

# Clysar® AFG-E

## Description

Clysar® AFG-E is a strong, clear, biaxially-oriented, heat-shrinkable, anti-fog polyolefin film. The film has excellent gloss, stretch recovery, toughness and tear resistance, and will not brittle with age.

## Uses

Clysar® AFG-E is used for food applications where ambient temperature swings create fogging problems in the package. Clysar AFG-E is ideally suited to overwrap fresh food products, including sausage, poultry, fish, and other trayed meat products, as well as individual, prepared, and multipacked produce and fruit. This grade of Clysar combines anti-fog, excellent shrinkage and recovery properties to maintain good-looking packages through all distribution steps. Clysar AFG-E is designed for use on packages that will be frozen, refrigerated or stored at room temperature. Treated film can be printed for high quality, colorful consumer presentation.

## Significant Features

### Sealing

- Compatible with all shrink-sealing systems.
- Sealing temperature range is wide, starting at temperatures 11 - 14°C lower than other polyolefin films.
- Seals easily even under less-than-optimum conditions.
- Seals at higher speeds than other cross-linked shrink films.
- Seals are thin and less likely to leak than ordinary polyolefin films.

### Shrinking

- Has very high degree of shrinkage at minimum shrink temperatures.
- Allows lower tunnel temperatures that can result in utility cost savings.
- Runs on wide variety of tunnels and shrinks under less-than-optimum conditions. It is not dependent on high air velocity to get good shrink.
- Produces medium shrink force.
- Requires sufficient air evacuation for proper package appearance.

## Standard Put-Ups

- Clysar AFG-E is available in 15, 19, and 25 micron in single-wound (SW).
- Clysar AFG-E is also available print treated on the outside.
- Single-wound film is available in widths from 110 – 1720 mm in 10 mm increments.
- Center-folded film is available on request in widths from 130 – 910 mm in 10 mm increments.
- Center-folded film will have half the linear length of flat film in the same thickness and roll dimensions.
- Film is wound on 152 mm cores to the standard roll sizes shown in Table 1.

**Table 1**  
**Clysar® AFG-E**  
**Linear Length (m) – Flat Film**

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

## 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. 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 Bemis Clysar will meet FDA requirements for packaging meat and poultry products.

## Use

Bemis Clysar does not recommend cooking foods in Clysar Shrink Film. High temperature and high speed sealing of Clysar 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 7, (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® AFG-E**

Property	ASTM Test Method	Unit	Thickness (Micron)		
			15	19	25
Haze (avg)	D1003	%	3.0	3.0	3.0
Gloss at 20° (min)	D2457	(photocell)	110	110	110
COF, Kinetic	D1894		0.3	0.3	0.3
Shrinkage, 100°C	D1204	% (area)	60	60	60
Shrink Force, (100°C, 365 psi shrink stress)	D2838	N/15 mm	0.580	0.695	0.869
Stiffness Modulus (avg)	D882	MPa	193	193	193
Tensile Strength (avg)	D882	MPa	76	76	76
Elongation (avg)	D882	%	150	150	150
WVTR	F1249	g/m <sup>2</sup> /24 hr (37.8°C, 100% RH)	24.8	21.7	15.5
Oxygen Transmission	D3985	cc/m <sup>2</sup> /24 hr (23°C, 50% RH)	13,950	12,400	9,300
CO <sub>2</sub> Transmission	--	cc/m <sup>2</sup> /24 hr. (23°C, 0% RH)	35,650	34,100	31,000

\*Film Temperature

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

---

**Bemis Worldwide**

**Phone +33 (0)2 35 05 93 93**

Internet/World Wide Web:  
<http://www.clysar.com>

E-Mail:  
[clysareurope@bemis.com](mailto:clysareurope@bemis.com)

---

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.