

Summary of Typical Properties of PLAVIS Polyimide

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Properties		Condition	ASTM	Unit	Plavis-N			Plavis-G15			Plavis-G40			Plavis-MS		
					DF	ISO ¹⁾	CM ²⁾	DF	ISO	CM	DF	ISO	CM	DF	CM	
Mechanical Properties	Tensile Strength	23°C	D1708	Kg ^f /cm ² (MPa)	810 (79.4)	900 (88.3)	900 (88.3)	650 (63.7)	680 (66.7)	680 (66.7)	550 (53.9)	580 (56.9)	580 (56.9)	600 (58.8)	650 (63.7)	
		260°C			400 (39.2)	420 (41.2)	420 (41.2)	330 (32.4)	350 (34.3)	350 (34.3)	270 (26.5)	280 (27.5)	280 (27.5)			
	Elongation	23°C	D1708	%	8.5	7.5	8.0	5.5	4.5	5.0	3.5	2.5	3.0	4.5	4.0	
		260°C			7.5	6.0	6.0	4.5	3.0	3.0	2.5	2.0	2.0			
	Flexural Strength	23°C	D790	Kg ^f /cm ² (MPa)	860 (84.3)	1,150 (112.8)	1,150 (112.8)	850 (83.4)	1,100 (107.9)		650 (63.7)	900 (88.3)		780 (76.5)	800 (78.5)	
		260°C			470 (46.1)	600 (58.8)	600 (58.8)	500 (49.0)	650 (63.7)		400 (39.2)	450 (44.1)		400 (39.2)	450 (44.1)	
	Flexural Modulus	23°C	D790	Kg ^f /cm ² (MPa)	26,000 (2,550)	31,000 (3,040)	31,000 (3,040)	32,500 (3,187)	39,000 (3,825)		49,500 (4,854)	49,500 (4,854)		33,500 (3,285)	34,000 (3,334)	
		260°C			14,500 (1,422)	17,000 (1,667)	17,000 (1,667)	18,000 (1,765)	26,000 (2,550)		28,000 (2,746)	28,000 (2,746)		18,500 (1,814)	19,000 (1,863)	
	Compressive strength (1% Strain)	23°C	D695	Kg ^f /cm ² (MPa)	250 (24.5)	250 (24.5)	250 (24.5)	230 (22.6)	300 (29.4)		250 (24.5)	350 (34.3)		350 (34.3)	350 (34.3)	
	Compressive Strength (10% Strain)				1,150 (112.8)	1,300 (127.5)	1,300 (127.5)	1,080 (105.9)	1,400 (137.3)		950 (93.2)	1,100 (107.9)		1,300 (127.5)	1,300 (127.5)	
	Compressive Strength (50% Strain)															
	Compressive Modulus	23°C	D695	Kg ^f /cm ² (MPa)	24,500 (2,403)	24,000 (2,354)	24,000 (2,354)	23,500 (2,304)	30,000 (2,942)		27,000 (2,648)	34,000 (3,334)		25,000 (2,452)	25,000 (2,452)	
	Impact Strength Izod, notched	23°C	D-256	kgcm/cm	6.0	6.0	5.0	5.0	5.0							
				J/m	58.8	58.8	49.0	49.0	49.0							
Wear & Friction Properties	Wear Rate			m/s x 10 ⁻¹⁰	64	27.0	27.0	3.1	2.4	2.4					2.8	
	Friction Coefficient ³⁾ PV=10kg/cm ² .m/sec (0.98MPa.m/sec)			-	0.34	0.32	0.32	0.26	0.23	0.23	0.18	0.16	0.16		0.24	
Thermal Properties	Coefficient of Linear Expansion (CTE)	23~260°C	D696	μm/m/°C	50	50	55			45	25		25	50		
	Thermal Conductivity	25°C	-	W/m·°C			0.36	0.45								
		40°C					0.37									
	Specific Heat	-	-	J/kg·°C			1,042									
				kcal/kg·°C			0.249									
	Tehrml Decomposition Temperature (on-set point, rate 10°C/min, in air)				°C			565	569		557					
Thermal 50% weight reduction time (on-set point, rate 10°C/min, in air)				min			154	164		231						
Electrical Properties	Dielectric Constant	10 ⁴ Hz					3.6									
		10 ⁶ Hz					3.6									
	Dielectric Strength		D-149	kV/mm			21.9									
	Dissipation Factor	10 ⁴ Hz					3.8									
		10 ⁶ Hz					3.6									
	Volume Resistivity	23°C	D257	Ω·m	≥1E14	≥1E14	≥1E14	1E12-13	1E12-13	1E12-13						
	Surface Resistivity	23°C	D257	Ω	≥1E14	≥1E14	≥1E14	1E12-13	1E12-13	1E12-13						
Other Properties	Water Absorption	50%RH(avg)	D-570	%	0.9 ~ 1.1	0.9 ~ 1.1	0.9 ~ 1.1									
		24hrs/23°C			0.37	0.23	0.21				0.20		0.20			
		48hrs/50°C			0.40	0.35	0.27									
	Specific gravity	23°C	D792	g/cm ³	1.33	1.38	1.43	1.41	1.49	1.49	1.56	1.62	1.64	1.55	1.58	
	Hardness	23°C	D785	Rockwell "M"	65-90	85-100	90-105	65-85			65-80				70~90	

