





Alliance Academy

Stretch Film 101

Alliance Plastics
WE DELIVER INNOVATION
A VETERAN OWNED COMPANY

Polyethylene Basics

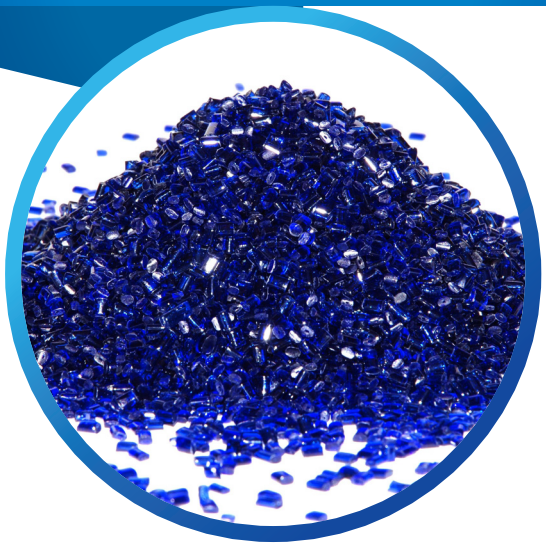
How is Polyethylene Made

Basic Types of Polyethylene

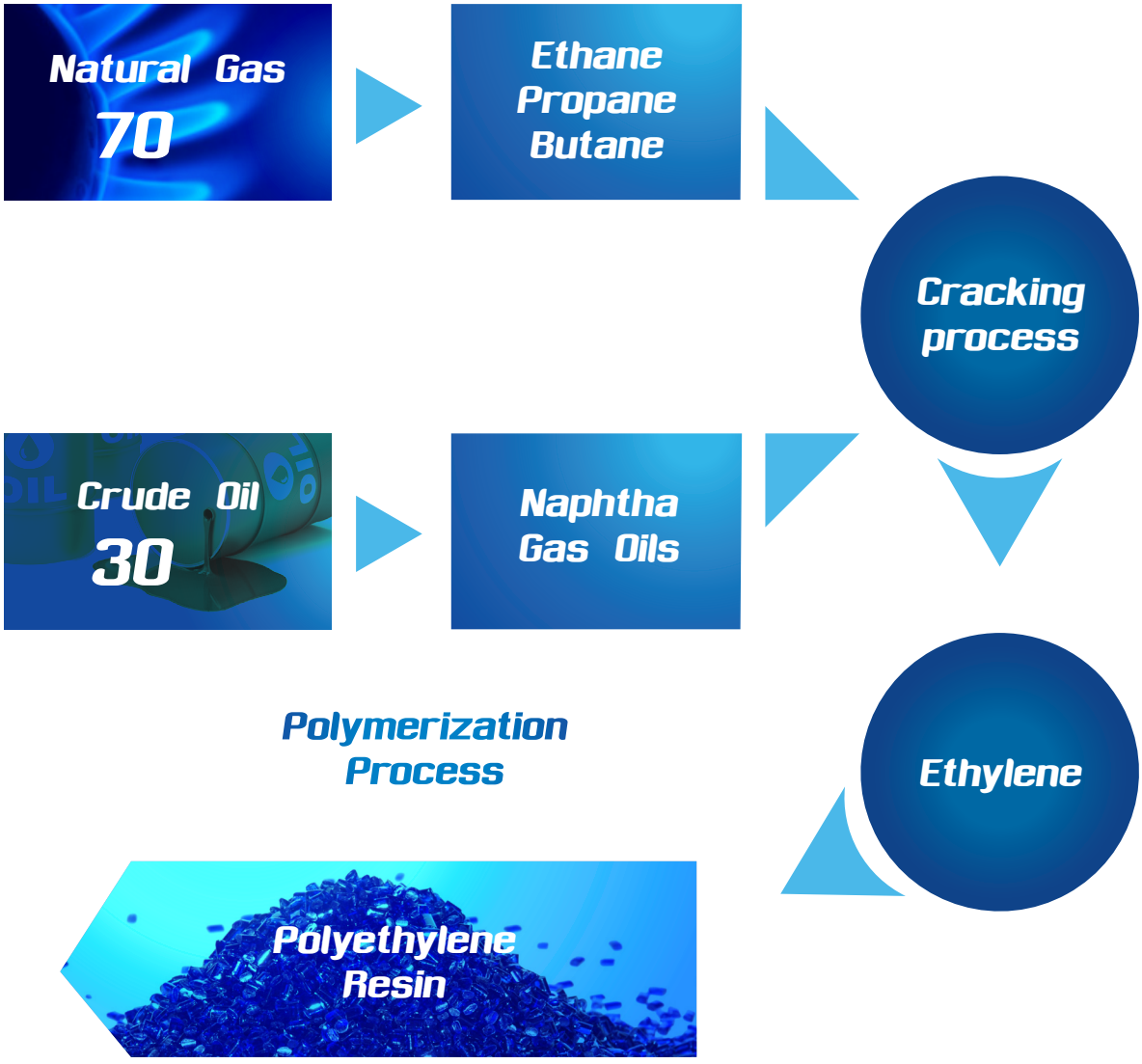
Who are these Resin Companies

and why are

They so darn powerful



Polyethylene Resin Manufacturing



Polyethylene Basic Types

LDPE

Low density polyethylene
High density polyethylene
Branched polyethylene



LLDPE

(main component of stretch film)

Linear low density polyethylene
Low pressure low density polyethylene
Linear polyethylene



mLLDPE

Linear low density polyethylene copolymer
Linear polyethylene produced using a hexene copolymer



HDPE

High density polyethylene
Linear polyethylene



Major Resin Companies

Exxon Mobil

40% + market share on Stretch Resin

Dow Chemical

40% + market share on Stretch Resin



Remaining 20% split between several companies

- Nova Chemcials
- Eastman
- Hunstman
- Formosa
- Equistar
- Chevron Phillips

Manufacturing Methods

Extrusion Process and methods

Inherent qualities to each process / What makes them different?

