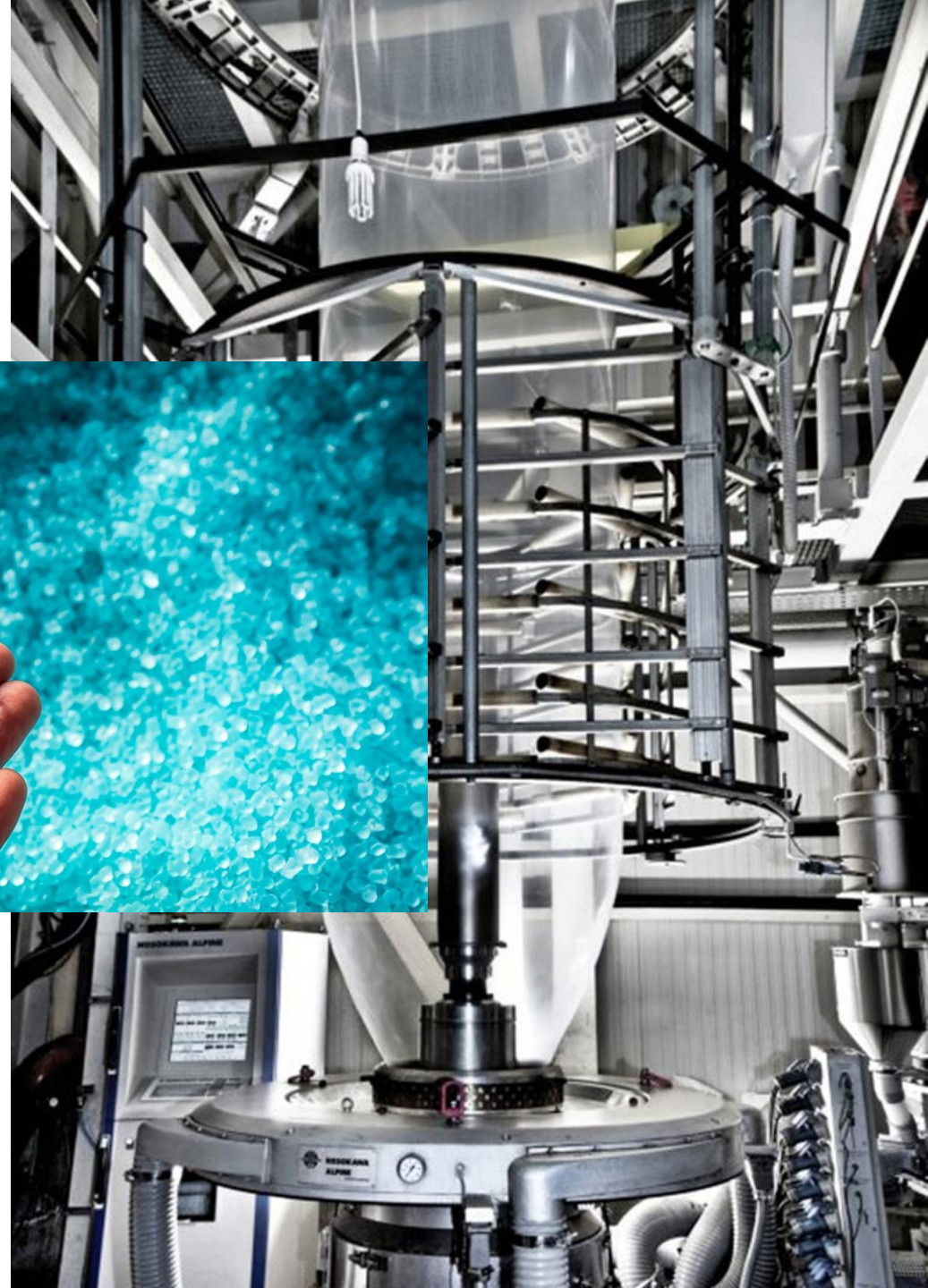


EUROfilm

MANTZARIS S.A.

PLASTIC FILM INDUSTRY

The Art of Plasticity



Mantzaris S.A in a Nutshell

**WE DO
HAVE
PLASTIC
MINDS**

- Agricultural products
- Packaging products
- Consumer products



MANTZARIS S.A.
PLASTIC FILM INDUSTRY

EUR  film



126
employees



~ 5%
Avg Annual Growth



1991
Established



24 M Euros
2018



HEADQUARTERS
Zevgolatio, Korinthias
Exports Office
Athens Greece



2.6 M Euros
CAPEX 2019

3 BUSINESS SEGMENTS

Flexible
Packaging

~50%



Agricultural
Products
~30%



Consumer
Products
~20%

Production Equipment

- ☐ 7 blown-film extrusion lines
- ☐ 5 blown-film co-extrusion lines
- ☐ 4 Waste bag production lines
- ☐ 1 Product line of drip pipe
- ☐ 2 bottom weld sack machines
- ☐ 3 Carrier-bag production lines
- ☐ 1 recycling line



Rely on a strategic partner

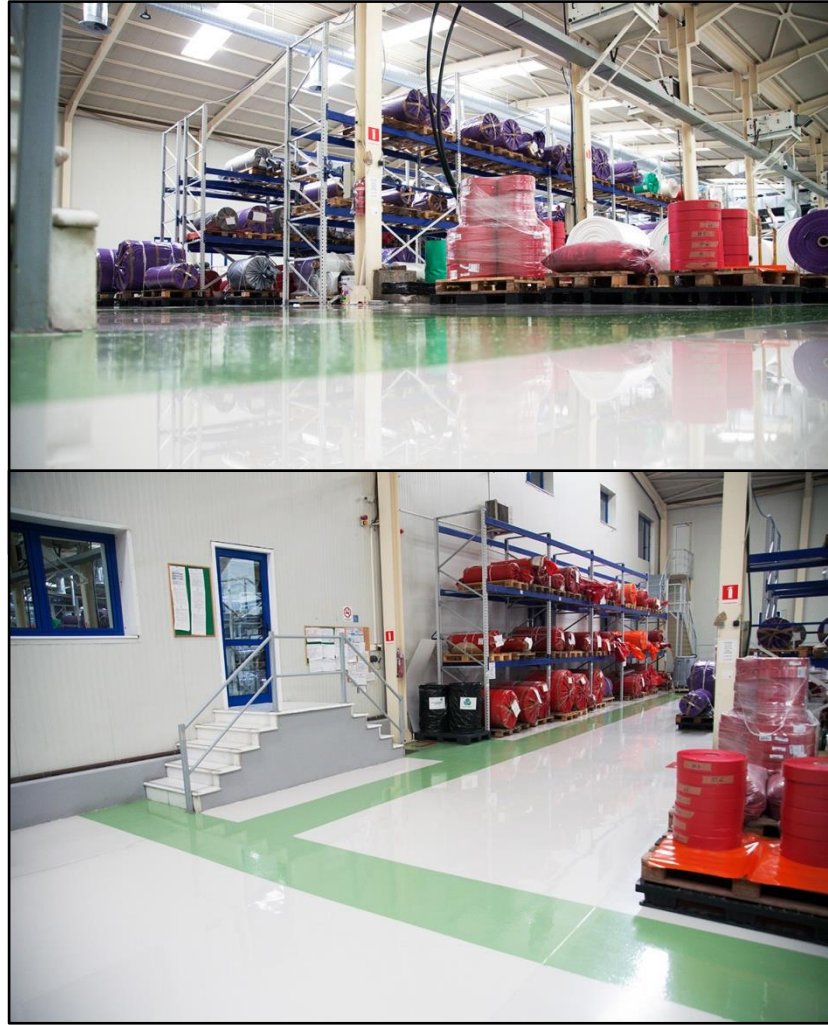
- Nominal Capacity of 17.000tns of PE production annually
- Tailor Made solutions based on customer's needs
- Constant investment for new state of the art production lines and R&D
 - 2 Alpina Hosokawa 3 layer
 - 1 Alpina Hosokawa MDO
 - 1 Reifenhauser 3 layer line
- Strick Quality assurance protocols



