

# CS Hyde Company

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## PRODUCT INFORMATION

**32-1F**  
**1 mil. PVDF Film**  
**\*Solef® 9009 Resin**

Solef® 9009 PVDF Homopolymer has low/medium viscosity and is used in film extrusion and injection molding.

Physical Properties	Test Method	Typical Values			
		SI Units		US Customary Units	
Density @ 23°C/73°F	ASTM D 792	g/cm <sup>3</sup>	1.75-1.80	Lb/ft <sup>3</sup>	110-112
Water absorption (24 h @ 23°C/73°F)	ASTM D 570	% wt.	<0.04	%	<0.04
Melt flow index (5 Kg @ 230°C)	ASTM D 1238	g/10min	15-30	g/10min	15-30
Melt flow index (2,16 Kg @ 230°C)	ASTM D 1238	g/10min	5-11	g/10min	5-11
Melt viscosity (232°C, 100 s <sup>-1</sup> )	ASTM D 3835	kP	5-10	kP	5-10

### Mechanical Properties

Tensile					
Stress at yield (23°C/73°F, 50 mm/min)	ASTM D 638 (Type IV specimen, 2 mm thick)	MPa	45-60	psi	6,500-8,700
Elongation at yield (23°C/73°F, 50 mm/min)		%	5-10	%	5-10
Stress at break (23°C/73°F, 50 mm/min)		MPa	30-50	psi	4,400-7,300
Elongation at yield (23°C/73°F, 50 mm/min)		%	20-300	%	20-300
Modulus (23°C/73°F, 1 mm/min)		MPa	1,400-2,200	psi	200,00-320,000
Impact					
Notched Charpy strength (4 mm thick, 2m/s, 23°C/73°F)	ASTM D 6110	J/m	60-120	ft lbf/in	1.0-2.5
Shore D Hardness (2 mm thick, 1 sec)	ASTM D 2240	-	73-80	-	73-80
Taber Abrasion Resistance (CS-10, 1 Kg)	ASTM D 4060	mg/1000 rev	5-10	mg/1000 rev	5-10
Friction coefficient					
Static	ASTM D 1894	-	0.20-0.40	-	0.20-0.40
Dynamic		-	0.15-0.35	-	0.15-0.35

Thermal Properties	Test Method	Typical Values			
		SI Units		US Customary Units	
Melting Point	ASTM D 3418	°C	162-168	°F	324-334
Heat of Fusion	ASTM D 3418	J/g	53-60	BTU/lb	22-26
Crystallization Point	ASTM D 3418	°C	133-140	°F	271-284
Crystallization Heat	ASTM D 3418	°C	53-60	°F	22-26
Glass Transition Temp. (TG)	ASTM D 4065	°C	-40	°F	-40
Linear Molding Shrinkage	-	%	2-3	%	2-3

#### Electrical Properties

Surface resistivity	ASTM D 257	Ω	≥10 <sup>14</sup>	Ω	≥10 <sup>14</sup>
Volume resistivity		Ωcm	≥10 <sup>14</sup>	Ωcm	≥10 <sup>14</sup>
Dielectric constant (23°C/73°F, 1 kHz)	ASTM D 150	-	7-10	-	7-10
Dielectric strength	ASTM D 149	kV/mm	20-25	kV/mm	20-25

#### Fire Resistance

UL Flammability (0.10 mm thick sheet)	UL-94	-	V-0	-	V-0
Limiting Oxygen Index (3 mm thick sheet)	ASTM D 2863	%	44	%	44

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\*The above values are "Typical Values" which have a nominal range about them and are not intended for specification purposes.