The Industry in Review

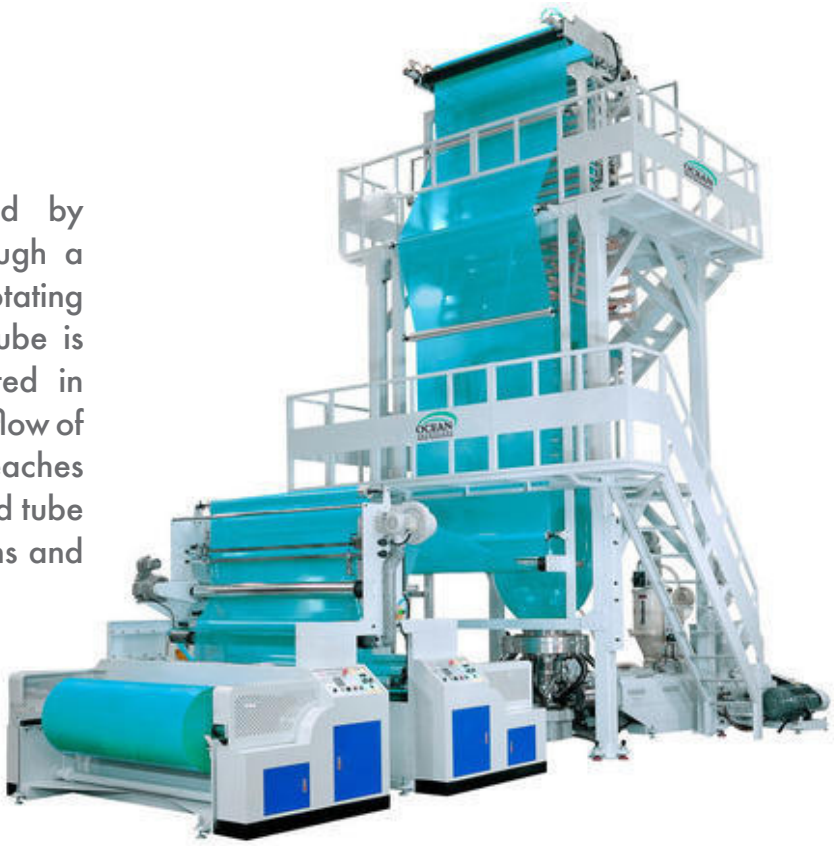




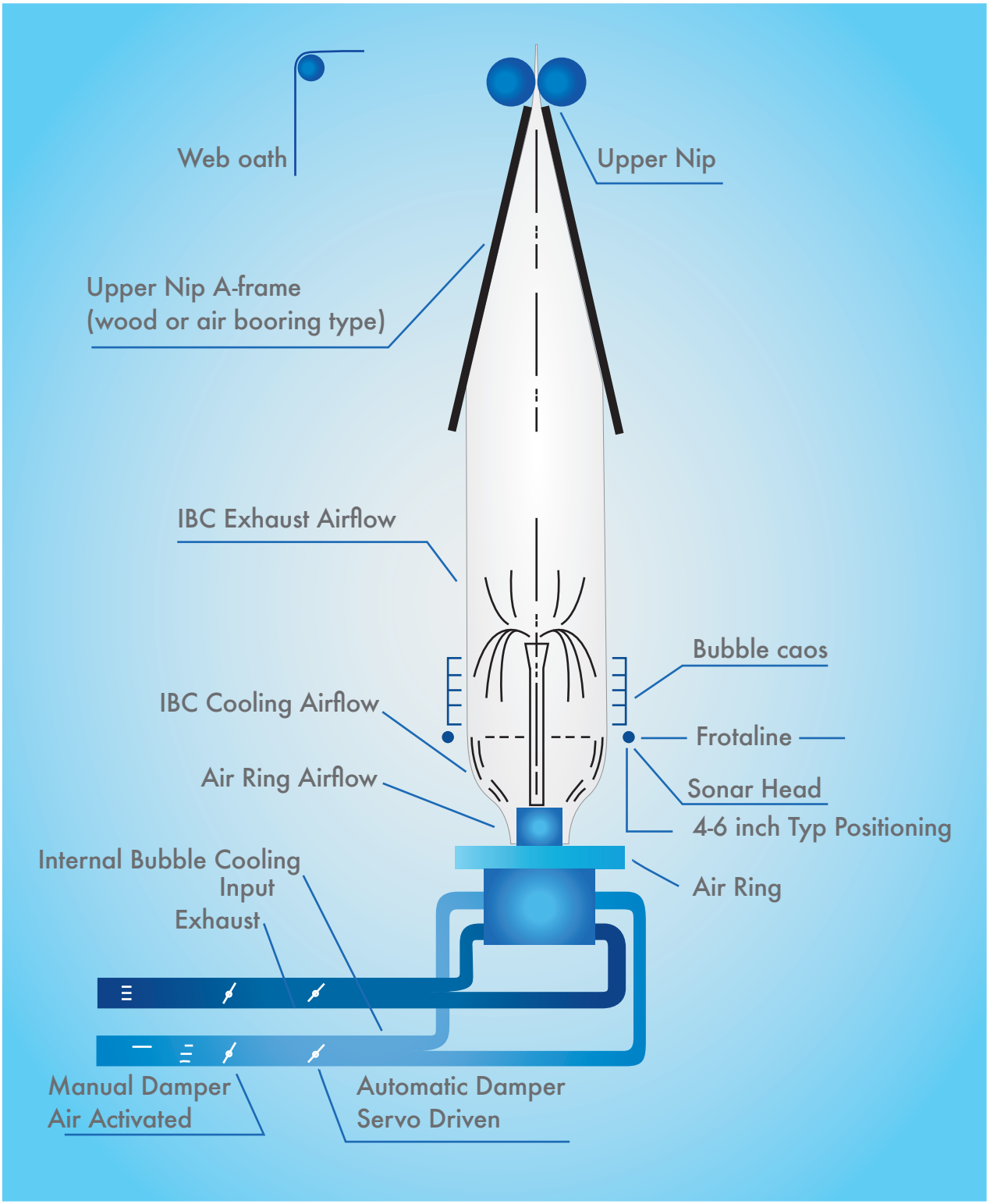
Extrusion Methods

Blown

Blown films are produced by pumping melted resin through a heated circular slotted rotating die to form a tube. The tube is filled with air which assisted in determining the gauge. The flow of air cools the film before it reaches the nip rollers. The collapsed tube is then slit into various widths and roll lengths.






Web oath
Upper Nip
Upper Nip A-frame
(wood or air booring type)
IBC Exhaust Airflow
Bubble caos
IBC Cooling Airflow
Frotaline
Air Ring Airflow
Sonar Head
4-6 inch Typ Positioning
Internal Bubble Cooling
Input
Exhaust
Air Ring
Manual Damper
Air Activated
Automatic Damper
Servo Driven