Environmental Footprint



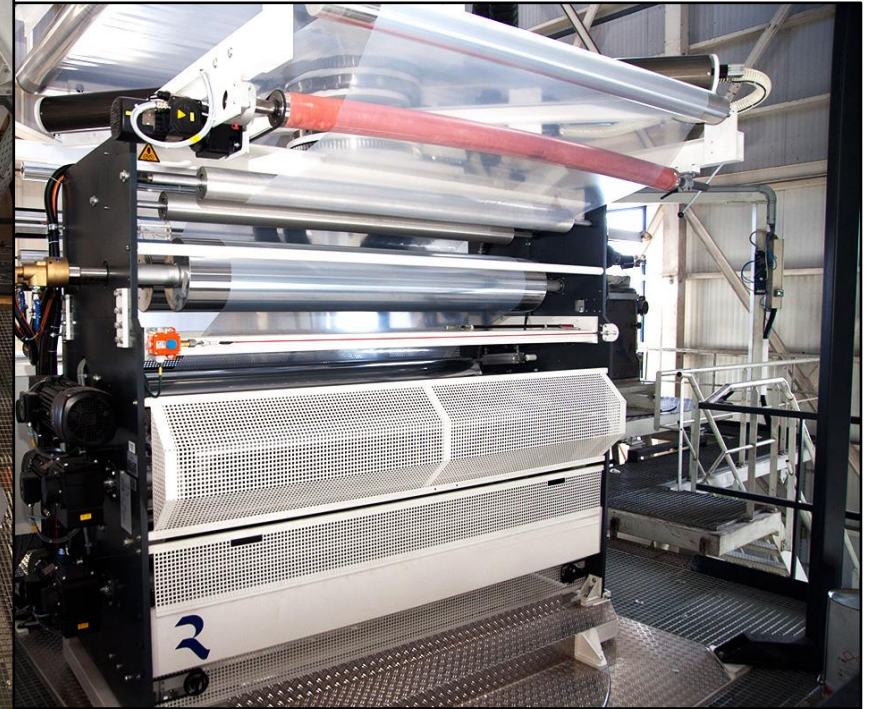
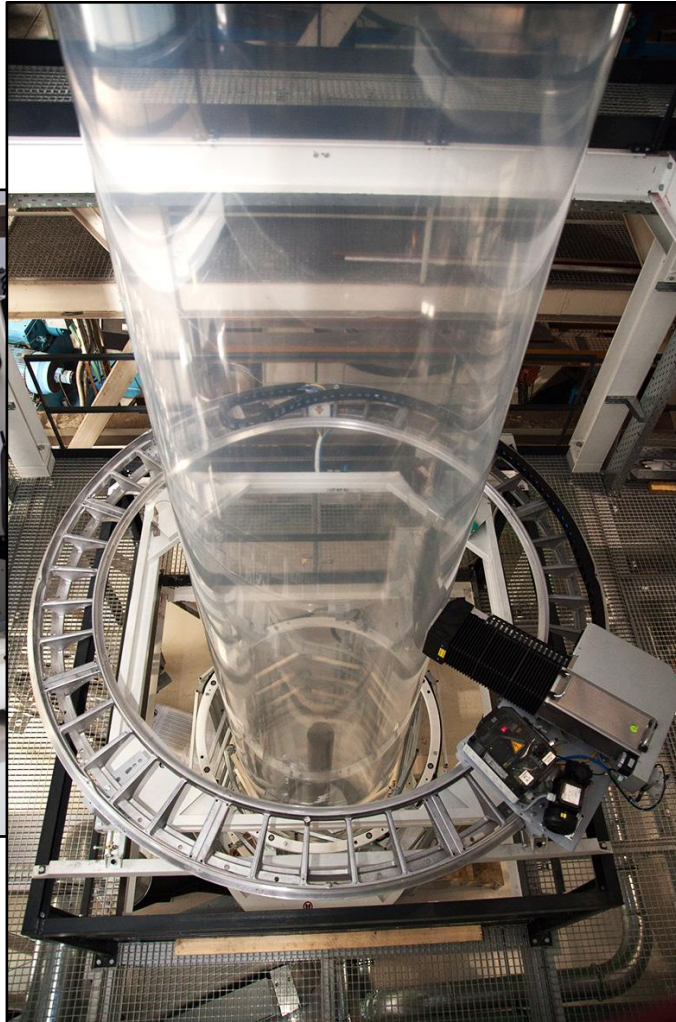
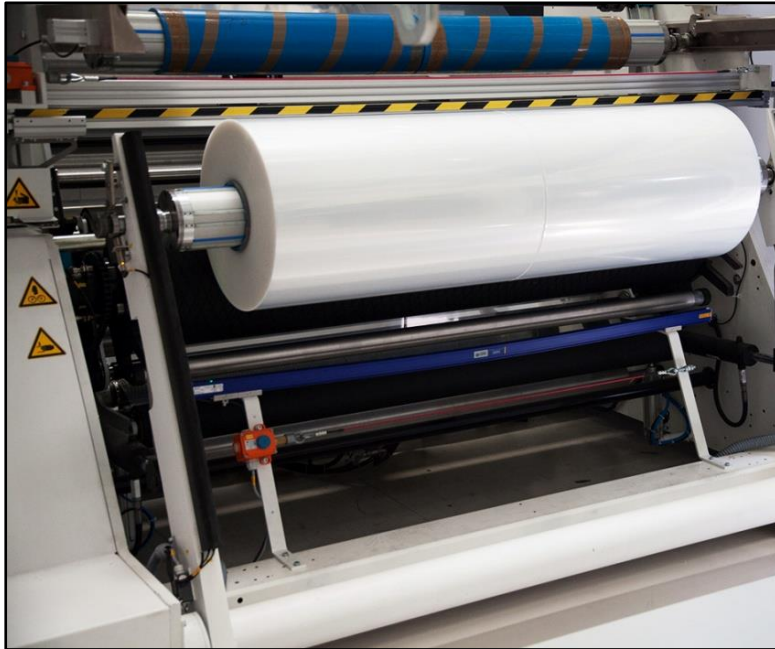
Controlled Production Environment



Production Units



Production Units



Production Units



Production Units



In Situ Recycling Units



Quality control

Quality Control

- Top quality raw materials (REACH / MSDS)
- Quality Management certification according to
 - ISO 9001:2015
 - ISO 22000:2005
 - ISO 14001:2015
- Suppliers' evaluation

