



HOW TO SELECT THE CORRECT FILM TYPE FOR **YOUR SHRINK LABELING APPLICATION**

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Shrink labels have been one of the highest growth segments of flexible packaging over the last 15 years as companies increasingly rely on unique packaging to bolster brand awareness and shelf appeal for consumers. Shrink labeling offers a huge range of exceptional graphics possibilities for creating a brand and decorating a package. While beautiful art on packaging is important, producing it is as much a science as it is an art.

In shrink labeling, there are four major types of film substrates to choose from, PVC, PET/PETG, OPS and PLA, and various grades of film within each type. How is one to select the film that is most cost effective yet has all the required characteristics to make your package exceptional? It is not a casual decision. Labels printed on the incorrect film will not do the job and will cause substantial downtime on the production line, including the need to replace all the faulty labels resulting in major additional costs.

To fully grasp the concepts surrounding the importance of film in shrink labeling, let's start with some definitions:

Material Types

Since there is a range of available shrink materials that vary in type, cost and shrink characteristics, it is important that the company that is providing your shrink tunnels understands your requirements. They will need to specify the correct type, grade, and material thickness, so that you get the results you and your customers expect.

Making The Film Substrate

Resins from various companies are turned into sheet film and then tented by raw stock suppliers (warmed and stretched, then cooled, to impart the thermo-retractable property). The tented film is provided to label converters who print, slit and seam the material into finished sleeve labels.

PDC carries out R&D with the resin suppliers, film suppliers and the label converters. Together, we work to test and develop the latest materials used within the industry. PDC is considered a valuable resource, as we can be used for your product development and production, maximizing your efficiency.

WHAT IS A SHRINK CURVE?

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Each type of base film has its own performance fingerprint or “shrink curve” which is determined by the resin and other components, such as plasticizer, pigment, the type and amount of ink coverage - each sleeve has unique properties.

The Importance Of Shrink Curves

Shrink curves chart the percentage of shrinking that occurs at specific temperatures over specific time periods when measured in a controlled environment. The path of the curve indicates at what temperature a material begins to shrink, the rate at which it shrinks, and when and at what point it reaches its maximum shrink percentage.