1) ISO : Isostatically Molded

2) CM : Compression Molded

3) Steady state, unlubricated in air

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Properties		Condition	ASTM	Unit	Plavis-C		Plavis-ESD		Plavis-S	Plavis-SG		Plavis-S1			Plavis-HM	
					DF	CM	DF	CM	CM	DF	CM	DF	ISO	CM	CM	
Mechanical Properties	Tensile Strength	23°C	D1708	Kg _f /cm ² (MPa)	800 (78.4)	850 (83.3)	800 (78.4)	850 (83.3)	1,670 (164.0)	903 (88.6)	1,071 (105.0)	1,223 (120.0)	1,274 (125.0)	1,528 (150.0)	1,370 (135)	
		260°C			370 (36.2)	400 (39.2)	370 (36.2)	400 (39.2)	650 (64.0)	342 (33.5)	214 (21.0)	571 (56.0)	611 (60.0)	611 (60.0)	560 (55.0)	
	Elongation	23°C	D1708	%	8.0	7.0	8.0	7.0	8.0	2.5	2.6	5.0	5.0	6.0	4.0	
		260°C			7.0	6.0	7.0	6.0	40.0	4.3	4.3	15.0	15.0	25.0	16.0	
	Flexural Strength	23°C	D790	Kg _f /cm ² (MPa)		1,100 (107.9)		1,100 (107.9)	1,800 (176.0)		1,466 (143.8)	1630 (160)	1,731 (170)	2,039 (200)	2,040 (200.0)	
		260°C							1,220 (120.0)		928 (91.0)	662 (65)	815 (80)	815 (80)		
	Flexural Modulus	23°C	D790	Kg _f /cm ² (MPa)		35,000 (3,432)		35,000 (3,432)	54,620 (5,356)		160,000 (15,690)	50,950 (5,000)	52,942 (5,200)	58,111 (5,700)	70,400 (6,900)	
		260°C							35,282 (3,460)		95,850 (9,400)	24,456 (2,400)	26,507 (2,600)	27,532 (2,700)		
	Compressive strength (1% Strain)	23°C	D695	Kg _f /cm ² (MPa)		250 (24.5)		250 (24.5)								270 (26.5)
	Compressive Strength (10% Strain)					1,500 (147.1)		1,500 (147.1)	2,141 (210.0)				1,916 (188)	1,916 (188)	2,400 (235.0)	
	Compressive Strength (50% Strain)					3,500 (343.2)		3,500 (343.2)								
	Compressive Modulus	23°C	D695	Kg _f /cm ² (MPa)		25,000 (2,452)		25,000 (2,452)	32,190 (8,060)			41,800 (4,100)				46,387 (4,550)
	Impact Strength Izod, notched	23°C	D-256	kgcm/cm		5.0		5.0	11.7							
				J/m		49.0		49.0	114.7				62.0	60.0		
Wear & Friction Properties	Wear Rate			m/s x 10 ⁻¹⁰				11	8.3	30	3.0	3.0	3.0	3.0	2.8	
	Friction Coefficient ³⁾ PV=10kg/cm ² .m/sec (0.98MPa.m/sec)			-		0.32		0.32	0.34	0.47	0.39	0.32	0.32	0.32	0.18	
Thermal Properties	Coefficient of Linear Expansion (CTE)	23~260°C	D696	μm/m/°C		45		45	50	47	57	50	50	50	30	
	Thermal Conductivity	25°C	-	W/m·°C		0.37		0.37	0.30	1.50	1.71		0.41	0.29	0.35	
		40°C				0.38		0.38	0.31	1.50	1.71					
	Specific Heat	-	-	J/kg·°C					938	880	964		1,003	792	1,020	
				kcal/kg·°C					0.224	0.210	0.230		-	-	0.244	
	Tehrml Decomposition Temperature (on-set point, rate 10°C/min, in air)				°C	545		550	567		567					
Thermal 50% weight reduction time (on-set point, rate 10°C/min, in air)				min	145		155	242				265	265	276		
Electrical Properties	Dielectric Constant	10 ⁴ Hz							3.0				3.3	3.3	3.7	
		10 ⁶ Hz							3.1				3.4	3.4	3.7	
	Dielectric Strength		D-149	kV/mm												
	Dissipation Factor	10 ⁴ Hz							1.7				3.0	2.5	4.5	
		10 ⁶ Hz							0.9				3.5	1.2	6.7	
	Volume Resistivity	23°C	D257	Ω·m					≥1E14	1E7-8	1E7-8	≥1E14	≥1E14	≥1E14	≥1E14	
	Surface Resistivity	23°C	D257	Ω	1E0-3	1E0-3	1E6-9	1E6-9	≥1E14	1E5-6	1E5-6	≥1E14	≥1E14	≥1E14	≥1E14	
Other Properties	Water Absorption	50%RH(avg)	D-570	%												
		24hrs/23°C				0.20		0.06	0.08	0.07	0.10	0.08	0.08	0.03		
		48hrs/50°C														
	Specific gravity	23°C	D792	g/cm ³	1.36	1.44	1.36	1.44	1.45	1.68	1.8	1.43	1.46	1.47	1.47	
	Hardness	23°C	D785	Rockwell "M"	85-89	90-105	85-89	90-105	100-120	80-85	100-105	105-115	110-120	110-120	115	

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