EQC (Eurofilm Quality Control) according to accredited Standards

Thickness/ μm , Width/cm, Weight/g/qm,

Corona Treatment/dyn

ISO 527

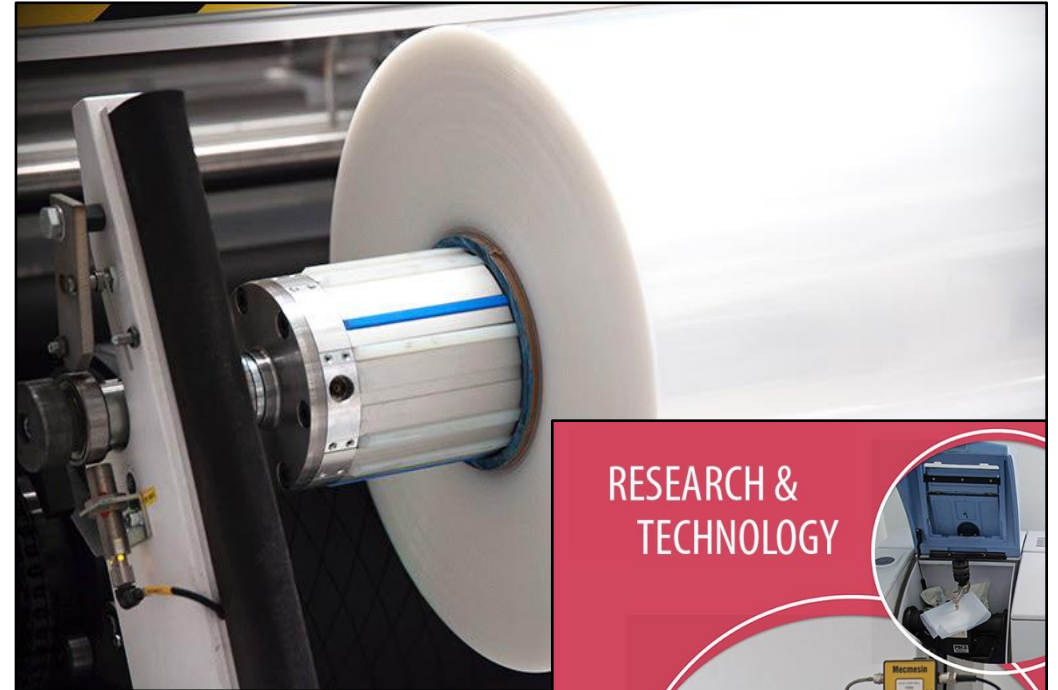
Tensile Strength MD-TD/N/qmm

Tensile Yield MD-TD/qmm

Elongation MD-TD/%

ISO 8295

Coefficient of Friction



RESEARCH & TECHNOLOGY



Eurofilm Added Value Platform



Eurofilm Agricultural Products

Agro Products

We supply farmers in Greece and neighboring countries with specialized crop protection and enhancement products



Low Cover Products



Low Cover Products

- **Filman:** Transparent film for agricultural use.
- **Black Filman:** Film for agricultural use.
- **Linman:** Transparent film of increased mechanical resistance and up to 15% reduced cover cost per acre due to lower thickness.
- **Linman plus:** Land cover black film from high quality raw materials, where new technology is implemented, ultra thin for reduced cover cost per acre.
- **Thermic:** Low cover film of high transparency. Offers the best thermal properties of the market for early crops.
- **Thermic Silver:** Thermic film for cooling.
- **Brown Ground film :**
High quality raw materials are used. It contains color master-batches with UV stabilizers. Diffuses the heat up to 10 cm depth into the soil. For the best protection and earliness of plant.
- **Silver Black Ground film :**
Stabilized film having silver color in the up-side, to reflect the light, resulting in improved earliness and uniform color of the fruit.



Low Cover Products

Thermic for curtain: High performance thermo-curtain film

- Width: up to 5,30m
- Thickness: 50 microns
- Duration: inside the green house 5-6 months during the winter

Eurotherm W for curtain: High performance, long lasting thermo-curtain film

- Width: up to 7m
- Thickness: 50 microns
- Duration: inside the green house 2 seasons of 5-6 months during the winter.

Eurotherm 1W for curtain: High performance, long lasting thermo-curtain film

- Width: up to 7m
- Thickness: 50 microns
- Duration: inside the green house 3 seasons of 5-6 months during the winter.



Greenhouse Products



Greenhouse Products

- **Eurostar** : Duration of 8-10 months
 - **Eurostar 1**: Duration of 12 months
 - **Eurostar 2**: Duration of 21-24 months
 - **Eurostar 3**: Duration of 33-36 months
-
- **Eurostar 1w**: White, duration of 12 months
 - **Eurostar 2w**: White, duration of 24 months
 - **Eurostar 3w**: White, duration of 36 months

KEY PROPERTIES:

Reduced solar spectrum

Reduction of pesticides Use

UVA, UVB Filters

Increased Solar radiation protection

Light Diffusion and uniform distribution

Helps plants grow evenly



Greenhouse Products

Thermic Green house film absorbs the day heat and diffuses it in the green house during the night.

Enhancing plant growth by preserving high temperature in the greenhouse even in the night.

- **Eurotherm 1W:** Duration of one cultivation season 12 months
- **Eurotherm 2W:** Duration 24 months
- **Eurotherm 3W:** Duration 36 months
- **4 PLUS: Transparent as glass, use of high technology raw materials (next generation)**



General Agricultural Products

- Vineyards
- Pomegranate
- Cherry trees
- Tobacco drying
- Raisin drying



General Agricultural Products

- Black - White film
- General agricultural use, multi layer structure
- Plain, black or colored film for agricultural use
- Water tank membrane



General Agricultural Products

Agrostretch

Colors:

White

Black

Green

PACKING:

1 ROLL/CARTON

24 CARTONS/PALLET

DIMENSIONS:

WIDTH: 250mm / 375mm / 500mm /
750 mm

LENGTH: 1500m / 1800m



Eurofilm Consumer Products



Consumer Products

Multilayer extrusion technology for printed and plain waste bags, carrier shopping bags, hygienic products, etc.



Eurofilm Consumer Products

Waste bags with or without string

Full range of dimensions, plain or printed

Indicative items:

- **WC or office bag:** 45X50 without string, star sealed.
- **For kitchen use:** 52X75 and 54X80 with string.
- **Large:** 70X100 with string.

Bag color, dimensions, additives & packaging



Eurofilm Consumer Products

HDPE – LDPE carrier bags:

SUPER MARKET SHOPPING BAGS

A complete range of waste bags is produced from modern materials that provide high mechanical strength and watertight welds, with or without heavy-duty cord and bags, with the ability to print and package with each customer's brand name and the dimensions, colors and fragrances.

- Super mini (No 35)
- Mini (No 40)
- Medium (No 48)
- Large (No 60)

Available in 25 kg packages or according to customer request. Produced in different colors

PASTRY HIGHLY TRANSPARENT BAGS

Pastry shopping bag of high transparency with customer logo.

SOFTLOOP + HOODED

It is produced in various colors, simple or printed, according to customer requirements.



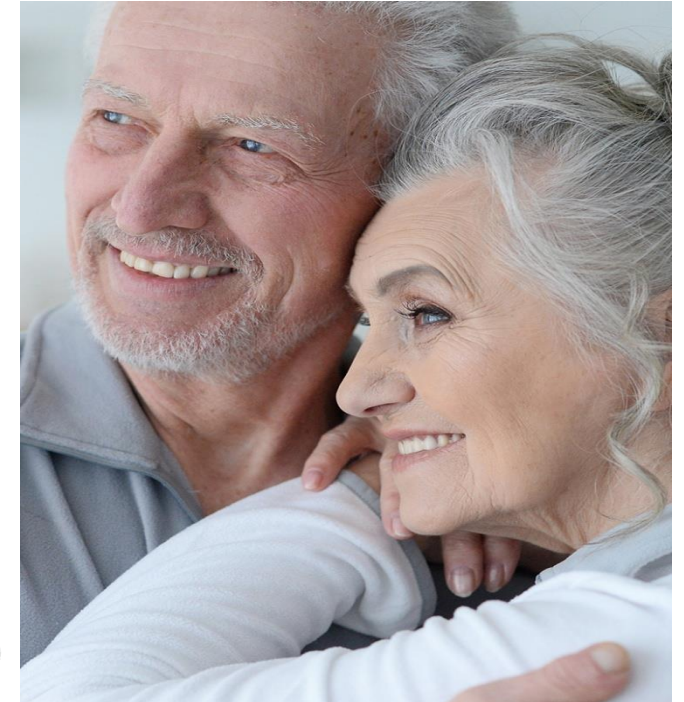
Eurofilm Consumer Products (Hygiene)

Personal Care Products

Materials for the manufacture of personal hygiene items such as diapers, sub-bands, etc. which we provide printed or imprinted. Choose from our available products.