Extrusion Methods

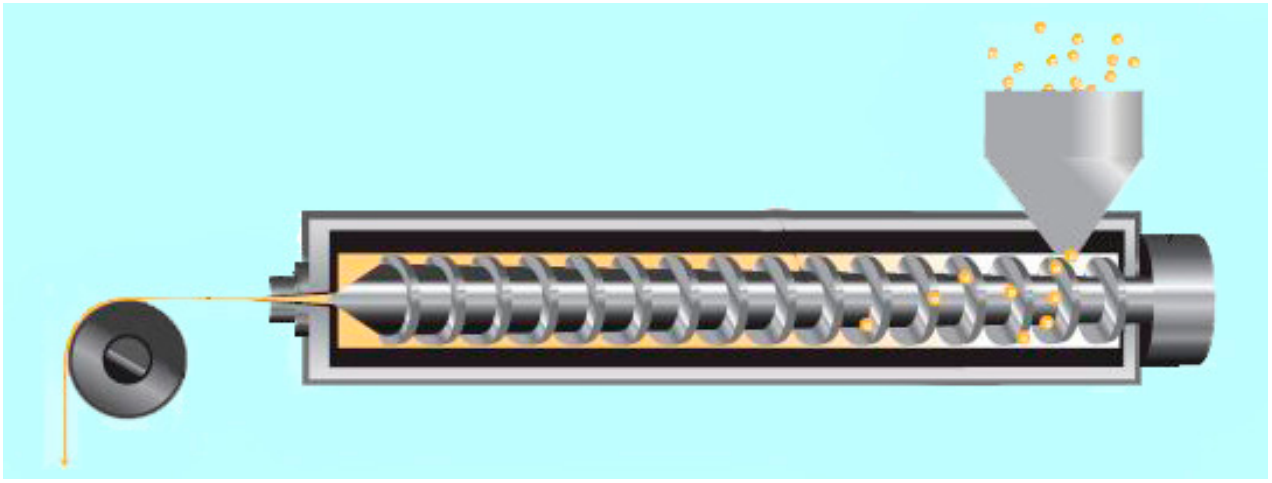
Cast Co-Extrusion

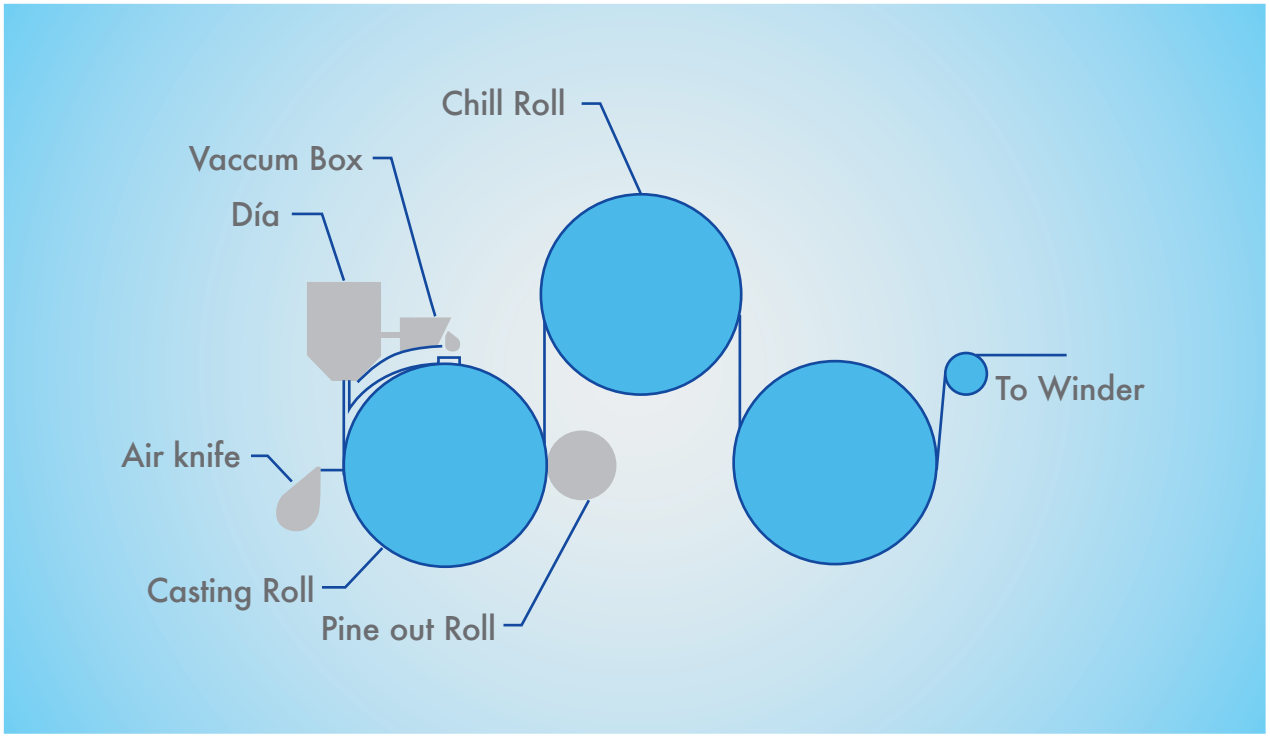


The cast coextrusion manufacturing method consists of melted resin pumped through several extruders through a straight slotted die creating a layered sheet of film. The film is then quickly cooled by a water filled chill roller and slit to size.

The cast process usually produces superior quality stretch film with more uniform gauge, and more consistent cling. Cast films traditionally offer better tear strength which results in the prevention of tear propagation.

Extruder in operation





Differences Blown & Cast Films

CAST

- Superior optics
- High Gloss
- Lower modulus (stretches easier)
- Tear resistance
- Good puncture
- Quiet unwind
- Non-migratory
- Excellent gauge control

BLOWN

- Hazy
- Dull
- Tough
- Noisy unwind
- Tear resistance
- Migratory cling
- Poor gauge control
- Excellent puncture





The Industry



- 2009 Stretch Film Sales were approximately 1.7-1.9 Billion Pounds
- 2009 Capacity was roughly 2.6 Billion lbs
- 2008 Capacity was over 2.1 billion lbs
- 2008-10 Major reshaping of players due to the mergers and consolidation that the industry has gone through. RECESSION has hurt many small and big players
- The top 5 companies have nearly 1.6 Billion pounds of capacity

Stretch Film Performance

- Measuring Hand Film Performance
- Measuring Machine Film Performance
- Load Types



Hand Film Performance

- Stiffness
- Puncture Resistance
- NECK Down
- Yield
- Clarity
- Holding Force



Machine Film Performance

Pre-Stretch
The amount of stretch achieved between the rollers

F2 Stretch
The amount of stretch achieved by the load against the unwinding film.