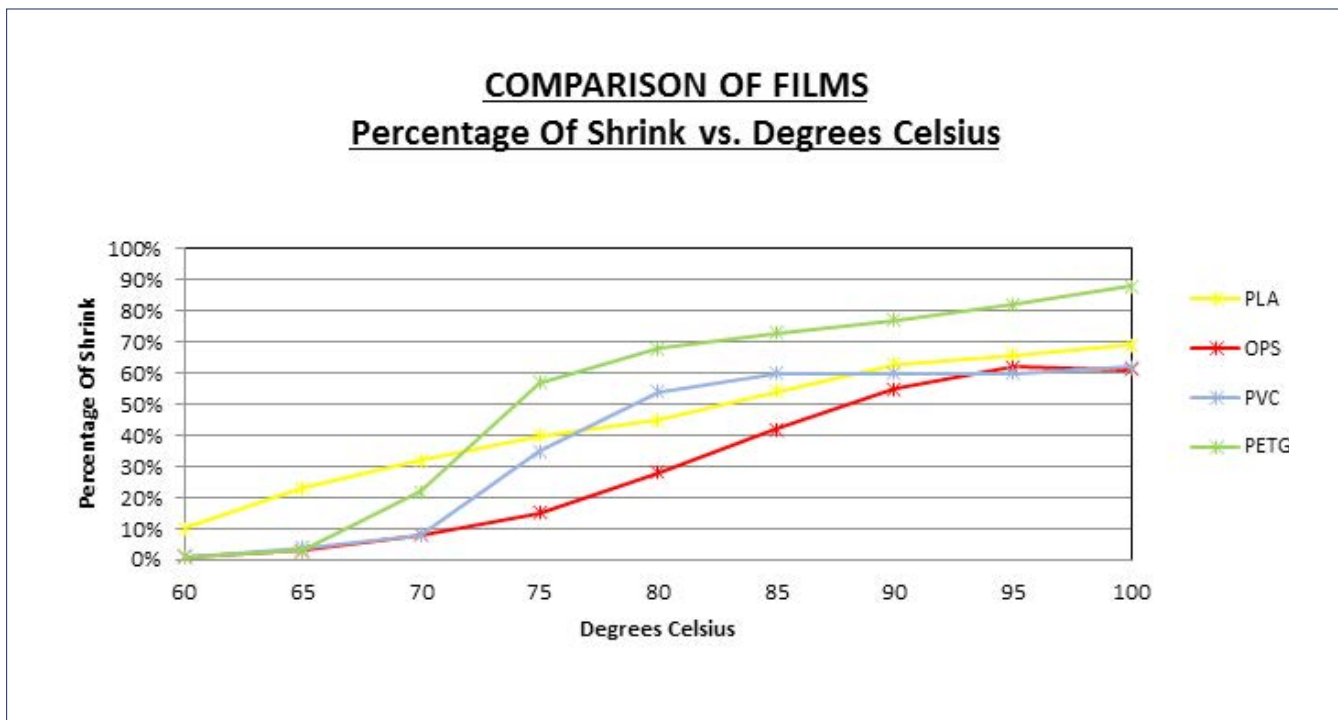
Transverse Direction (TD) Shrink

There are typical materials that shrink up to about 55% in the transverse (side-to-side) direction, and high shrink materials that shrink up to about 78%.

WHAT IS A SHRINK CURVE? *Continued*

Machine Direction (MD) Shrink

Films also have some machine direction shrinkage ranging from 0- 7% (in the top-to-bottom direction) which can cause sleeves to shorten in height - an effect that has to be controlled to insure acceptable results. There are also films that grow in the machine direction at certain temperatures, which can cause the sleeve cut length to elongate –an effect that also has to be controlled to insure acceptable results.



TYPES OF SHRINK LABELING FILMS

PVC (Polyvinylchloride)

The advantages of PVC:

- Up to 68% TD (side-to-side) shrink
- Dominant film in today's market (est. 70%)
- Performance characteristic well understood, original marketable film
- Generally, less expensive film

COMMENTS:

Not accepted by all consumer products companies due to environmental questions

Applications in which PVC is well suited:

- Projects with less than 68% TD shrink
- Tamper evident banding
- Should be considered for non-recyclable containers

(PET/PETG) Polyethylene terephthalate (glycol)

The advantages of PET/PETG:

- Up to 78% TD shrink
- Highest level of clarity
- Increasing in popularity
- Potential for down gauging
- Potential for MD growth/elongation
- Perceived as environmentally friendly
- More compatible with PET recycling systems



COMMENTS:

- Depending on grade, low to high shrink force
- Minimal smiling or frowning at label bottom
- Versatile shrink curve

Applications in which PET/PETG is well suited:

Large Diameter bottle/small diameter neck – PETG has enough shrink to provide the required coverage.

OPS (Oriented Polystyrene)

The advantages of OPS:

- Up to 70% TD shrink
- Greater acceptance in Japan and Europe
- Perceived as environmentally friendly
- Minimal MD shrink
- Softer, better for squeezable applications

Comments:

- Requires lower storage temperature
- Low shrink force

Applications in which OPS is well suited:

- Squeezable containers
- Full sleeve applications on bottles with little or no radius at the bottom for the label to wrap under since label does not pull up due to low MD shrink

PLA (Polylactic acid)

The advantages of PLA:

- Corn-based film, not petroleum based
- Up to 78% TD shrink
- Less MD loss than PVC
- Environmentally friendly
- Annually renewable resource
- ASTM Certified Compostable



Comments:

Not as widely used as other films

Applications in which PLA is well suited:

- Total compostable package
- Tamper evident banding materials per PDC experience

CONCLUSION

The four types of film used on packaging, PVC, PET/PETG, OPS and PLA, each have unique values as well as advantages and disadvantages. Knowing these allow end users to make the right choice for their product and budget, with no worries or surprises.

At PDC, we have mastered both the science and the art of creating an exceptional package. Our “empirical” test processes are designed to avoid any oversights and help clients to select the correct film from the start. The PDC Shrink Lab is available to test your products, make prototypes and determine correct label specifications. PDC technicians can help you develop new packages and build your brand through shrink sleeve labeling technology.





Questions about your sleeving project?

PDC's "Total Sleeving Solution" includes specialized consulting regarding:

- Package analysis
- Material selection
- Shrink testing and sample preparation
- Line layouts and equipment integration
- Operator controls
- Inspection options
- Documentation
- Operator and maintenance training

Call or email

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