Properties:

- high mechanical properties
- breathing capability
- exceptional sticking ability
- Rigidity
 - Widths: 20 cm - 100 cm
 - Thickness: 12µm - 25 µm
 - Up to 6 color printing
 - Corona Treatment

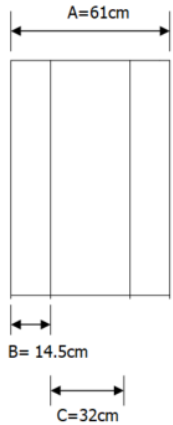


Eurofilm Consumer Products (Hygiene)

Eurofilm Mantzaris (Non – Breathable)			Lay - Flat			
Property	Direction	Unit	Standard	Hygiene 60/18	Hygiene 65/22	Hygiene 80/22
Width		cm	EQC*	60 +/- 1	65 +/- 1	80 +/- 1
Thickness		microns	EQC*	18 +/- 4%	22 +/- 4%	22 +/- 4%
Weight		g/m2	EQC*	18 +/- 4%	22 +/- 4%	22 +/- 4%
Density		g/cm3	ISO 527	1 +/- 0,7%	1 +/- 0,7%	1 +/- 0,7%
Tensile strength at Break	MD	N/mm2	ISO 527	16 +/- 2	19 +/- 2	19 +/- 2
	TD	N/mm2	ISO 527	13 +/- 2	15 +/- 2	15 +/- 2
Tensile Yield	MD	N/mm2	ISO 527	15 +/- 2	18 +/- 2	18 +/- 2
	TD	N/mm2	ISO 527	11 +/- 2	13 +/- 2	13 +/- 2
Elongation	MD	%	ISO 527	380 +/- 12%	440 +/- 12%	440 +/- 12%
	TD	%	ISO 527	590 +/- 12%	630 +/- 12%	630 +/- 12%
Friction Co-Eficient Untreated Area			ISO 8295	0,28-0,33		
Friction Co-Eficient Treated Area			ISO 8295	0,30-0,35		



Eurofilm Consumer Products (Hygiene)

Eurofilm Mantzaris (Non – Breathable)			Hygiene LD White 180/22 Gusset		
Property	Direction	Unit	Standard	90/61/22	
Width		cm	EQC*	180 +/- 0,7%	
Length A		cm	EQC*	61 +/- 1%	
Length B		cm	EQC*	14,5 +/- 2%	
Length C		cm	EQC*	32 +/- 2%	
Thickness		microns	EQC*	22 +/- 4%	
Weight		g/m2	EQC*	21,3 +/- 4%	
Density		g/cm3	ISO 527	0,97 +/- 0,7%	
Tensile strength at Break	MD	N/mm2	ISO 527	21 +/- 2	
	TD	N/mm2	ISO 527	14 +/- 2	
Tensile Yield	MD	N/mm2	ISO 527	19 +/- 2	
	TD	N/mm2	ISO 527	13 +/- 2	
Elongation	MD	%	ISO 527	420 +/- 12%	
	TD	%	ISO 527	650 +/- 12%	
Friction Co-Eficient Untreated Area			ISO 8295	0,29-0,35	
Friction Co-Eficient Treated Area			ISO 8295	0,28-0,34	



Eurofilm Consumer Products (Hygiene)

BREATHABLE FILM

MDO production line

Breathable film in various widths and thicknesses

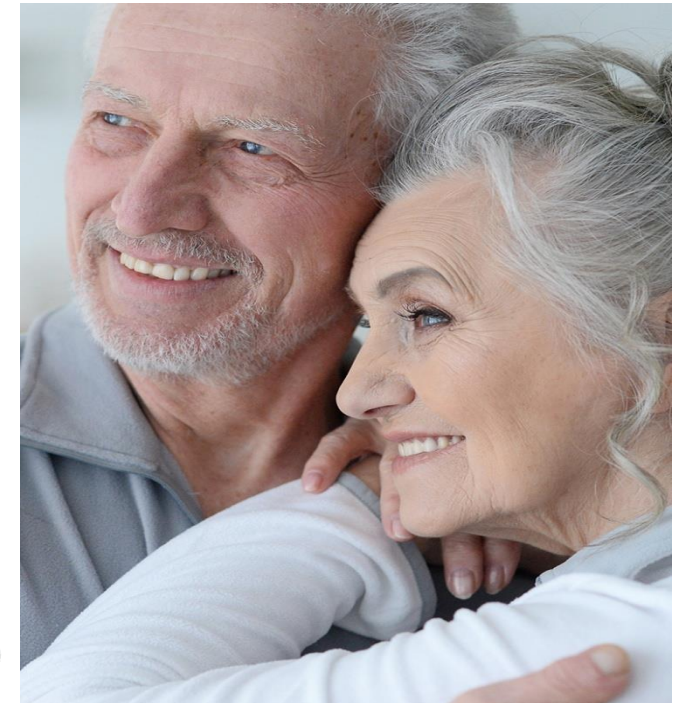
PE breathable film for diapers

WVTR (Lyssy g/m²/24h) for film 14 GSM = 2.079

Deviation of film thickness = +/- 5 to 7%

Tensile Strength at Break (MD) = 35 N/mm²

Coefficient of Friction = 0,23 – 0,28



Eurofilm Consumer Products (Hygiene)

Eurofilm Mantzaris			Hygiene LD Breathable White Lay Flat	
Property	Direction	Unit	Standard	80/15
Width		cm	EQC*	80 +/- 1%
Thickness		microns	EQC*	15 +/- 7%
Weight		g/m2	EQC*	15 +/- 4%
Density		g/cm3	ISO 527	1 +/- 0,7%
Tensile strength at Break	MD	N/mm2	ISO 527	25+/- 2
	TD	N/mm2	ISO 527	8+/- 2
Tensile Yield	MD	N/mm2	ISO 527	24,5 +/- 2
	TD	N/mm2	ISO 527	5,5 +/- 2
Elongation	MD	%	ISO 527	18
	TD	%	ISO 527	206
Friction Co-Eficient Untreated Area			ISO 8295	0,23-0,28
WVTR (lyssy, 38 C, 80%RH)		g/m2/day	WSP 70.6	2000-3000

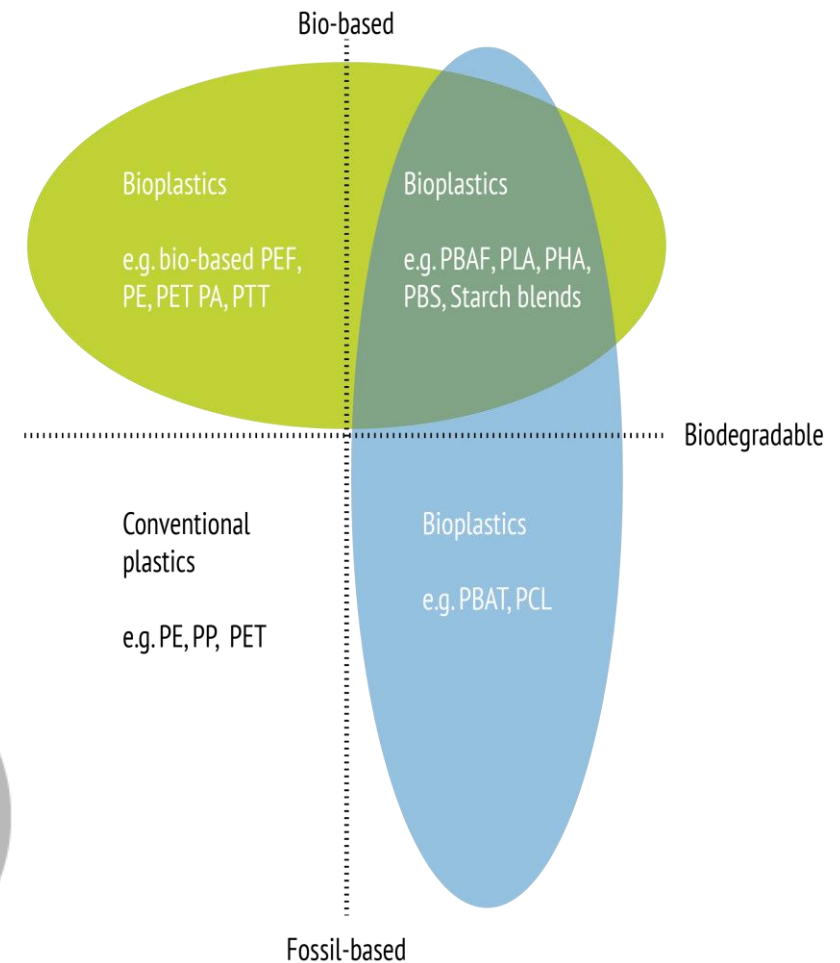


Eurofilm Consumer Products (Hygiene)

