MULCH AND FUMIGATION FILM COMPOSITION AND PROPERTY DESCRIPTIONS

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To aid in mulch and fumigant film selection, an understanding of film composition and the standard film properties is of importance. Descriptions of the common polymers used and explanations of industry tests are displayed to provide an introductory education.

Polymeric materials have widely varying properties and purposes. The selection of resins to form a structure requires a fine balance of choices to achieve a highly functional, yet cost effective structure. The primary resins used in mulch and fumigant films are as follows:

POLYMER	BENEFIT
Linear Low Density Polyethylene (LLDPE)	Strength, flexibility and elastic puncture resistance
Low Density Polyethylene (LDPE)	General purpose with processing benefits as a blend component in blown and cast embossed films
High Density Polyethylene (HDPE)	High stiffness, puncture energy and moisture barrier
Polypropylene (PP)	High stiffness and puncture energy
Nylon Polyamide (PA)	Low oxygen transmission (good oxygen barrier)
Ethylene Vinyl Alcohol (EVOH)	Extremely low oxygen transmission (excellent oxygen barrier)

To adequately assess the functionality in the field of film products, a standard regimen of property testing has been developed. These tests are captured by ASTM methods and are relatable to real field application.

TEST	METHOD	FIELD ATTRIBUTE CORRELATION
Tensile	D-882	Force to begin stretching – how conforming the film is Force and stretch until breaking
Tear Resistance	D-1992	If the film will resist tearing or splitting when punctured
Dart Drop	D-1709	How much the film will resist puncturing
Oxygen Transmission Rate	D-3985	How fast fumigant (larger non-polar molecules) will release through the film
Water Vapor Transmission Rate	F-1249	How fast water vapor will escape through the film
Coefficient of Friction	D-1894	If the film will unwind easily from the roll
Embossed Thickness	D-2103	An indicator to compare films
Light Transmittance and Reflectance	D-1003	For opaque films, how much of the targeted wavelength is transmitted through the film, and how much is reflected

With this primer, the choice of available film types can be more accurate according to the end use and environment, leading to higher yields and a reduction of issues when evaluating a new film product.

For additional information and a review of product offerings, please contact your local Pliant Corporation representative.