Total Stretch
The combination of the pre-stretch and the F2 stretch.

of F2
The F2 stretch %/ pre-stretch gear % (Normal is about 10%).

Measuring Film Performance

Total Stretch
Is measured with a 10" star wheel.

Load Retention
The amount of force exerted inward by the film. It is measured in lab conditions on a load cell.

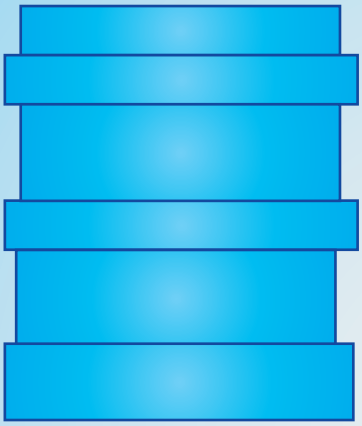
Cut & Weigh
The amount of film cut off the load & measured on a scale.

Force to Load
Is measured with a flat plat and a pull scale.

Load Types

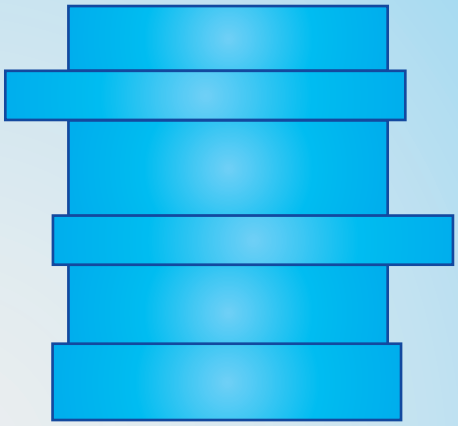
"A"

Up To 3" Protrusion



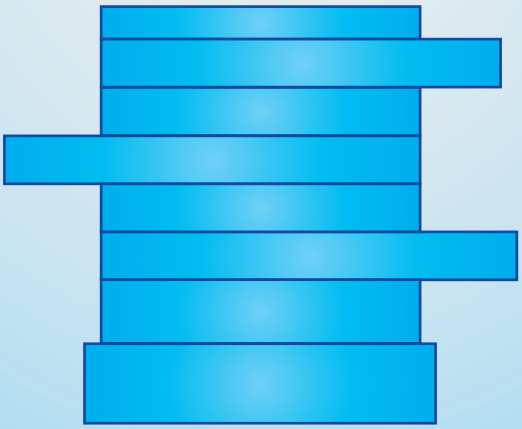
"B"

3"- 6" Protrusion



"C"

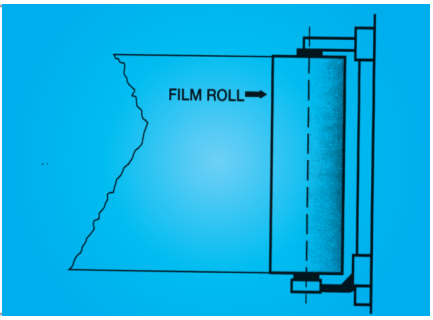
Greater than 6" protrusion



Film Failures

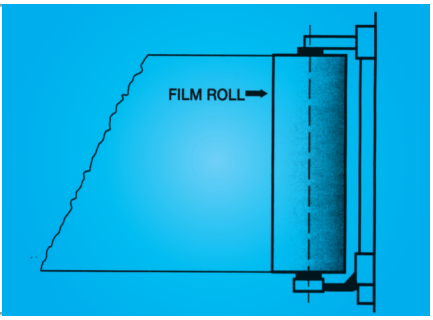
Gel Holes

A gel is a V shaped break in the film caused by resin imperfection or some other manufacturing problem.

