Versaflex™ CL E90

Thermoplastic Elastomer

Key Characteristics

Product Description

Versaflex™ CL E90 is an exceptional clarity, high performance and autoclavable solution ideal for healthcare and food packaging. Versaflex™ CL E90 is also formulated without the use of plasticizers.

New Product. Commercial specifications have not been established.

- Flexible
- Formulated without Plasticizers
- High Clarity

General		
Material Status	• Commercial: Active	
Regional Availability	• Africa & Middle East • Asia Pacific	• Latin America • North America
Features	• Good Flexibility	• High Clarity
Uses	• Bottles • Film	• Medical/Healthcare Applications • Personal Care
Agency Ratings	• FDA 21 CFR 177.1210 [1] • ISO 10993 Part 4	• ISO 10993 Part 5 • USP Class VI [2]
RoHS Compliance	• RoHS Compliant	
Appearance	• Clear/Transparent	
Forms	• Pellets	
Processing Method	• Extrusion	

Technical Properties [3]

Physical	Typical Value (English)	Typical Value (SI)	Test Method
Density / Specific Gravity	0.900	0.900	ASTM D792
Films	**Typical Value (English)**	**Typical Value (SI)**	**Test Method**
Oxygen Permeability			ASTM D3985
70°F (21°C), 4.7 mil (120 µm)	710 $cm^3 \cdot mil/100 in^2/atm/24 hr$	280 $cm^3 \cdot mm/m^2/atm/24 hr$	
70°F (21°C), 73 mil (1800 µm)	660 $cm^3 \cdot mil/100 in^2/atm/24 hr$	260 $cm^3 \cdot mm/m^2/atm/24 hr$	
Oxygen Transmission Rate			ASTM D3985
70°F (21°C), 4.7 mil (120 µm)	150 $cm^3/100\ in^2/24 hr$	2300 $cm^3/m^2/24$ hr	
70°F (21°C), 73 mil (1800 µm)	9.2 $cm^3/100\ in^2/24 hr$	140 $cm^3/m^2/24$ hr	

Elastomers	Typical Value (English)	Typical Value (SI)	Test Method
Tensile Stress [4, 5] (100% Strain, 73°F (23°C))	1000 psi	6.89 MPa	ASTM D412
Tensile Stress [4, 5] (300% Strain, 73°F (23°C))	1230 psi	8.51 MPa	ASTM D412
Tensile Strength [4, 5] (Break, 73°F (23°C))	1830 psi	12.6 MPa	ASTM D412
Tensile Elongation [4, 5] (Break, 73°F (23°C))	570 %	570 %	ASTM D412
Compression Set			ASTM D395B
72°F (22°C), 22 hr	27 %	27 %	
158°F (70°C), 22 hr	67 %	67 %	
212°F (100°C), 22 hr	73 %	73 %	
Hardness	**Typical Value (English)**	**Typical Value (SI)**	**Test Method**
Durometer Hardness (Shore A, 10 sec)	90	90	ASTM D2240
Fill Analysis	**Typical Value (English)**	**Typical Value (SI)**	**Test Method**
Apparent Viscosity			ASTM D3835
392°F (200°C), 1340 sec^-1	162 Pa·s	162 Pa·s	
392°F (200°C), 11200 sec^-1	34.0 Pa·s	34.0 Pa·s	

Processing Information

Extrusion	Typical Value (English)	Typical Value (SI)
Melt Temperature	360 to 400 °F	182 to 204 °C
Die Temperature	340 to 390 °F	171 to 199 °C

Extrusion Notes

Color concentrates with polypropylene (PP), ethylene vinyl acetate (EVA), or low density polyethylene (PE) carriers are most suitable for coloring Versaflex™ CL E90. Improved color dispersion can be achieved by using higher melt flow concentrates (with a melt flow from 25 - 40g/10 min). Typical loadings for color concentrates are 1% to 5% by weight. Liquid color can be used, but mineral oil based carriers may have a significant effect on the final hardness value. Concentrates based on PVC should not be used. A high color match consistency can be obtained by using precolored compounds available from GLS. The final determination of color concentrate suitability should be determined by customer trials.

Purge thoroughly before and after use of this product with a low flow (0.5 - 2.5 MFR) polyethylene (PE) or polypropylene (PP).

Drying is not Required.

Rear Zone = 330-370F
Center Zone = 350-400F
Front Zone = 360-420F
Screw Speed = 100-500 RPM

Notes

[1] Please contact GLS Thermoplastic Elastomers for a copy of the FDA compliance letter.

[2] Please contact PolyOne GLS Thermoplastic Elastomers for a complete copy of the GLS Healthcare Policy.
1. The Customer must notify GLS of any FDA Class I and/or European Union Class I medical devices for each specific product and application.
2. The Customer shall not knowingly manufacture, use, sell or otherwise supply, directly or indirectly products or compounds made from GLS products in any of the following without prior written approval by GLS for each specific product or application:
a. Cosmetics
b. Drugs and other Pharmaceuticals
c. Temporary or permanent implantation in the human body, regardless of the intended duration of implantation
d. Class II and Class III Medical Devices as defined in 21 CFR 860.3 ("Medical Devices")
e. Class IIa, IIb and III as defined in Directive 93/42/EEC

[3] Typical values are not to be construed as specifications.

[4] Die C

[5] 2 hr

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