

FUSED SILICA
HOT PRESS PLATENS
CASTABLE CERAMICS
FIRED SHAPES
AEROSPACE TOOLING

Foundry Service & Supplies, Inc.

HI-TEMP INSULATIONS
CALCIUM SILICATE BOARDS
MILLBOARD AND BLANKET
PAPERS AND CEMENTS
CUTTING AND FABRICATING

11808 Burke Street, Santa Fe Springs, CA 90670

Telephone: (562) 945-6511

Fax: (562) 696-1633

www.foundryservice.com

MICARTA® PLATES

PHYSICAL PROPERTIES

NEMA Grade	X	XX	XXX	LE	L	C	CE
Specification No. & Type	Mil-I-24768/ 12-PBM	Mil-I-24768/ 11-PBG	Mil-24768/ 10-PBE	Mil-I-24768/ 13-FBE	Mil-I-24768/ 15-FBI	Mil-I-24768/ 16-FBM	Mil-I- 24768/ 14-FBG
Construction Resin & Substrate	Phenolic/Paper	Phenolic/Paper	Phenolic/Paper	Phenolic/Linen	Phenolic/Linen	Phenolic/ Canvas	Phenolic/ Canvas
Color	Natural/Black	Natural/Black	Natural	Natural/Black	Natural	Natural/Black	Natural
Density(lb/in³)	.051	.048	.047	.050	.052	.053	.050
Water Absorption(%)	2.4	0.5	0.5	1.0	1.3	2.2	1.1
Hardness (Rockwell M)	110	100	110	105	100	100	105
Tensile With grain (psi)	25,000	13,500	20,000	15,000	11,500	13,000	13,000
Compressive Flatwise (psi)	44,000	30,000	38,000	38,000	36,000	39,000	37,000
Flexural Flatwise (psi)	30,000	17,000	23,000	25,000	19,000	20,000	19,000
Bonding (psi)	950	1,000	1,000	1,700	1,900	2,100	2,000
Maximum Operating Temperature (°C) Electrical	130	140	140	115	115	115	115
Mechanical	130	140	140	125	125	125	125
Impact Strength Izod edgewise with grain(ft-lb/in)	0.8	0.55	0.8	1.5	1.6	2.3	1.8
Shear Flatwise (psi)	14,000	10,000	12,000	14,000	13,000	13,000	10,000

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MICARTA® PLATES PHYSICAL PROPERTIES

NEMA Grade	G-3	G-5	G-7	G-9	G-10/FR-4	G-11
Specification No. & Type	Mil-I-24768/ 18-GPG	Mil-I-24768/ 8-GMG	Mil-24768/ 17-GSG	Mil-I-24768/ 1-GME	Mil-I-24768/ 2/27- GEE,GEE-F	Mil-I-24768/ 3-GEB
Construction Resin & Substrate	Phenolic/Glass	Melamine/Glass	Silicone/Glass	Melamine/Glass	Epoxy/Glass	Epoxy/Glass
Color	Natural	Gray	White	Gray	Natural	Natural
Density(lb/in³)	.070	.072	.068	.072	.069	.069
Water Absorption(%)	0.8	0.4	0.03	0.2	0.05	0.085
Hardness (Rockwell M)	(n/a)	115	105	120	109	110
Tensile With grain (psi)	34,000	40,000	20,500	55,000	50,000	41,000
Compressive Flatwise (psi)	55,000	65,000	41,000	65,000	60,000	50,000
Flexural Flatwise (psi)	42,000	50,000	25,000	75,000	65,000	57,000
Bonding (psi)	1,500	1,800	900	2,300	2,600	2,180
Maximum Operating Temperature (°C) Electrical	140	**	170	**	130	170
Mechanical	170	140	220	140	140	180
Impact Strength Izod edgewise with grain(ft-lb/in)	11.0	10.0	11.0	13.0	12.0	10.0
Shear Flatwise (psi)	(n/a)	30,000	(n/a)	25,000	20,000	21,000

- Tests were run with 1/8" thick laminates (except bonding strength) at condition A (23°C, 50% RH)
- ** Not recommended at elevated temperatures

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MICARTA® PLATES ELECTRICAL PROPERTIES

NEMA Grade	X	XX	XXX	LE	L	C	CE
Dielectric Strength Perpendicular(vpm, short time)	450	500	475	350	250	200	200
Dissipation Factor (@ 10 ⁶ cycles/ sec)	0.070	0.040	0.042	0.060	(n/a)	(n/a)	(n/a)
Dielectric Constant (@ 10 ⁶ cycles/ sec)	6.4	4.6	4.9	5.3	(n/a)	(n/a)	(n/a)
Volume Resistivity (megohm-cm)	(n/a)	4x10 ⁵	3x10 ⁷	7x10 ⁴	(n/a)	(n/a)	(n/a)
Surface Resistivity (megohms)	(n/a)	4x10 ⁴	7x10 ⁵	6x10 ⁴	(n/a)	(n/a)	(n/a)
Arc Resistance (seconds)	(n/a)	(n/a)	124	(n/a)	(n/a)	(n/a)	(n/a)
Parallel Dielectric (kv)	50	60	65	70	25	21	(n/a)

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MICARTA® PLATES ELECTRICAL PROPERTIES

NEMA Grade	G-3	G-5	G-7	G-9	G-10/FR-4	G-11
Dielectric Strength Perpendicular(vpm, short time)	400	300	350	450	550	550
Dissipation Factor (@ 10 ⁶ cycles/ sec)	0.035	0.019	0.012	0.018	0.020	0.068
Dielectric Constant (@ 10 ⁶ cycles/ sec)	7.3	6.3	4.2	7.2	5.0	4.5
Volume Resistivity (megohm-cm)	1.3x10 ⁴	6x10 ⁷	(n/a)	1.5x10 ⁷	6x10 ⁶	5x10 ⁶
Surface Resistivity (megohms)	4.6x10 ⁴	6x10 ⁶	(n/a)	1.5x10 ⁷	1x10 ⁶	1.5x10 ⁶
Arc Resistance (seconds)	(n/a)	180	240	180	100	185
Parallel Dielectric (kv)	50	50	60	70	60	65