Moving towards a Green Bio Friendly future

Eurofilm actively invests in R&D focused in the promotion of **Bio Based** Raw materials suitable to follow EN 13432 requirements for:

- Compostable
- Home Compostable



Eurofilm Consumer Products

Boat protection film

For protection of new boats, during transportation and storage.
Also, after maintenance work.

General features

Standard UV protection is for 8 months at 140 kLys, but
Longer protection can be achieved upon demand.

Width: from 6 to 10 meters

Thickness: up to 300 μm

Length: Dimensions can vary according to customers request.



Eurofilm Packaging Products



Eurofilm Packaging Products

Packaging Film

- Shrink film
- Anti-stick shrink film
- Paper like film
- Peel able film
- Film for automated packaging



Eurofilm Packaging Products

Shrink hood film:

LDPE thermo shrink (in tabular form) is used for automated packaging of various products on pallets. It enables stability of pallets in storage and transportation. Additionally, it protects your products from dust, dirt, water, weather conditions and damage.

On your request, we can print up to 6 colours on this type of shrink hood film, and give you up to 12 months of increased UV protection.

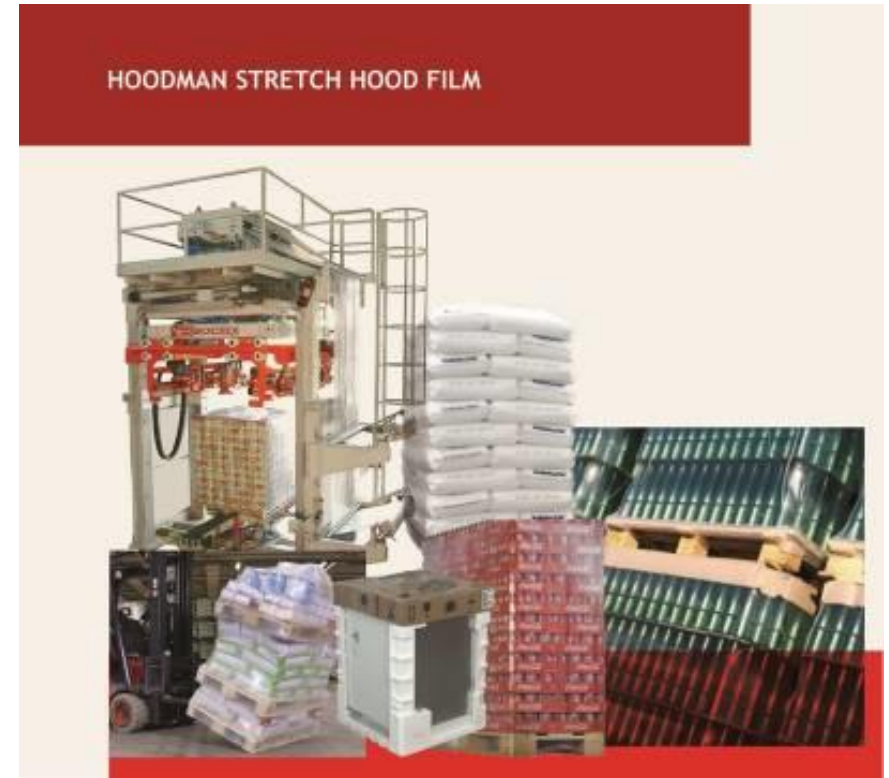
Stretch Hood Film

Multilayer film suitable for automatic high speed packaging lines (palletizers).

Key properties:

- Stability of the pallet
- Economy (less weight per pallet)
- Flexibility – one size film can wrap pallets of various sizes
- Transparency - security
- High packaging speed
- Energy saving
- Waterproof and sun protection

Mostly used for pallets of piled sacks with goods, bottles, domestic appliances, bricks, etc.



Eurofilm Packaging Products

STRETCH FILM FOR MANUAL APPLICATION

Width: 50cm

Thickness: Anò 17 – 23 microns

Weight/Rol: 2,3 kg approx.

STRETCH FILM FOR MACHINE APPLICATION

Width: 50cm

Thickness: Anò 17 – 23 microns

Weight/Rol: 2,3 kg approx.

- **BL**

Better pallet tightening .One adhesive surface. Packaged pallets do not stick to each other Absence of the usual 15µm film noise. Low unfolding intensity to keep the manual stretch film impact minimum. Thinner so that fewer grams per pallet (215gr/pallet) are required



Eurofilm Packaging Products

Printed/plain film for Automatic Packaging lines

- Suitable for packaging lines without shrink oven.
- Close collaboration with customers ensures the creation of optimal design for a high quality printed packaging.
- Careful selection of ink quality and standardized testing of the printing process help us deliver great prints. Our sophisticated procedures in compliance with ISO 9001/2000 ensure high quality and perfect repeatability.
- Printing applications may be on a wide variety of materials, having different mechanical and optical properties depending on the end –use requirements. Typical materials used are polyethylene (LDPE, LLDPE, HDPE), of polypropylene (CAST PP, OPP) polyester (PET), paper etc.

Main packaging applications are: paper and clothing industry, food packaging, personal care and consumer goods, bakery & confectionery products, pharmaceuticals, pesticides, cleaning products



Eurofilm Packaging Products

Plain / Printed Packaging for Bulky Items

- Printed film in rolls (sheet or tube) up to 2,5 m wide.
- Printed pallet-bags simple, shrink or stretch.
- Single or multilayer (COEX) films produced in various dimensions and thickness using special PE brands, leading to products with a wide variety of features (mechanical resistance, protection from UV radiation for outdoor storage, color, etc.)
- Meet branded packaging needs of various markets such as: building insulation materials, furniture, mattresses, timber, construction materials, chemicals, detergents, fertilizers, provender, fish feed, and many other products delivered on pallets providing not only protection and stability but also advertising during transportation.



Eurofilm Packaging Products

Packaging bags Printed / Plain

LDPE or HDPE in wide range of dimensions and colors.

Available in stock:

- General use small bag (3,5 µm)
- Mattress bag (single – double)
- Clothes & Suit bag
- Carpet Bag
- Debris bag, transparent of high strength (Packages of 25 Kg)



Eurofilm Packaging Products

Big Bags:

For protection of pallets or bulky items

Types available:

- Regular, for 4-6 months outdoor storage.
- UV-stabilized for longer periods of outdoor use, according to customer needs and specific requirements of application.

Welding width: up to 2 meters



Eurofilm Packaging Products

Heavy Duty Bags

- Ready-to-use bags or
- Rolls (tube or sheet) to be processed at customer's premises (appropriate packaging equipment required).

Key Properties

- Use special types of materials (LD-HD-LLDPE, PP).
- Implement advanced production processes for a high performance product.
- Excellent physical and mechanical properties (high strength, elasticity, friction coefficient, appealing appearance).
- Improve appearance of the packaged product and increase customer preference by printing high resolution designs on the packaging.
- Application of special surface treatment to create repousse anti-slip stripes that improve pallet stability.