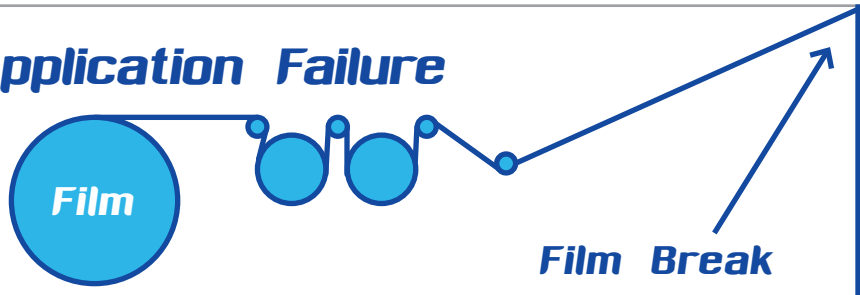


Edge Damage

An edge tear starts at the top or bottom of a roll and tears in a diagonal direction. A nick in the film edge usually causes it.



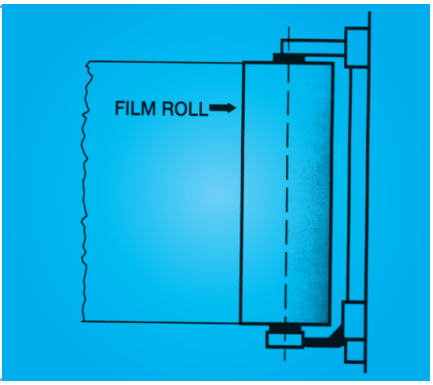
Application Failure



An Application failure is when the wrong film is being used for an application. Load type and excessive down gauging are possible causes.

Ultimate Breaks

An ultimate break is a straight-line break with pointed edges. The break occurs when the film has been pre-stretched beyond its limits.



How to sell Stretch film

Current Market Conditions & Pricing

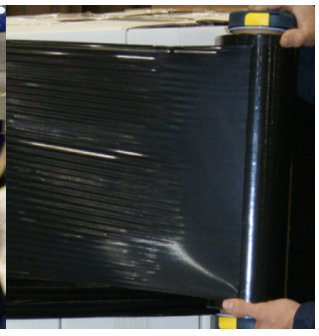
Questions to Ask

Let's do the Numbers

What's in the Box

Who's my Competiton?





Current Market Conditions & Pricing

Pricing Factors:

- Oil and Natural Gas
- Supply and Demand from Overseas Markets
- Overcapacity from Fabricators both in North America and international Markets

Stretch Film Market still remains very volatile with increases and decreases due to capacity from the mill to excess capacity from the Stretch Film Manufacturers



Questions to ask:

- Know your N E E D S
- What are they using NOW
- What Is the EQUIPMENT?
- What do they ENJOY about it
- Who is the DECISION MAKER
- How SOON?
- N E E D S
- NOW – gauge, width, length, competition, blown or cast



Let's do the numbers

How to figure out the weight of a roll (NET POLY)

Width x Length x Mill Thickness/2500 = poly wt.

Gauge to Micron

Gauge x .254 = Micron

Micron to Gauge

Micron x 3.937 = Gauge

MIN FTL on a pallet

Weight of pallet/100

Performance Formulas

Stretch Film performance formulas

Find Approximate Net Poly Weight	Purpose: To determine the amount of poly on a roll of film Formula: Film Width (inches) x Film length (inches) x Thickness (mil) = Poly lbs. Example: *ATT1-2080 20"X(6000'X12")X8mil/30,000=38.4 lbs*
Find Net Cost Per Pound	Formula: $\frac{\text{Price Per Roll}}{\text{Net Pound Per Roll}}$ = Net Cost Per Pound Example: *ATT1-2080@$31.68 per roll $31.68/38.4=83 cents/lb*
Find Net Cost Per Thousand Linear Feet	Formula: $\frac{\text{Price Per Roll}}{\text{Thousand Ft Per Roll}}$ = Net Cost Per Thousand Linear Feet Example: *ATT1-2080@$31.68 per roll $31.68/38.4=83 cents/lb*
Find Geared Stretch level of a Machine	Given: Both rollers on the machine are the same diameter, count the teeth in the two gears driving the rollers (# of teeth on the Input Roller= RS1, # of teeth on the Output Roller=RS2) Formula: (RS1/RS2-1)x100=Pre-Stretch% Example: (54/18-1)x100=200%



