Summary of Properties

Clysar® HPG

Description

Clysar® HPG (HP Gold) is a strong, clear, biaxially oriented, heat-shrinkable, cross-linked, polyolefin film.

Uses

Clysar® HPG is used when outstanding optics and a tough, durable wrap with strong seals and excellent shrinkage are required. HPG is functional on manual, semiautomatic and automatic packaging machines.

Significant Features

Sealing

- Provides strong, durable seals with all sealing systems, including wires, knives, and electrostatic overlap.
- Wide sealing temperature range.
- Requires little or no cooling dwell.
- When properly sealed, excellent seal integrity with virtually no pinholes when properly sealed.

Shrinking

- Excellent burn-through resistance.
- Average available shrinkage.
- Higher shrink force provides better bundling capability.

General

- Good tear resistance.
- High gloss, clarity and sparkle.
- Cleans up well on package.

Standard Put-Ups

- Clysar HPG is available in six thicknesses (micron): 15, 19, 25, 31.5, 38, and 50, as either single-wound (SW) or center-folded (CF or F) film.
- Clysar HPG is also available print treated on the outside (HPGT) or silicone coated for improved hot slip (HPGS).
- Single-wound film is available in widths from 110 – 1720 mm in 10 mm increments.
- Center-folded film is available in widths from 130 – 1190 mm in 15 mm increments. Standard CF stock sizes are available in 50mm width increments.
- Center-folded film will have approximately half the linear length of flat film for same thickness and roll dimensions.
- Clysar VHG is the 12.5-micron version of Clysar HP Gold. Clysar VHG is not available print treated, nor silicon coated
- Center-folded VHG film is available in widths from 130 –760 mm in 10mm increments.
- Available in standardized pre-perforated pattern or as plain film.
- Film is wound on 76 and 152 mm cores to the standard roll sizes as shown in Table 1.

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Table 1
Clysar® HPG
Linear Length – Flat Film

Core I.D., mm.	Roll O.D., mm.	Micron						
		12.5[1]	15	19	25	31.5	38	50
76	242	3,200	2,660	2,130	1,600	1,280	1,060	800
76	331	6,400	5,330	4,260	3,200	2,560	2,130	1,600
152	280	3,200	2,660	2,130	1,600	1,280	1,060	800
152	356	6,400	5,330	4,260	3,200	2,560	2,130	1,600
152	477	12,800	10,660	8,530	6,400	5,120	4,260	3,200

[1] Clysar VHG is the 12.5-micron version of HPG.

EU Regulation/FDA/USDA Status

Clysar films sold by Bemis for food packaging use comply with the food contact regulations of European Union and U.S. Food and Drug Administration (FDA) requirements under the Federal Food, Drug, and Cosmetic Act as amended. Bemis 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 Bemis will meet USDA requirements for packaging meat and poultry products.

Use

Bemis does not recommend cooking foods in Clysar films. High temperature and high speed sealing of polyolefin shrink films will release small amounts of "smoke," which should be removed by adequate ventilation in normal commercial practice.

Disposal

Preferred options for disposal are: (1) recycling, SPI Code – Class 4; (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

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.

For more detailed information on the safe handling of Bemis Clysar films a "Safety in Handling and Use" guide and OSHA Material Safety Data Sheets can be obtained from your Bemis Clysar representative.

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Table 2
Typical Properties of Clysar® HPG

Property	ASTM Test Method	Unit	Thickness (Micron)						
			12.5[1]	15	19	25	31.5	38	50
Haze (avg)	D1003	%	2.0	2.5	2.5	3.0	3.0	3.0	3.5
Gloss at 20° (min)	D2457	(photocell)	135	135	135	130	130	130	120
COF, Kinetic	D1894		0.20	0.15	0.15	0.15	0.15	0.15	0.15
Shrinkage, 102°C (216°F)* -- 10 min	D1204	% (area)	50	50	50	50	50	50	50
Shrink Force	D2838	N/15mm @100°C	0.521	0.753	0.839	0.927	1.158	1.390	1.853
Stiffness Modulus (avg)	D882	MPa	414	414	414	379	379	345	345
Tensile Strength (avg)	D882	MPa	103	103	103	103	103	103	103
Elongation (avg)	D882	%	135	145	150	160	160	170	180
Tear Strength (avg) (Elmendorf)	D1922	N	0.147	0.196	0.245	0.392	0.441	0.490	0.932
Spencer Impact	D3420	mm-kg	92	115	150	173	219	254	346
WVTR	E-96	g/m² /24 hr	29.5	23.3	21.7	15.5	14.0	12.4	7.8
Oxygen Transmission	D3985	cc/m² /24 hr	12,245	9,300	7,750	6,200	5,425	4,650	3,875
CO2 Transmission	--	cc/m² /24 hr	46,500	38,750	35,650	24,800	21,700	18,600	15,500

[1] Clysar VHG is the 12.5-micron version of HPG.

Note: These values are typical data for Clysar HPG shrink film and are not product release specifications, warranties, or limiting specifications. Values are based on initial production and tests run during development of this film.

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