Mostly used for packaging of fertilizers, detergents, provender, fish feed, molds, etc.



Lamination Film

EURO 2SLL 40AC

Polyethylene lamination transparent film with highly adhesive properties for flow-pack machines. Used with polyethylene and polypropylene . Suitable for packaging food products such as rice, beans, etc.

Types of film:

FT EURO 2SLL40AC

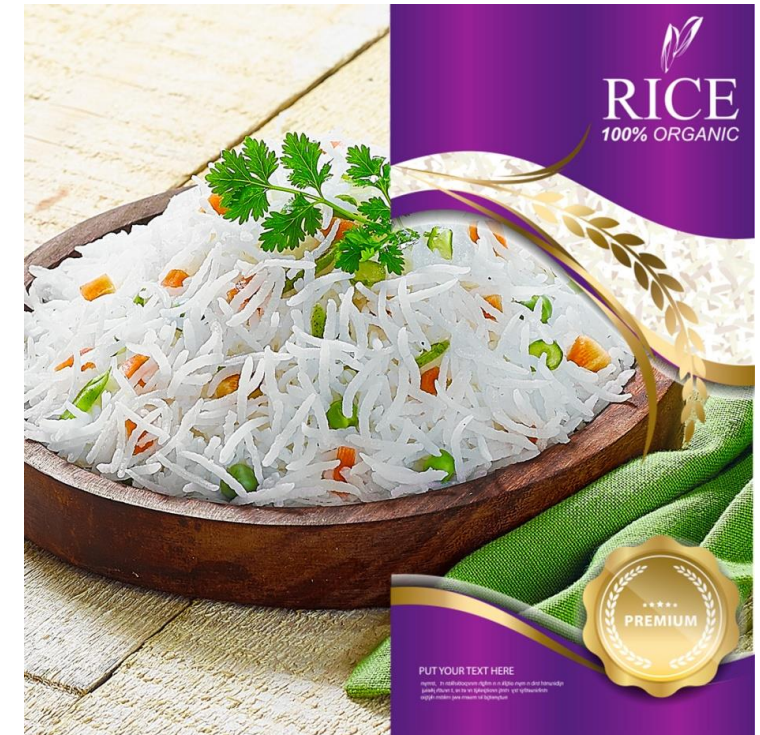
FT EURO 2SLL40ACA – **Anti-Fog**

FT EURO 2SLL40ACH – **High-Slip**

FT EURO 2SLL40ACW – **White**

CHEMICAL CHARACTERISTICS OF RAW MATERIAL

- Standard technical specifications
- Approved for food packaging according the (EU) Regulation No 10/2011 (14.1.2011) and its amendments on the suitability of food contact materials.
- Absence of heavy metals (Cd, CrVI, Pb, Hg) regulation 94/62 / EC



Lamination Film

EURO 2SLL 80AC

High quality film for triplex use (polyester-aluminum-polyethylene). Used in packages of products such as coffee, wet wipes, etc.

Types of film:

FT EURO 2SLL80AC

FT EURO 2SLL80ACA – **Anti-Fog**

FT EURO 2SLL80ACH – **High-Slip**

FT EURO 2SLL80ACW – **White**



Lamination Film

EURO 2SLL 100AC

High quality film for difficult and demanding applications, with quick and safe welding. Used in packages of products such as soap, oil containing products etc.

Types of film:

FT EURO 2SLL100AC

FT EURO 2SLL100ACA – **Anti-Fog**

FT EURO 2SLL100ACH – **High-Slip**

FT EURO 2SLL100ACW – **White**

NEW HD SHEET WITH 2LD OR LLD IN OUTER LAYERS

Suitable for cornflakes packaging, mesh bag handles, etc.

EASY PEEL 20AFFD: Lamination film of high requirements for the use of food packages (e.g. Cheese), requiring very good adhesion and relatively easy peel-opening. The adhesive substrate can be polypropylene (PP) or HDPE.

EASY PEEL (easy open): Lamination film for use in polyethylene food packaging. where very good PE to PE adhesion is required and relatively easy peel-opening



Film (40μm) FT & FC EURO2SLL40-80-100AC

Specifications		measurement unit	measurement standard	40AC	80AC	100AC	40ACW	80ACW	100ACW
Width)		cm	EQC	(30-240)± 1	30-240	30-240	30-240	30-240	30-240
Thickness		μm	EQC	40± 4%	40± 4%	40± 4%	40± 4%	40± 4%	40± 5%
Weight		g / m ²	EQC	36.9± 4%	36.88± 4%	36.9± 4%	39.2± 4%	39.2± 4%	39.2± 4%
Density)		g / cm ³	EQC	0,923±0,7%	0,922±0,7%	0,922±0,7%	0,98±0,7%	0,98±0,7%	0,98±0,7%
Tensile Strength	MD	N/mm ²	ISO 527	24± 2	21± 2	22± 2	22± 2	22± 2	21,5± 2
	TD	N/mm ²	ISO 527	17± 2	17± 2	23± 2	18± 2	18± 2	20± 2
Tensile Yield	MD	N/mm ²	ISO 527	23± 2	20± 2	21± 2	21± 2	21± 2	20.5± 2
	TD	N/mm ²	ISO 527	14± 2	14± 2	20± 2	14± 2	15± 2	17± 2
Elongation	MD	%	ISO 527	260±12%	330±12%	340±12%	280±12%	330±12%	390±12%
	TD	%	ISO 527	640±12%	570±12%	620±12%	600±12%	580±12%	610±12%
Coefficient of Friction		-	ISO 8295	0.15-0.25	0.15-0.25	0.15-0.25	0.15-0.25	0.15-0.25	0.15-0.25
Treatment		dyn	EQC	40± 5%	40± 5%	40± 5%	40± 5%	40± 5%	40± 5%
Color		-	-	Trasnparent	Trasnparent	Trasnparent	WHITE	WHITE	WHITE

