

Clysar® LLG

Description

Clysar® LLG (LLP Gold) is a strong, clear, biaxially oriented, heat-shrinkable, nonirradiated polyolefin film.

Uses

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

Significant Features

Sealing

- Compatible with all sealing systems. Especially suited for continuous, automatic side seals.
- Wide sealing temperature range.
- Requires no cooling dwell.
- Excellent seal integrity with virtually no pinholes.

Shrinking

- Best when used on tunnels with good temperature control.
- Average available shrinkage.
- Medium shrink force.

General

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

Standard Put-Ups

- Clysar LLG is available in five thicknesses (micron): 15, 19, 25, 38, and 50, as either single-wound (SW) or center-folded (CF or F) film.
- Clysar LLG is also available 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 10 mm increments.
- Center-folded film will have approximately half the linear length of flat film for same thickness and roll dimensions.
- 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.

Table 1
Clysar® LLG
Linear Length (m) – Flat Film

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

EU Regulation/FDA/USDA Status

Clysar films sold 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 Clysar will meet USDA requirements needs for packaging meat and poultry products.

Use

Bemis does not recommend cooking foods in Clysar. High temperature and high-speed sealing of Clysar 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 Clysar films a "Safety in Handling and Use" guide and OSHA Material Safety Data Sheets can be obtained from your Clysar representative.

Table 2
Typical Properties of Clysar® LLG

Property	ASTM Test Method	Unit	Thickness (Micron)				
			15	19	25	38	50
Haze (avg)	D1003	%	2.5	2.5	3.0	3.0	3.5
Gloss at 20° (min)	D2457	(photocell)	135	135	130	130	120
COF, Kinetic	D1894		0.20	0.15	0.15	0.15	0.15
Shrinkage, 102°C (216°F)* 10 min	D1204	% (area)	50	50	50	50	50
Shrink Force	D2838	N/15 mm @100°C	0.753	0.839	0.927	1.390	1.853
Stiffness Modulus (avg)	D882	MPa	414	414	379	345	345
Tensile Strength (avg)	D882	MPa	103	103	103	103	103
Elongation (avg)	D882	%	145	150	160	170	180
Tear Strength (avg) (Elmendorf)	D1922	N	0.196	0.245	0.392	0.686	0.932
Spencer Impact	D3420	mm-kg	115	150	173	254	346
WVTR	F1249	g/m ² /24 hr	23.3	21.7	15.5	11.6	7.8
Oxygen Transmission	D3985	cc/m ² /24 hr	9,300	7,750	6,200	4,650	3,875
CO2 Transmission	--	cc/m ² /24 hr	38,750	35,650	24,800	18,600	15,500

*Film Temperature Note:

These values are typical data for Clysar LLG 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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The technical data contained herein are guides to the use of Bemis Clysar films. The advice contained herein is based upon tests and information believed to be reliable, but users should not rely upon it absolutely for specific applications because performance properties will vary with processing conditions. It is given and accepted at user's risk and confirmation of its validity and suitability in particular cases should be obtained independently. Bemis Clysar makes no guarantees of results and assumes no obligations or liability in connection with its advice. This publication is not to be taken as a license to operate under, or recommendation to infringe, any patents.

CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, see Bemis Medical Caution Statement, MCS_01.