

# BOYD

C O R P O R A T I O N

## LECTROSHIELD

ELECTRICAL INSULATORS

One Company, Many Solutions

Precision Components

Fabricated Solutions

Global Presence

Complex electronic devices generate immense internal energy from multiple energy sources and have the potential to spark energy or electricity, which is detrimental to reliable performance. Electrical insulators function as electrical barriers or shields, helping assure you of trusted performance.

Boyd's LectroShield Electrical Insulators are designed to manage high levels of electrical energy in harsh environments, helping to extend the lifetime of electrical equipment and reduce electrical failure and are ideal for applications requiring high electrical and breakdown resistance.

For more than 30 years, Boyd has provided electrical insulators for market segments and applications including:

- Servers & server cabinets
- Routers
- Power Distribution
- PC Board to Housing Barriers
- Labels
- Air Flow Management
- Consumer Electronics
- Transformers
- Motors
- Generators

**Polycarbonate (PC)** : Lays flat and is dimensionally stable, creases and cold forms well, excellent impact resistance, UL flammability testing approved. Available with polished surfaces on both sides or textured finish.

**Polypropylene (PP)** : Lays semi-flat with excellent impact resistance, bends and cuts/scores for folding without cracking, retains structural integrity and dimensional stability even in the most demanding outdoor applications, non-hygroscopic with moisture absorption <0.06%, UL flammability testing approved.



Boyd provides best-cost, engineered, specialty material-based energy management and sealing solutions through comprehensive technical materials and design expertise, world-class manufacturing quality, service reliability, and unparalleled supply chain management. Use Boyd's years of experience and engineering support in concert with your engineering / technical expertise to ensure your electrical energy challenges are solved in a cost effective, leading edge way.

Properties	Unit	Product Type: Electrical Insulator		Test Method
		PC Black Fine/Matte Finish		
		BOYD Part Number		
		BCPLA-810-1101	BCPLA-810-1102	
Thickness	mm	0.1	0.125	
Tensile Strength	kgf/cm <sup>2</sup>	530		ASTM D638
Impact Strength	kgf/cm	104		ASTM D256
Tear Strength	g/mil	30-55		ASTM D1922
Specific Gravity	g/cm <sup>3</sup>	1.23		ASTM D792
Water Absorption	%	0.2		ASTM D792
Oxygen Absorption	%	25		ASTM D570
Melting Temperature	°C	180-230		ASTM D2863
Melt Flow Index	g/10 min.	2.8		ASTM D2117
Vicat Softening Point	°C	135		ASTM D1238
Dielectric Strength	KV/mm	53		ASTM D1525
Volume Resistivity @ 25°C	Ω-cm	10 <sup>16</sup>		ASTM D149
UL Flammability				ASTM D257
<.25mm		VTM-0		
>.25mm		V-0		
Break Strength (Mpa)		58		
Ultimate Elongation	%	100		ASTM D882
Tensile Modulus	Mpa	2100		ASTM D790
Surface Resistivity	Ω <sup>2</sup>	10 <sup>15</sup>		ASTM D257
Thermal Expansion Coefficient	%	<1.0		ASTM D1204
Thermal Conductivity	W/m°C	0.2		ASTM C177
Brittle Temperature	°C	-135		ASTM D746
Yield Strength	Mpa	55		ASTM D882
Flexural Strength	Mpa	90		ASTM D790
Flexural Modulus	Mpa	2200		ASTM D790
Compressive Strength	Mpa	76		ASTM D695

Boyd UL Rating #: QMFZ2.E151722

Properties	Unit	Product Type: Electrical Insulator		Test Method
		PC Black Fine/Matte Finish		
		BOYD Part Number		
		BCPLA-810-1103	BCPLA-810-1104	
Thickness	mm	0.175	0.25	
Tensile Strength	kgf/cm <sup>2</sup>	530		ASTM D638
Impact Strength	kgf/cm	104		ASTM D256
Tear Strength	g/mil	30-55		ASTM D1922
Specific Gravity	g/cm <sup>3</sup>	1.23		ASTM D792
Water Absorption	%	0.2		ASTM D792
Oxygen Absorption	%	25		ASTM D570
Melting Temperature	°C	180-230		ASTM D2863
Melt Flow Index	g/10 min.	2.8		ASTM D2117
Vicat Softening Point	°C	135		ASTM D1238
Dielectric Strength	KV/mm	53		ASTM D1525
Volume Resistivity @ 25°C	Ω-cm	10 <sup>16</sup>		ASTM D149
UL Flammability				ASTM D257
<.25mm		VTM-0		
>.25mm		V-0		
Break Strength (Mpa)		58		
Ultimate Elongation	%	100		ASTM D882
Tensile Modulus	Mpa	2100		ASTM D790
Surface Resistivity	Ω <sup>2</sup>	10 <sup>15</sup>		ASTM D257
Thermal Expansion Coefficient	%	<1.0		ASTM D1204
Thermal Conductivity	W/m°C	0.2		ASTM C177
Brittle Temperature	°C	-135		ASTM D746
Yield Strength	Mpa	55		ASTM D882
Flexural Strength	Mpa	90		ASTM D790
Flexural Modulus	Mpa	2200		ASTM D790
Compressive Strength	Mpa	76		ASTM D695