Conversion Chart

Microns	Gauge	Microns	Gauge
8.5	0.33	19	0.75
9	0.35	19.5	0.77
9.5	0.37	20	0.79
10	0.39	20.32	0.80
10.5	0.41	20.5	0.81
11	0.43	21	0.83
11.5	0.45	21.5	0.85
12	0.47	22	0.87
12.5	0.49	22.5	0.89
13	0.51	22.86	0.90
13.5	0.53	23.0	0.91
14	0.55	25.4	1.00
14.5	0.57	27.9	1.10
15	0.59	30.5	1.20
15.5	0.61	33.00	1.30
16	0.63	35.6	1.40
16.5	0.65	38.1	1.50
17	0.67	40.6	1.60
17.5	0.69	43.2	1.70
17.75	0.70	45.7	1.80
18	0.71	48.3	1.90
18.5	0.73	50.8	2.00
		63.5	2.50
		76.2	3.00

What is in the BOX?



What is in this box, Really?
Customer say's it's 80 Gauge,
But what is it really? Why are
WE priced so much higher?

We weigh a case and it weighs
30.1 lbs and we know a 80 GA
Box should weigh net poly 34.56 lbs
+Cores + Box



SOMETHING IS WRONG!

Where can they cheat?
Width, Length and Gauge

How does this effect you?



- Customer states he's buying a 18" x 80 Gauge x 1500' roll
- You do your math from the formula you just learned: 18" x 1500 x .80/2500 = 8.64 lbs/roll
- The cores weigh 1 lb each and there are 4 lbs box weighs 1 lb so the total weight for a 18" x 80 x 1500 box
- At 4 rolls per case = Net poly weight + Cores + Box
- 34.56 lbs net poly weight + 4 lbs cores + 1 lb box = 39.56 lbs
- We weighed the box and it comes out to 30.1 lbs and we subtract core and box = Net poly weight is 25.1 lbs
- We know he's getting cheated!
- Their cost is 25.1 @ 1.00 per pound = $25.10 a case vs Your cost of 34.56 x .85 a lb = 29.37 a case
- You are at a 17% disadvantage.

Hand Film

Selling Techniques

- Ask them what they prefer, cast or blown (Noisy or not noisy)
- Observe how they stretch wrap, if they are pulling hard and the film is soft – you can show them a stiff blown or cast film to save their back and money
- Show them the quick tightness of a stiff cast film vs the film they are using
- Show them the puncture resistance of the film vs what they are using
- Show neckdown, more film coverage vs what they are using
- Weight difference and strain on shoulder, wrist and back
- Walking forward vs backward – safety
- Fatigue factor
- Stonger but thinner = Environmental Source Reduction
- Better load retention means less damage

Machine Film Buying & Selling Techniques

Common Situations

What's your roll price? If you don't know the application and what the operating parameters are, how can you begin to quote a roll price? Explain how Our Films are different and convert to cost/load.

Don't change any machine settings. The customer wants you to compare apples to apples when you may be offering an opportunity for the customer to improve their current package if they will allow some minor or sometimes major changes. Explain how performance can be measured and how our films are high performance films and achieve the greatest advantage at the higher performance levels.

Drop off a sample & we'll tell you how it does. Our films are not the same as other films and before a sample can be tested, someone with the knowledge of how to measure performance needs to be present. Show the customer how performance is measured and how it not as simple as changing rolls out. Sell like a film expert.

You don't need to see the machine I'll tell what you need. Start talking about the different variables effecting performance and these are critical in choosing the correct film. Don't guess at the film needed, new business is too important not to do correctly.

The Right Solution



WHY ALLIANCE PLASTICS