



# Versaflex™ HC 2110-57B

## Thermoplastic Elastomer

### Key Characteristics

#### Product Description

Versaflex™ HC 2110-57B is a TPE designed for use in the healthcare industry offering low stiction and good compression set for syringe stoppers, gaskets, seals and other applications.

- Bonds to Polypropylene
- ETO, Gamma, and Autoclave sterilization compatible
- Compatible with Silicone lubricants

#### General

Material Status	• Commercial: Active		
Regional Availability	• Africa & Middle East	• Latin America	• North America
Features	• Good Sterilizability	• Low Compression Set	• Low Friction
Uses	• Gaskets	• Overmolding	• Plugs
Agency Ratings	• ISO 10993 Part 4	• ISO 10993 Part 5	• USP Class VI <sup>1</sup>
RoHS Compliance	• RoHS Compliant		
Appearance	• Black		
Forms	• Pellets		
Processing Method	• Injection Molding		

### Technical Properties <sup>2</sup>

Physical	Typical Value (English)	Typical Value (SI)	Test Method
Specific Gravity	1.01	1.01	ASTM D792
Molding Shrinkage - Flow	9.0E-3 to 0.019 in/in	0.90 to 1.9 %	ASTM D955
Molding Shrinkage - Across Flow	0.011 to 0.021 in/in	1.1 to 2.1 %	ASTM D955
Elastomers	Typical Value (English)	Typical Value (SI)	Test Method
Tensile Stress <sup>3,4</sup> (100% Strain, 73°F (23°C))	369 psi	2.54 MPa	ASTM D412
Tensile Stress <sup>3,4</sup> (300% Strain, 73°F (23°C))	558 psi	3.85 MPa	ASTM D412
Tensile Strength <sup>3,4</sup> (Break, 73°F (23°C))	537 psi	3.70 MPa	ASTM D412
Tensile Elongation <sup>3,4</sup> (Break, 73°F (23°C))	350 %	350 %	ASTM D412
Tear Strength	147 lbf/in	25.7 kN/m	ASTM D624
Compression Set			ASTM D395B
70°F (21°C), 22 hr	20 %	20 %	
158°F (70°C), 22 hr	28 %	28 %	
212°F (100°C), 22 hr	37 %	37 %	
Hardness	Typical Value (English)	Typical Value (SI)	Test Method
Durometer Hardness			ASTM D2240
Shore A, 10 sec, 73°F (23°C)	55	55	
Fill Analysis	Typical Value (English)	Typical Value (SI)	Test Method
Apparent Viscosity			ASTM D3835
392°F (200°C), 11200 sec <sup>-1</sup>	9.00 Pa·s	9.00 Pa·s	

Copyright © 2016 PolyOne Corporation. PolyOne makes no representations, guarantees, or warranties of any kind with respect to the Information contained in this document about its accuracy, suitability for particular applications, or the results obtained or obtainable using the information. Some of the Information arises from laboratory work with small-scale equipment which may not provide a reliable indication of performance or properties obtained or obtainable on larger-scale equipment. Values reported as "typical" or stated without a range do not state minimum or maximum properties; consult your sales representative for property ranges and min/max specifications. Processing conditions can cause material properties to shift from the values stated in the Information. PolyOne makes no warranties or guarantees respecting suitability of either PolyOne's products or the Information for your process or end-use application. You have the responsibility to conduct full-scale end-product performance testing to determine suitability in your application, and you assume all risk and liability arising from your use of the Information and/or use or handling of any product. POLYONE MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, either with respect to the Information or products reflected by the Information. This data sheet shall NOT operate as permission, recommendation, or inducement to practice any patented invention without permission of the patent owner.

## Processing Information

Injection	Typical Value (English)	Typical Value (SI)
Rear Temperature	330 to 360 °F	166 to 182 °C
Middle Temperature	380 to 420 °F	193 to 216 °C
Front Temperature	400 to 440 °F	204 to 227 °C
Nozzle Temperature	400 to 450 °F	204 to 232 °C
Mold Temperature	55.0 to 90.0 °F	12.8 to 32.2 °C
Screw Speed	80 to 120 rpm	80 to 120 rpm

## Injection Notes

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

Versaflex™ HC 2110-57B 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: 0.5 to 2.5 in/sec

Hold Time (Thick Part): 2 to 7 sec

Hold Time (Thin Part): 1 to 3 sec

## Notes

- Please contact PolyOne GLS Thermoplastic Elastomers for a complete copy of the GLS Healthcare Policy.
- The Customer must notify GLS of any FDA Class I and/or European Union Class I medical devices for each specific product and application.
- 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:
  - Cosmetics
  - Drugs and other Pharmaceuticals
  - Temporary or permanent implantation in the human body, regardless of the intended duration of implantation
  - Class II and Class III Medical Devices as defined in 21 CFR 860.3 ("Medical Devices")
  - Class IIa, IIb and III as defined in Directive 93/42/EEC

<sup>2</sup> Typical values are not to be construed as specifications.

<sup>3</sup> Die C

<sup>4</sup> 2 hr

## CONTACT INFORMATION

## Americas

United States - Avon Lake  
+1 440 930 1000

United States - McHenry  
+1 815 385 8500

## Asia

China - Guangzhou  
+86 20 8732 7260

China - Shenzhen  
+86 755 2969 2888

China - Suzhou  
+86 512 6823 24 38

China - Suzhou  
+86 512 6265 2600

Hong Kong -  
+852 2690 5332

Taiwan - Yonghe City,  
+886 9396 99740, +886 2929 1849

## Europe

Germany - Gaggenau  
+49 7225 6802 0

Spain - Barbastró (Huesca)  
+34 974 310 314



Beyond Polymers.

Better Business Solutions. <sup>SM</sup>

www.polyone.com

## PolyOne Americas

33587 Walker Road  
Avon Lake, Ohio 44012  
United States  
+1 440 930 1000  
+1 866 POLYONE

## PolyOne Asia

No. 88 Guoshoujing Road  
Z.J Hi-tech Park, Pudong  
Shanghai, 201203, China  
+86 21 5080 1188

## PolyOne Europe

6 Giällewee  
+352 269 050 35

Copyright ©, 2016 PolyOne Corporation. PolyOne makes no representations, guarantees, or warranties of any kind with respect to the Information contained in this document about its accuracy, suitability for particular applications, or the results obtained or obtainable using the information. Some of the Information arises from laboratory work with small-scale equipment which may not provide a reliable indication of performance or properties obtained or obtainable on larger-scale equipment. Values reported as "typical" or stated without a range do not state minimum or maximum properties; consult your sales representative for property ranges and min/max specifications. Processing conditions can cause material properties to shift from the values stated in the Information. PolyOne makes no warranties or guarantees respecting suitability of either PolyOne's products or the Information for your process or end-use application. You have the responsibility to conduct full-scale end-product performance testing to determine suitability in your application, and you assume all risk and liability arising from your use of the Information and/or use or handling of any product. POLYONE MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, either with respect to the Information or products reflected by the Information. This data sheet shall NOT operate as permission, recommendation, or inducement to practice any patented invention without permission of the patent owner.