

Extending The Life Of Metals With Protekote

Coating Properties

Mechanical Properties							
Property	ASTM Standard	Unit	PTFE	FEP	PFA	ETFE	
Specific Gravity	D792		2.15	2.15	2.15	1.76	
Tensile Strength	D1457, D1708, D638	MPa	21-35	23	25	40-47	
		psi	3,000-5,000	3,400	3,600	5,800-6,700	
Elongation	D1457, D1708, D638	%	300-500	325	300	150-300	
Flexural Modulus	D790	MPa	500	600	600	1,200	
		psi	72,000	85,000	85,000	170,000	
Folding Endurance	D2176	(MIT)	>10 ⁶	5-80 x 10 ³	10-500 x 10 ³	10-27 x 10 ³	
		cycles					
Impact Strength	D256	J/m	189	No break	No break	No break	
		ft.lb/in	3.5				
Hardness	D2240	Shore D	50-65	56	60	72	
		pencil	HB	HB			
Abrasion Resistance							
		- Bell Abrasion (1)	g/μm	85			
		- Sliding Arm (2)	mg	7.9-9.7	11.1-15.2		13.4
- Tabor Abrasion (3)	mg	12	14.8				
Scratch Resistance							
Scratch Master							
		- initial (4)	kg	5.7-7.0	5.1-11.4		
		- complete (5)	kg	7.3-10.7	8.5-13.2		
Coefficient of Friction	D1894						
		- static		0.12-0.15	0.12-0.20	0.2	0.24-0.50
		- dynamic		0.05-0.10	0.08-0.3		0.3-0.4
Contact Angle							
		- water	degree	104° -111°	95°-105°	104°-111°	90°-100°

Notes:

- Bell Abrasion Tester: grams abrasive/micrometers
- Sliding Arm Test: 1,000 cycles, 500 gr load, 400 Emery paper, 35.5 sq. cm surface
- Tabor Abrasion: Cs 17 wheel, 1 kg load, 1,000 cycles, weight loss in mg
- Scratch Master: initial = first sign of substrate
- Scratch Master: complete = total removal of film
- Salt Spray Resistance: 5% NaCl @ 35°C/95°F, hours to failure
- Detergent Resistance: hours to failure
- Dielectric Strength: 100 micrometers film

The values shown in this table represent average experiences from numerous testing sources and are not intended to be specifications. These values will vary depending upon the individual compositions of the primers and topcoats and the systems used. For further information on the properties of these coating systems, and examples of how they have led to the development of new products, increased production rates and resultant cost savings, you should consult DuPont or a Licensed Industrial Applicator. All technical advice, application suggestions, recommendations and services are rendered by the Seller gratis. They are based on technical data which the Seller believes to be reliable and are intended for use by persons having skill and know-how, at their own discretion and risk. Seller assumes no responsibility for results obtained or damages incurred for their use by Buyer in whole or in part. Such technical advice, application suggestions, recommendations or services are not to be taken as a license to operate under, or intended to suggest infringement of, any existing patent.

Coating Properties

Thermal Properties						
Property	ASTM Standard	Unit	PTFE	FEP	PFA	ETFE
Melting Point	D3418	°C	327	260	305	267
		°F	621	500	582	512
Cure Temperature		°C	380-430	360-390	380-400	300-325
		°F	715-805	680-735	715-750	575-615
Max. Use Temperature		°C	290	205	260	150
		°C	315	230	290	200
Flame Rating**			V0	V0	V0	V0
Limiting Oxygen Index	D2863	%	>95	>95	>95	30-36
Heat of Combustion	D240	MJ/kg	5.1	5.1	5.3	13.7
		Btu/lb	2,200	2,200	2,300	5,900
Thermal Conductivity		Btu.in/h.ft ² .°F	1.7	1.4	1.3	1.65
		W/m-k	0.25	0.20	0.19	0.24

** Statements regarding behavior in a flame situation are not intended to reflect hazards presented by this or any other material when under actual fire conditions.

Chemical Properties							
Property	ASTM Standard	Unit	PTFE	FEP	PFA	ETFE	
Property Chemical/Solvent Resistance	D543		Excellent	Excellent	Excellent	Excellent	
Water Absorption, 24 h	D570	%	< 0.01	< 0.01	< 0.01	< 0.03	
Salt Spray Resistance (6)	B-117						
		- on aluminum	Hours	744+	744+	1000	1000
		- on steel	Hours	192			
Detergent Resistance (7)							
		- on aluminum	Hours	264	744		
		- on grit-blasted aluminum	Hours	624	600		
		- on grit-blasted steel	Hours	24	480		
Weather Resistance	Florida Exposure	Years Unaffected	20	20	10	15	

Electrical Properties						
Property	ASTM Standard	Unit	PTFE	FEP	PFA	ETFE
Dielectric Constant	D150	1 MHz	2.1	2.1	2.1	2.6
Dielectric Strength (8)	D149	V/μm	18	53	80	79
Dissipation Factor	D150	1 MHz	< 0.0001	0.0006	0.0001	0.007
Arc Resistance	D495	sec	>300	>300	>180	122
Volume Resistivity	D257	ohm.cm	>10 ¹⁸	>10 ¹⁸	>10 ¹⁸	>10 ¹⁷
Surface Resistivity	D257	ohm/sq	>10 ¹⁸	>10 ¹⁶	>10 ¹⁷	>10 ¹⁵

* This data reproduced from published Dupont literature H-75151