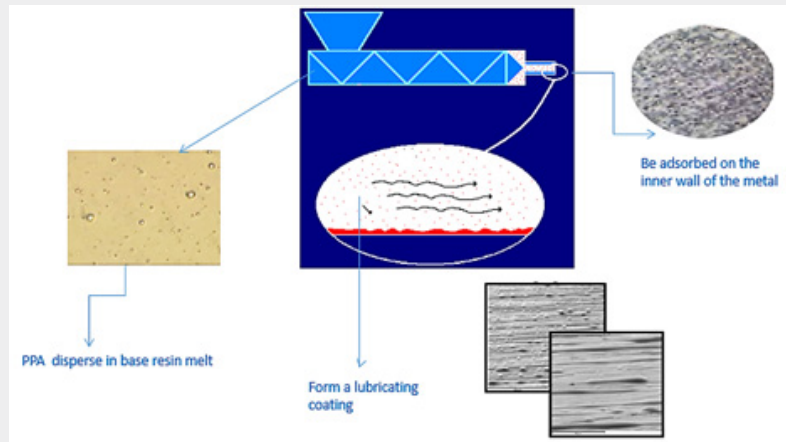




HOW CLING MASTERBATCH WORKS

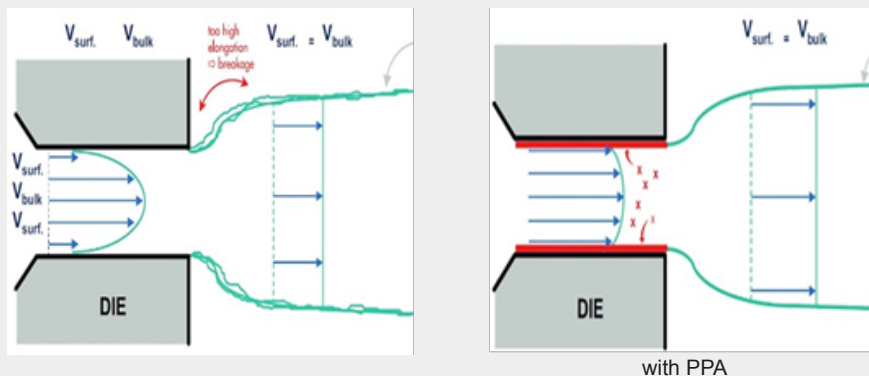
How does coating form?

PPA particles, in immiscible dispersion phase form, exist in resin melt-mass. During processing, low surface energy particles migrate to the melt-mass surface and stick to the metal inner wall (barrel, screw & die head). Gradually, a multi-layer structure of polymer melt- coating of low surface energy polymers- metal surface is formed. The coating can help the blended polymers go through the interface easily.



PPA Mechanism in film application

during extrusion process of polyolefin such as PE films, tubes or pipes, the melted polymers flow with a higher speed in the middle of the gap than on the sides. At the exit of the extruder, this difference causes irreversible damages, such as melt fracture, die build up and polymer degradation resulting in gels and black spots.



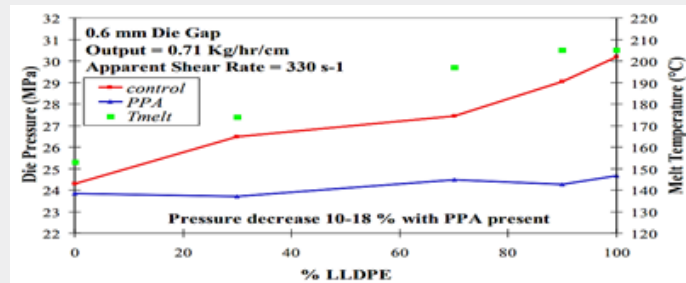


PPA application in blown and cast film:

- ◆ Food and non-food packaging film
- ◆ Agricultural film
- ◆ Tapes

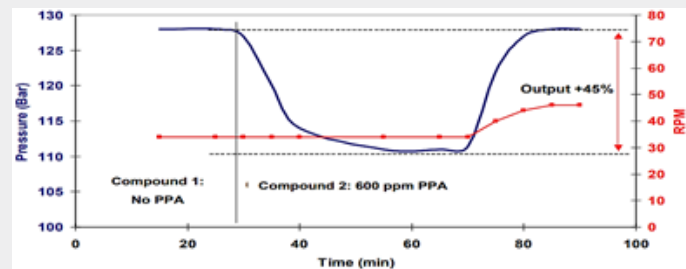
LLDPE film blowing testing data:

- ◆ Effect on die buildup

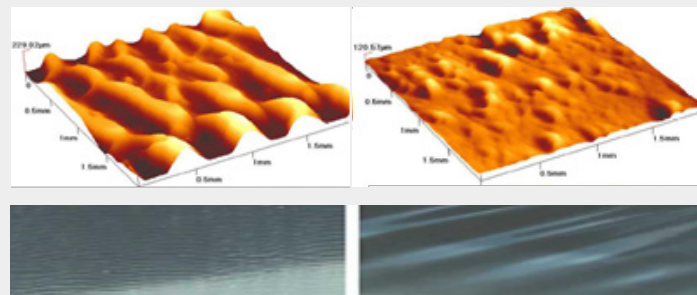


with PPA

- ◆ Effect on output



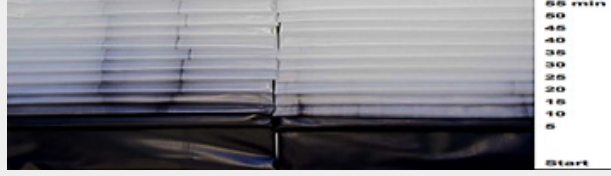
- ◆ Surface finish tested by 3D profilometer



with PPA



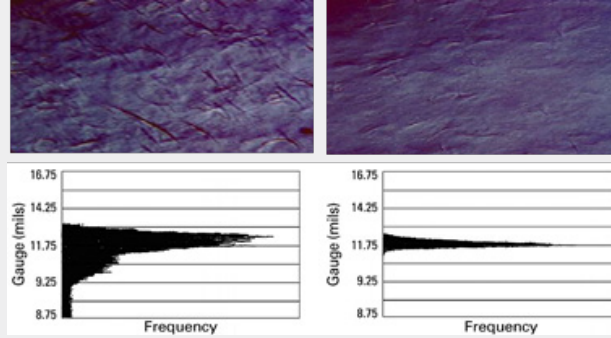
◆ **Faster color change-over**



with PPA

PP film blowing testing data:

◆ **Performance for BOPP film surface and gauge**



with PPA

SUPPLIED PPA active agent

Lanpoly (China), the producer of PPA 2200, won the title of Chinese National High-tech Enterprise in 2017. They specialize in researching, developing and producing fluorine additives for over 10 years. Lanpoly is determined to promote fluorine additives, to innovate fluoropolymer, and to strive to build an international fluoropolymer brand!

Nowadays PPA 2200 (food contact grade) can easily compete with Daikin 910, having the same mechanical properties (in PPA masterbatch through twin-screw extruder) with the same addition level.

Characterization	PPA 2200
Bulk Density (g/cm ³)	0.6-0.8
Particle size (mesh)	<25
Volatile (105°C 1 h) %	<1
Form	25 mesh white powder
Addition level (ppm)	500-800