

HAND STRETCH FILM

TECHNICAL SPECIFICATION

1 PRODUCT DESCRIPTION

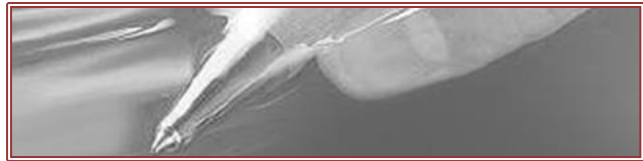
This technical specification concerns the polyethylene, 33-layer, transparent, LLDPE stretch film manufactured with the use of the CAST film extrusion technology.

Stretch film is used for packing and protection of products, ranging from loads bundled on pallets, to individual items of large overall dimensions.



The hand stretch film manufactured with the use of the nano technology features:

- very high puncture resistance,
- excellent optics properties,
- good cling properties,
- high clarity.



2 HAND STRETCH FILM DIMENSIONS

Thickness [μm] ($\pm 1 \mu\text{m}$)	10		12		15		17	
Width [mm] ($\pm 5 \text{ mm}$)	450	500	450	500	450	500	450	500
Roll wound (m)	600		450		300		300	
Roll weight [kg] ($\pm 0.05\text{kg}$)	2,72	3,01	2,47	2,74	2,10	2,33	2,35	2,60

It is possible to manufacture the film of custom size after having consulted and confirmed with our Customer Service.

3 MECHANICAL PROPERTIES OF THE HAND STRETCH FILM

Mechanical properties of hand stretch film are determined based on tests performed with the use of a device simulating the operation of a wrapping process in laboratory.

The Ultimate test determines the maximum stretch [%] when the film starts to rupture.

The Puncture test determines the force [kg] needed for puncturing the film.

The Retention test determines the maximum force [kg] exerted by the film in reaction to a point pressure.



TYPICAL MECHANICAL PROPERTIES OF THE HAND STRETCH FILM

THICKNESS	μm	10	12	15	17	20	23	
Ultimate stretch*	%	158	170	203	225	240	261	
Puncture force*	kg	1,65	1,89	2,33	2,53	2,67	3,28	
Max Retention force*	kg	0,80	0,95	1,22	1,33	1,40	1,66	
Retention force after 60s*	kg	0,68	0,77	1,03	1,10	1,15	1,40	

*Mechanical properties measured on pre-stretch: 10-12μm – 75%, ≥15μm – 100%

*Tolerance for mechanical parameters is: -5%.

The film maintains its physicochemical properties for up to 6 months when storing the product in the conditions of an average yearly insolation of 100 kLy.

4 EXTERNAL APPEARANCE

- Product surface should be uniform and free of mechanical damage.
- Film impurities of size ranging from 0.3 mm² to 0.6 mm² that do not create holes are allowed in the total number of 2 pcs/m².
- Stretch film roll surface can have bands, within tolerance limits, caused by variation in film gauge.
- Relative displacement of film layers in the roll face plane cannot exceed the allowable tolerance limit on the film width (± 5 mm).

5 CONFORMITY WITH EU DIRECTIVES

The LLDPE stretch film conforms to the requirements of EU Directive No. 94/62/EC, as amended:

- The stretch film is manufactured in a way to ensure limiting its volume and weight down to the necessary minimum values required for the performance of its function, considering expectations of its user.
- The LLDPE stretch film is designed and manufactured in a way enabling it to be recycled; film waste is regranulated and directed back to the process as raw material.
- The LLDPE stretch film is manufactured in a way allowing the reduction of substances hazardous to human health or life, or to the environment; supplier declarations concerning the absence of harmful and hazardous substances.
- The maximum content of lead (Pb), cadmium (Cd), mercury (Hg), chromium (VI) (Cr(VI)) in a package does not exceed 100 mg/kg, which is confirmed by tests performed periodically by accredited laboratories.
- The stretch film is not intended for direct contact with food. The stretch film is allowed to be used in applications involving indirect contact with food.

6 PACKING

- The LLDPE manual stretch film is packed in a manner protecting rolls from mechanical damage and fouling in transport.
- The film is wound on a cardboard core.
- The rolls are packed in 6-piece boxes or in multi-packs and placed on a pallet: industrial 1200 x 1000 or EUR 1200 x 800.
- The size of the box and the number of pieces on the pallet depend on the type of products packed and is adjusted individually to every order.
- Each pallet is protected with a rain-proof film hood, wrapped in stretch film and equipped with a label specifying the product.

7 STORAGE

The stretch film shall be stored with observance of the following principles:

- Rooms used for film storage should be dry and well ventilated.
- The temperature of film storage and use: from +5 °C to +30 °C
- Maximum two full pallets are allowed to be stacked on each other.

8 TRANSPORT

The product shall be transported with the use of enclosed means of transportation and shall be protected against mechanical damage and weather conditions.

The LLDPE stretch film is very susceptible to mechanical damage, thus film rupturing during pallet wrapping is most commonly caused by insufficient care during transport, unloading, handling, placing on ground and installing the product in a wrapping machine.