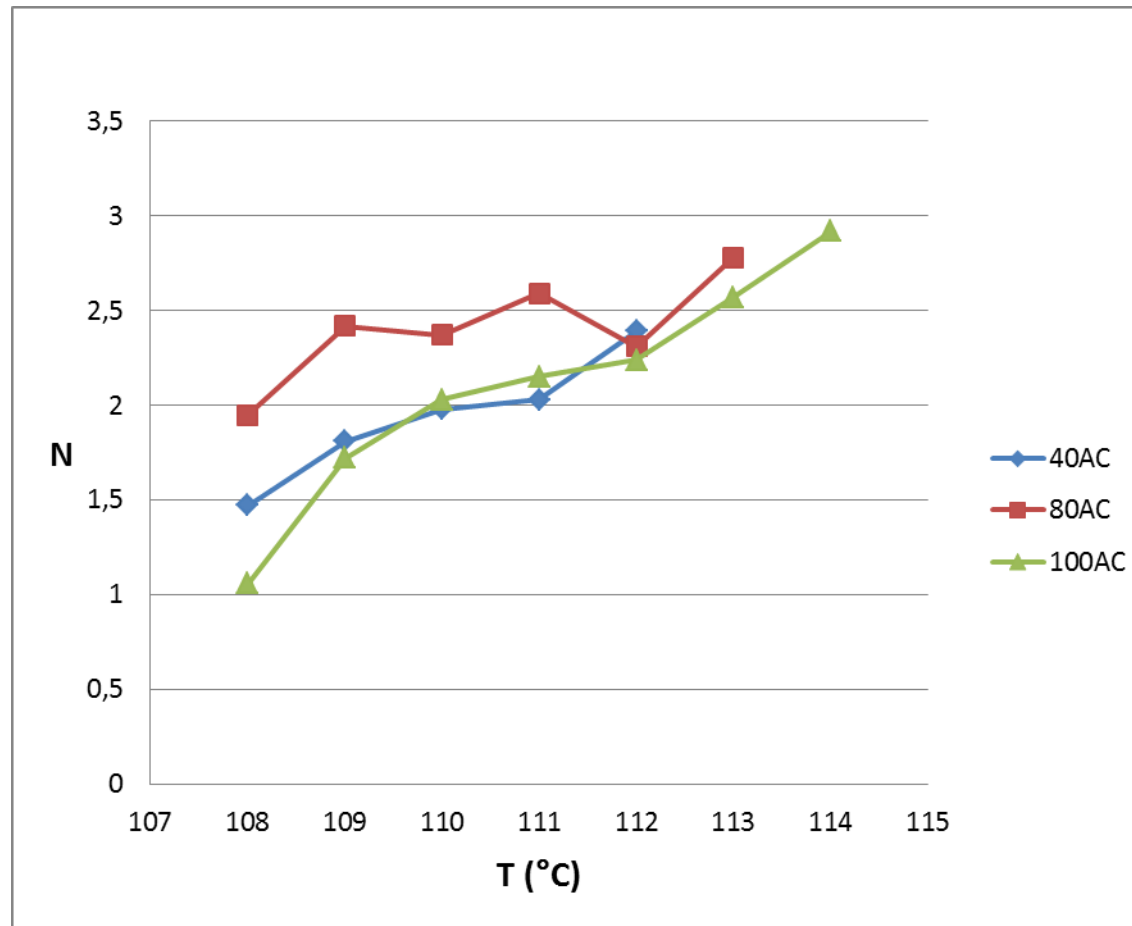


(50μm) EASY PEEL

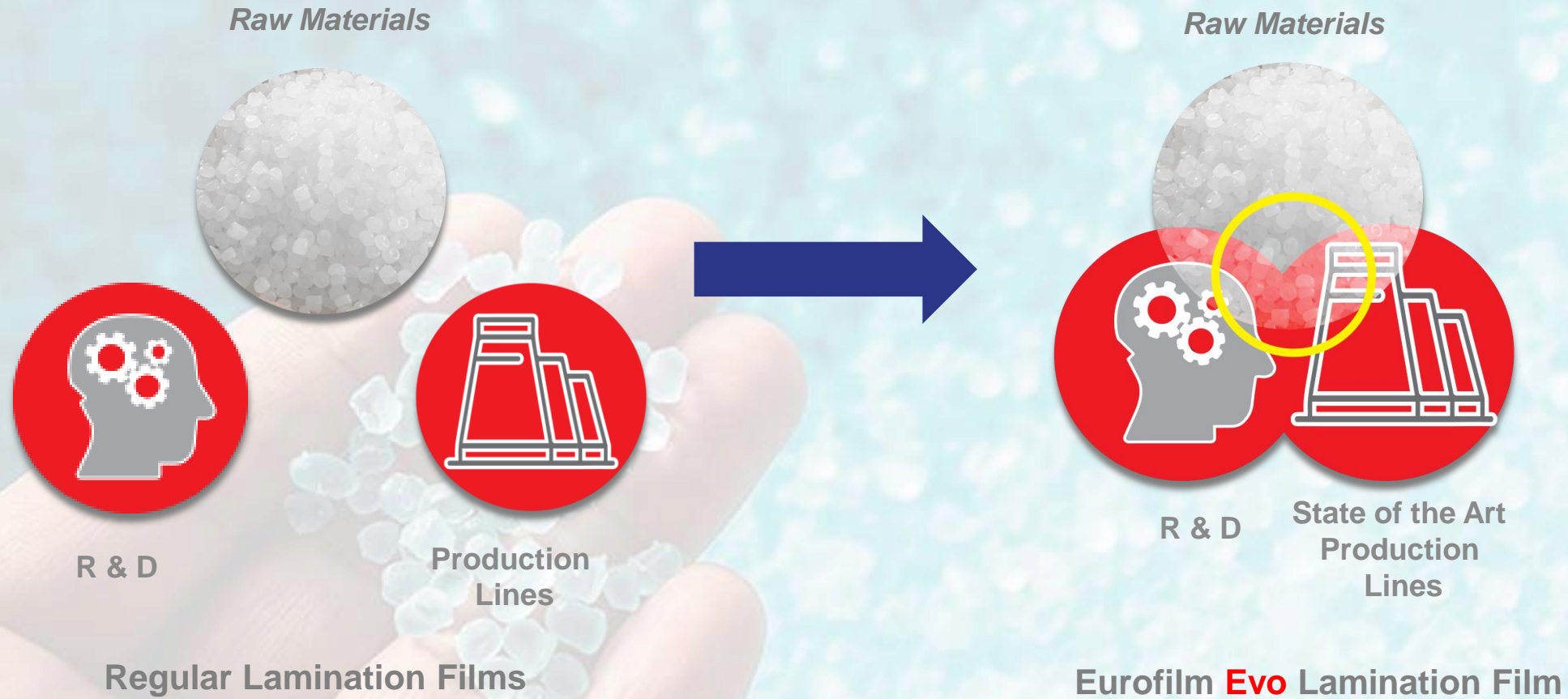
Specifications		measurement unit	measurement standard	EASY PEEL W	EASY PEEL W 20AFFD
Width)		cm	EQC	30-240	30-240
Thickness		μm	EQC	50± 4%	50± 4%
Weight		g / m ²	EQC	47,5± 4%	47,5± 4%
Density)		g / cm ³	EQC	0,95±0,7%	0,95±0,7%
HOT tack (Cooling time=5min)	108C	N	ASTM F 1921	2,64±5%	2,60±5%
	110C	N	ASTM F 1921	3,4±5%	3,23±5%
	112C	N	ASTM F 1921	3,8±5%	3,8±5%
Tensile Strength	MD	N / mm ²	ISO 527	21± 2	21,5± 2
	TD	N / mm ²	ISO 527	19± 2	19± 2
Elongation	MD	%	ISO 527	370± 12	360±12%
	TD	%	ISO 527	590± 12	600±12%
Coefficient of Friction	TREATED SIDE	-	ISO 8295	0.25-0.40	0,20-0,30
	UNTREATED SIDE	-	ISO 8295	0,50-0,60	0,45-0,55
Treatment		dyn	EQC	40± 5%	40± 5%
Color		-	-	WHITE	WHITE



Hot Tack (60 μ m)



The **Evo**lution of Lamination Films



The Evolution of Lamination Films

Advantages of Eurofilm Evo Lamination Film

- Highest film quality regarding flatness, camber & Curl
 - Higher printing, lamination and roll quality
 - Faster converting speeds
 - Less curling of laminates
- No negative influence on the thickness profile due to minimal stretching

Improvement of camber

- Less edge trim during converting
- Less wrinkles in lamination process
- Better sealing quality in FFS machines
- Waste savings in FFS machines due to less film camber

Improvement of lamination quality

- Reduction of curling
- Significantly improved converting quality which results in lower final production waste.
- Reduction of adhesive = sustainable T.C.O savings

Improvement of printing quality (flexo)

- Dot gain improvements result in more precise color register with less printing impression which significantly improves plate life.
- Up to 30% higher printing speed with constant print quality, and printing cost savings.



The **Evo**lution of Lamination Films

Evo Lamination Film

Run your press at full speed with perfect print quality!

