Versaflex™ HC 2110-35N

Thermoplastic Elastomer

Key Characteristics

Product Description

Versaflex™ HC 2110-35N is a thermoplastic elastomer developed as an alternative to traditional isoprene rubber solutions for infusion stoppers & septums that require multiple needle penetration with good resealing performance. Versaflex™ HC 2110-35N addresses needs such as low piercing force and good spike retention.

- Overmolds to PP and PE
- Approved to ISO 10993-4 & -5
- Approved to USP VI
- Approved to USP 381: Elastomeric closures for injection.

General			
Material Status	• Commercial: Active		
Regional Availability	• Africa & Middle East • Asia Pacific	• Latin America • North America	
Features	• Good Colorability • Good Flow	• Good Mold Release • Good Moldability	• Good Processing Stability • Good Sterilizability
Uses	• Medical/Healthcare Applications • Membranes	• Overmolding • Plugs	• Sealing Devices • Seals
Agency Ratings	• ISO 10993 Part 4	• ISO 10993 Part 5	• USP Class VI [1]
RoHS Compliance	• RoHS Compliant		
Appearance	• Natural Color		
Forms	• Pellets		
Processing Method	• Injection Molding		

Technical Properties [2]

Physical	Typical Value (English)	Typical Value (SI)	Test Method
Density / Specific Gravity	0.890	0.890	ASTM D792
Elastomers	**Typical Value (English)**	**Typical Value (SI)**	**Test Method**
Tensile Stress [3, 4] (100% Strain, 73°F (23°C))	100 psi	0.689 MPa	ASTM D412
Tensile Strength [3, 4] (Break, 73°F (23°C))	452 psi	3.12 MPa	ASTM D412
Tensile Elongation [3, 4] (Break, 73°F (23°C))	750 %	750 %	ASTM D412
Tear Strength	97.1 lbf/in	17.0 kN/m	ISO 34-1
Compression Set			ISO 815
73°F (23°C), 72 hr	19 %	19 %	
158°F (70°C), 22 hr	33 %	33 %	
212°F (100°C), 22 hr	47 %	47 %	
Hardness	**Typical Value (English)**	**Typical Value (SI)**	**Test Method**
Durometer Hardness (Shore A, 10 sec)	32	32	ASTM D2240
Fill Analysis	**Typical Value (English)**	**Typical Value (SI)**	**Test Method**
Apparent Viscosity			ASTM D3835
392°F (200°C), 11200 sec^-1	10.7 Pa·s	10.7 Pa·s	

Processing Information

Injection	Typical Value (English)	Typical Value (SI)
Suggested Max Regrind	20 %	20 %
Rear Temperature	360 to 380 °F	182 to 193 °C
Middle Temperature	430 to 460 °F	221 to 238 °C
Front Temperature	460 to 480 °F	238 to 249 °C
Nozzle Temperature	460 to 480 °F	238 to 249 °C
Processing (Melt) Temp	450 to 480 °F	232 to 249 °C
Mold Temperature	60 to 90 °F	16 to 32 °C
Back Pressure	0.00 to 80.0 psi	0.00 to 0.552 MPa
Screw Speed	80 to 200 rpm	80 to 200 rpm

Injection Notes

Color concentrates with polypropylene (PP), ethylene vinyl acetate (EVA), or polyethylene (PE) carriers are most suitable for coloring Versaflex™ HC 2110-35N. Improved color dispersion can be achieved by using higher melt flow concentrates (with a melt flow from 25 - 40 g/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).

Regrind levels up to 20% can be used with Versaflex™ HC 2110-35N with minimal property loss, provided that the regrind is free of contamination. To minimize losses during molding, the melt temperature should remain as low as possible. The final determination of regrind effectiveness should be determined by the customer.

Versaflex™ HC 2110-35N has excellent melt stability. Maximum residence times may vary, depending on the size of the barrel. Generally, the barrel should be emptied if it is idle for periods of 8 - 10 minutes or longer.

Drying is not Required

Injection Speed: 1 to 3 in/sec
1st Stage - Boost Pressure: 800 to 1200 psi
2nd Stage - Hold Pressure: 40-70% of Boost
Hold Time (Thick Part): 2 to 5 sec
Hold Time (Thin Part): 1 to 4 sec

Notes

[1] 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

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

[3] Die C

[4] 2 hr

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