



Steinwall Inc.

Re-Defining the Supply Chain®
Working in Harmony with Our Customers

1759 116th Avenue N.W. Minneapolis, MN 55448-3028

Phone: (763) 767-7060 (800) 229-9199

Fax: (763) 767-7061

www.steinwall.com

INJECTION MOLDING ENGINEERING MOLD MAKING ASSEMBLY DECORATING DISTRIBUTION

POLYETHER SULFONE (PES)

1. Common trade names: Radel-A, Ultrason E

	UNITS		
2. Density	g/cm ³	1.37	Mass per unit volume
3. Mold Shrinkage	in./in.	0.006	Size of part versus mold cavity
4. Continuous Service Temp	°F	356	Highest temp material can perform reliably for the long term
5. Melting Point	°F	340-428	Temperature material begins to melt
6. Processing Temp	°F	650	Recommended temperature for molding
7. Tensile Strength	$\frac{lb}{in.^2}$	12200	Maximum stress without yielding to a stretching mold
8. Izod Impact Strength	$\frac{ft-lb}{in.}$	2.1	Energy required to break at a v-notch
9. Compressive Strength	$\frac{10^3 lb.}{in.^2}$		Resist a crushing force
10. Flexural Strength, yeild	$\frac{10^3 lb.}{in.^2}$	18	Resistance to fracture during bending
11. Elongation, tensile break	%	40	Stretching ability before breaking
12. Dielectric Strength	$\frac{V}{10^{-3} in.}$	406	Voltage material can withstand before dielectric breakdown * = aluminum oxide
13. Water Absorption, 24 hours	%	0.15	% Water absorbed when immersed in water for 24 hours
14. Coefficient of Lin. Thermal Expansion	$10^{-5} \frac{in.}{in. \text{ } ^\circ F}$	5.5	Change in length per change in temperature
15. Crystalline or Amorphous	C = Crystalline A = Amorphous	A	Crystalline: arranged polymer, sharp melting point Amorphous: random polymer, broad melt)
16. Clarity	O = Opaque TP = Transparent TL = Translucent	TL	Opaque = no light passes through it Transparent = some light passes through it Translucent = light passes directly through it
17. Flammability	Flame Resistance High ← Low 5VA 5VB V-0 V-1 V-2 HB	V-0	Reference standard UL 94
18. Process: Drying Required		Yes	Is it recommended to dry the material prior to molding?
19. Hot Stamp		Yes	Does the material hot stamp?
20. Machining Qualities		Good	How does the material machine?
21. Creep Resistance		Good	Can this material keep it's shape under load? * = with additive or co-polymer
22. Ultrasonic Welding		Good	Does the material weld via ultrasonics?
23. Low Friction			Surface lubricity
24. Abrasion Resistance		Good	How well does the material withstand wear? * = with additive or co-polymer
25. Solvent Resistance		Good	How well does the material withstand chemicals?
26. UV Resistance		Poor	How well does the material withstand UV rays? * = with UV additive
27. Environmental Stress Crack Resistance		Good	Can this material resist environmental stress cracking? * = with additive or co-polymer
28. FDA		Yes	Are there FDA grades available?
29. Living Hinge		No	Can this material be used in a living hinge application?
30. Year Developed		1983	
31. Cost: year 2006	$\frac{\$}{lb.}$ @ 5,000 lbs.	\$8.44	Natural/Black Year 2006

**Qualitative Scale:
Excellent,
Good,
Fair,
Poor**

32. Applications:

Electrical Coils, Automotive Fasteners, Hot Water Applications, Lenses, Carburetor Parts, Reflectors, Bulb Housings