



Clysar® HP

shrink packaging films

Description

DuPont *Clysar*® HP is a strong, clear, biaxially oriented, heat-shrinkable, linear low-density polyolefin film. Cross-linking produces a film that is extremely rugged and durable and provides strong seals and good shrinkage under a wide range of operating conditions. *Clysar*® HPS is a hot slip version of HP.

Uses

Clysar® HP is used when outstanding optics and a tough, durable wrap are required. Strong seals and excellent shrinkage are obtained with all gauges under a wide range of operating conditions. *Clysar*® HP is functional on manual, semiautomatic, and automatic shrink packaging machines.

Significant Features

Sealing

- Provides strong, durable seals with all sealing systems, including wires, knives, and electrostatic overlap
- Has a wide sealing temperature range
- Requires 1-1.5 sec of cooling dwell
- Is forgiving to less-than-optimum seal equipment conditions
- Seals do not become brittle with age
- Excellent seal integrity with virtually no pin holes

Shrinking

- Compatible with all air evacuation systems
- Excellent burn through resistance
- Forgiving under less than optimum tunnel conditions
- Average available shrinkage
- Medium shrink force
- Balanced shrinkage

General

- Excellent film durability
- Good tear resistance
- Will not embrittle with age
- High gloss, clarity, sparkle
- Remains durable at freezer temperatures
- Available with print-treatment
- Compatible with SPI Code -- Class 7

Standard Put-Ups

- *Clysar*® HP is available in four gauges: 60, 75, 100, and 150, as either flat or folded film.
- Flat film is available as *Clysar*® HP, print treated on one side as *Clysar*® HPT, or silicone coated for improved hot slip as HPS.
- Folded film is available as *Clysar*® HPF, or silicone coated for improved hot slip as HPFS.
- Film is wound on 3 and 6-inch cores to the standard roll sizes as shown in Table 1. Rolls with lengths of three or four times the 6 × 11-inch put-up are available on 6-inch cores.
- Folded film will have approximately half the linear footage of flat film for same gauge and roll dimensions.

Available widths: Flat 4-68 inches

Folded 5-47 inches

Flat film is slit to width in 1/4-inch increments.

Folded rolls available in 1/2-inch increments.

Table 1
***Clysar*® HP Linear Footage -- Flat Film**

Core I.D., in.	Nominal Roll O.D., in.	Gauge			
		60	75	100	150
3	8½	8,750	7,000	5,250	3,500
3	13	17,500	14,000	10,500	7,000
6	11	8,750	7,000	5,250	3,500
6	14	17,500	14,000	10,500	7,000

FDA/USDA Status

Clysar® films sold by DuPont for food packaging use comply with U.S. Food and Drug Administration (FDA) requirements under the Federal Food, Drug, and Cosmetic Act as amended. *Clysar*® complies with FDA regulation 21 CFR 177.1520 -- Olefin polymers, allowing use for articles that contact food, except for articles used for packing or holding food during cooking. This FDA compliance and a continuing guarantee from DuPont will meet USDA needs for packaging meat and poultry products.

Use

DuPont does not recommend heating or cooking foods in *Clysar*®. High temperature, high speed, heat sealing of polyolefin shrink films will release small amounts of "smoke," which should be removed by adequate ventilation in normal commercial practice. Refer to "Safety in Handling and Use" brochure.

Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled.

Storage

Storage below 32°C (90°F) is recommended. Prolonged exposure to temperatures moderately above 32°C (90°F) or brief exposure to temperatures well above 32°C (90°F) may cause difficulty in unwinding film.

Table 2
Typical Properties of *Clysar*® HP

Property	ASTM Test Method	Unit	Gauge			
			60	75	100	150
Haze (avg.)	D1003	%	2.2	2.3	2.5	2.6
Gloss at 20° (min.)	D2457	(photocell)	145	145	140	130
Shrinkage, 102°C (216°F)* -- 10 min	D1204	% (area)	50	50	50	50
Shrink Force, 100°C (212°F) (avg.) (based on shrink stress 375 psi)	D2838	g/in	102	128	170	255
Tensile Strength (avg.)	D882	kpsi	15	15	15	15
Stiffness Modulus (avg.)	D882	kpsi	60	60	60	60
Elongation (avg.)	D882	%	125	135	160	170
Tear Strength (avg.)	D1922 (Elmendorf)	g	25	25	40	60
Spencer Impact	D3420	in-lbs	10	12	14	17
COF, Kinetic	D1894		0.20	0.20	0.17	0.15
WVTR	E-96	g/100 in ² / 24 hr	1.5	1.4	1.0	0.75
Oxygen Permeability	D3985	cc/100 in ² / 24 hr/atm	600	500	400	300
CO ₂ Transmission	D1434	cc/100 in ² / 24 hr/atm	2,500	2,300	1,600	1,200

*Film Temperature

Note: These values are typical data for *Clysar*® HP shrink film and are not intended for use as limiting specifications.

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CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, see DuPont Medical Caution Statement, H-50102.



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