Highest Film Quality without camber, curl & bagginess

- Higher printing, lamination & roll quality
- Faster converting speeds
- Less curling of laminates



Moving towards a Sustainable Bio Friendly future in Packaging

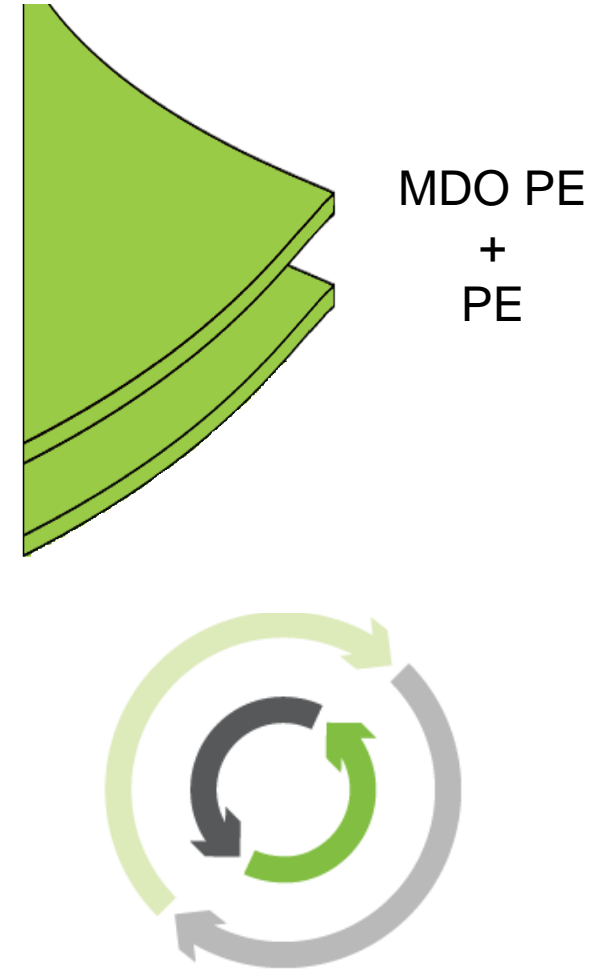
Multi-Material film structures provide a wide range of protective and functional properties in flexible packaging applications

However:

Multi-Material film structures are **not recyclable**

Eurofilm invests in R&D focused in the promotion solutions that enable:

- Reduced material consumption
- Full product recyclability
- Use of Recycled materials
- Use of Renewable materials



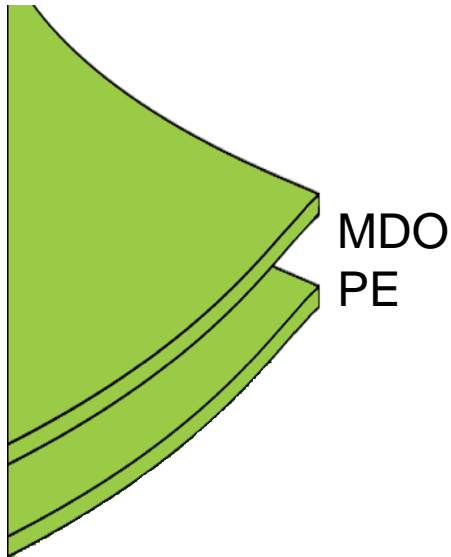
The Future of Packaging

Recyclable Mono-Material Films



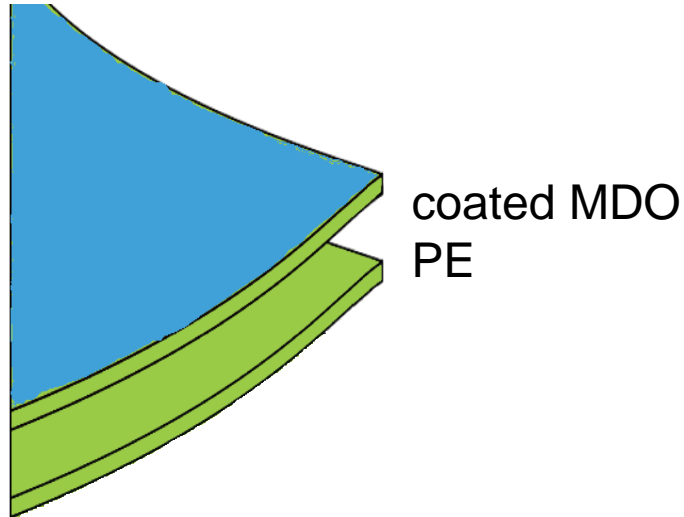
Water vapor barrier

MDO + PE



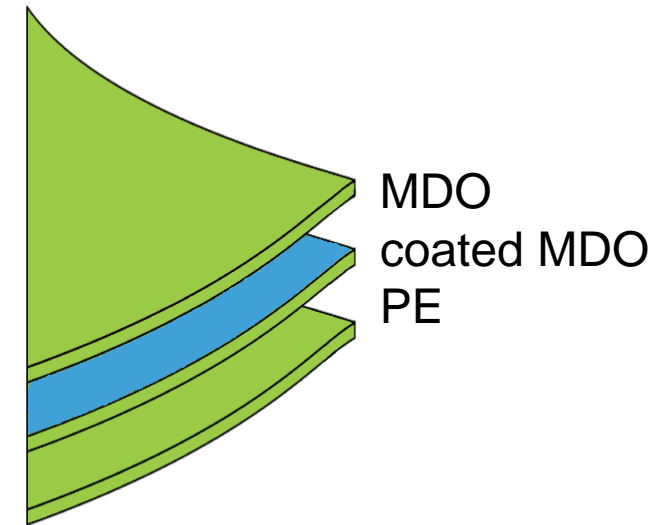
Medium oxygen and water

coated MDO + PE

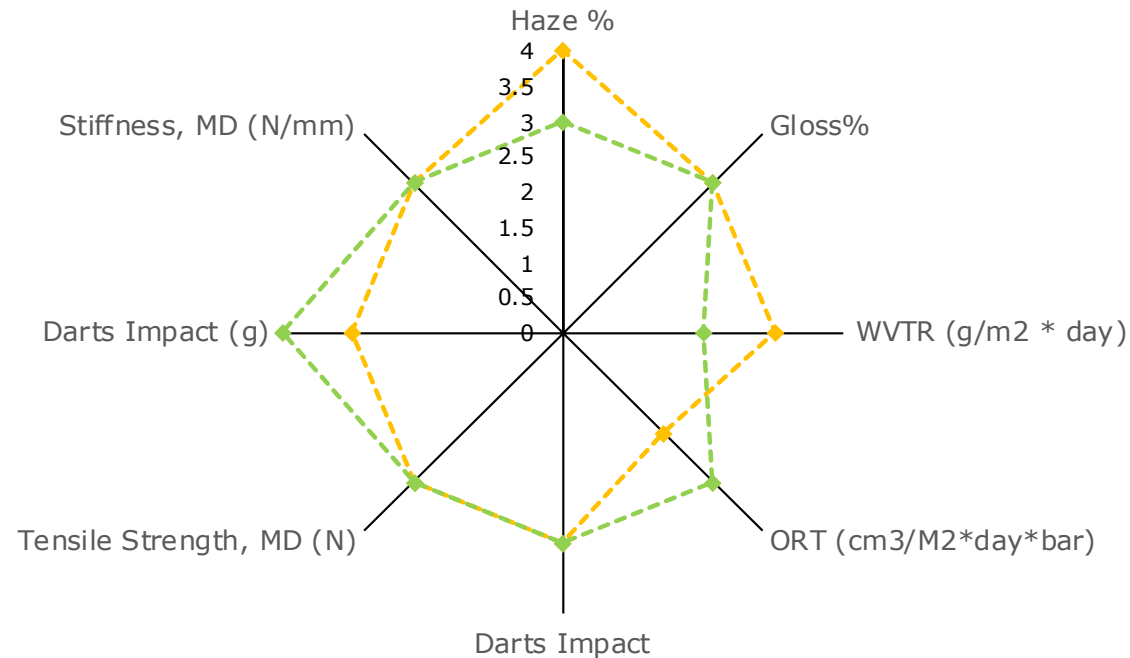


High oxygen and water vapor

coated MDO + MDO + PE



The Evolution of Lamination Films



| MDO for **water** vapor barrier?

| MDO for **medium oxygen and water** vapor barrier?

| MDO for **high oxygen and water** vapor barrier?



EUROfilm

MANTZARIS S.A.

PLASTIC FILM INDUSTRY

