

# Polymer Comparison Chart

## Geon™ Rigid Vinyl Versus Other Flame-Resistant Polymers

With increased attention to product safety, the use of flame-resistant polymers for molded electrical enclosures is growing. Some polymers like vinyl are inherently flame-resistant, while other polymers require additives to make them more flame-resistant. These additives can significantly alter the properties and performance of the base polymer.

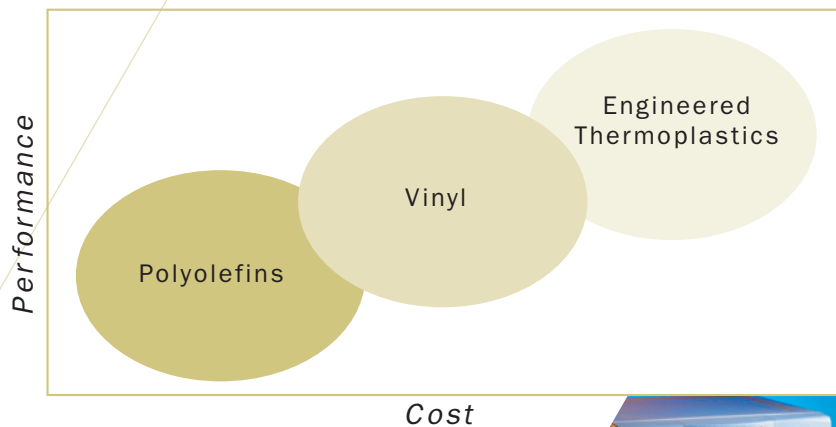
When comparing different polymers, a design engineer should consider physical properties, processing considerations, and cost per volume. As shown in the table below, few polymers deliver the cost-performance benefit of Geon Vinyl, often making it the best choice for molded electrical applications.

<b>FR Polymer Comparison Chart</b>						
	<b>Geon PVC</b>	<b>FR ABS</b>	<b>FR PC</b>	<b>FR PC+ABS</b>	<b>FR PPE+PS</b>	<b>FR HIPS</b>
<b>Physical Properties</b>						
<b>Tensile Strength</b>	Good	Good	Excellent	Excellent	Good	Low
<b>Tensile Modulus</b>	Good	Good	Good	Good	Good	Fair
<b>Flexural Strength</b>	Good	Good	Excellent	Excellent	Good	Low
<b>Flexural Modulus</b>	Good	Good	Good	Good	Good	Good
<b>Notched Izod Impact @73°F</b>	Excellent	Fair	Excellent	Excellent	Good	Low
<b>Heat Deflection Temp. @264 psi</b>	Good	Good	Excellent	Good	Good	Good
<b>Min Thickness for UL 94 V-0</b>	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
<b>Min Thickness for UL 94 5VA</b>	Excellent	Good	Good	Good	Good	Good
<b>Outdoor Weatherability*</b>	Excellent	Fair	Good	Good	Good	Fair
<b>Indoor UV Stability*</b>	Excellent	Fair	Excellent	Good	Fair	Fair
<b>Appearance</b>	Excellent	Good	Excellent	Good	Good	Fair
<b>Chemical Resistance</b>	Excellent	Good	Fair	Fair	Good	Good
<b>Specific Gravity</b>	1.33	1.19	1.21	1.19	1.13	1.16
<b>Processing Considerations</b>						
<b>Melt Temperature Range (°F)</b>	390-410	400-450	590-630	430-520	480-530	410-450
<b>Processing Window</b>	Narrow	Broad	Broad	Broad	Broad	Broad
<b>Drying Conditions</b>	None	2-4 hrs @180°F	3-4 hrs @180°F	3-4 hrs @175°F	3-4 hrs @180°F	None
<b>Tooling Steel</b>	Stainless Steel	P-20 Tool Steel	P-20 Tool Steel	P-20 Tool Steel	P-20 Tool Steel	P-20 Tool Steel
<b>Plate Out</b>	None	Yes	Yes	Yes	Yes	Yes
<b>Mold Shrinkage (inch per inch)</b>	0.002-0.005	0.005-0.007	0.005-0.007	0.004-0.006	0.005-0.007	0.004-0.007
<b>Estimated Cost per Volume</b>						
<b>Cost (¢/cu in)</b>	5.38	6.45	7.87	7.31	5.72	5.24

\* with appropriate UV protection additives

# Vinyl in the Value Chain

Vinyl compounds are an excellent alternative to engineered thermoplastics which may be over-engineered for the necessities of end-use or where polyolefins lack the physical properties required by the end-use. Vinyl compounds are also ideally suited to replace metal where design changes allow part consolidation and where corrosion resistance is a concern. The core characteristics of vinyl, such as inherent flame resistance, weatherability, and relatively low energy consumption, are combined with a wide array of performance enhancing possibilities to make vinyl a solid economic and environmental choice.



Product choices often vary by region due to differences in regulatory and agency requirements, availability, and other key factors. Please contact your nearest sales office for assistance in choosing the right solution for your locale.

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