Boyd UL Rating #: QMFZ2.E151722

Properties	Unit	Product Type: Electrical Insulator		Test Method
		PC Black Fine/Matte Finish		
		BOYD Part Number		
		BCPLA-810-1105	BCPLA-810-1106	
Thickness	mm	0.38	0.43	
Tensile Strength	kgf/cm <sup>2</sup>	530		ASTM D638
Impact Strength	kgf/cm	104		ASTM D256
Tear Strength	g/mil	30-55		ASTM D1922
Specific Gravity	g/cm <sup>3</sup>	1.23		ASTM D792
Water Absorption	%	0.2		ASTM D792
Oxygen Absorption	%	25		ASTM D570
Melting Temperature	°C	180-230		ASTM D2863
Melt Flow Index	g/10 min.	2.8		ASTM D2117
Vicat Softening Point	°C	135		ASTM D1238
Dielectric Strength	KV/mm	53		ASTM D1525
Volume Resistivity @ 25°C	Ω-cm	10 <sup>16</sup>		ASTM D149
UL Flammability				ASTM D257
<.25mm		VTM-0		
>.25mm		V-0		
Break Strength (Mpa)		58		
Ultimate Elongation	%	100		ASTM D882
Tensile Modulus	Mpa	2100		ASTM D790
Surface Resistivity	Ω <sup>2</sup>	10 <sup>15</sup>		ASTM D257
Thermal Expansion Coefficient	%	<1.0		ASTM D1204
Thermal Conductivity	W/m°C	0.2		ASTM C177
Brittle Temperature	°C	-135		ASTM D746
Yield Strength	Mpa	55		ASTM D882
Flexural Strength	Mpa	90		ASTM D790
Flexural Modulus	Mpa	2200		ASTM D790
Compressive Strength	Mpa	76		ASTM D695

Boyd UL Rating #: QMFZ2.E151722

Properties	Unit	Product Type: Electrical Insulator		Test Method
		PC Black Fine/Matte Finish		
		BOYD Part Number		
		BCPLA-810-1107	BCPLA-810-1108	
Thickness	mm	0.5	0.76	
Tensile Strength	kgf/cm <sup>2</sup>	530		ASTM D638
Impact Strength	kgf/cm	104		ASTM D256
Tear Strength	g/mil	30-55		ASTM D1922
Specific Gravity	g/cm <sup>3</sup>	1.23		ASTM D792
Water Absorption	%	0.2		ASTM D792
Oxygen Absorption	%	25		ASTM D570
Melting Temperature	°C	180-230		ASTM D2863
Melt Flow Index	g/10 min.	2.8		ASTM D2117
Vicat Softening Point	°C	135		ASTM D1238
Dielectric Strength	KV/mm	53		ASTM D1525
Volume Resistivity @ 25°C	KV/mm	10 <sup>16</sup>		ASTM D149
UL Flammability				ASTM D257
<.25mm		VTM-0		
>.25mm		V-0		
Break Strength (Mpa)		58		
Ultimate Elongation	%	100		ASTM D882
Tensile Modulus	Mpa	2100		ASTM D790
Surface Resistivity	Ω <sup>2</sup>	10 <sup>15</sup>		ASTM D257
Thermal Expansion Coefficient	%	<1.0		ASTM D1204
Thermal Conductivity	W/m°C	0.2		ASTM C177
Brittle Temperature	°C	-135		ASTM D746
Yield Strength	Mpa	55		ASTM D882
Flexural Strength	Mpa	90		ASTM D790
Flexural Modulus	Mpa	2200		ASTM D790
Compressive Strength	Mpa	76		ASTM D695

Boyd UL Rating #: QMFZ2.E151722

Properties	Unit	Product Type: Electrical Insulator		Test Method
		PC Clear Polish/Matte Finish		
		BOYD Part Number		
		BCPLA-810-2101	BCPLA-810-2102	
Thickness	mm	0.05	0.075	
Specific Gravity	g/cm <sup>3</sup>	1.2		ASTM D792
Water Absorption	%	0.2		ASTM D792
Oxygen Absorption	%	25		ASTM D570
Melting Temperature	°C	180 - 230		ASTM D2863
Vicat Softening Point	°C	135		ASTM D1238
Dielectric Strength	KV/mm	32		ASTM D1525
Volume Resistivity @ 25°C	Ω-cm	10 <sup>16</sup>		ASTM D149
Break Strength (Mpa)		58		
Ultimate Elongation	%	110		ASTM D882
Tensile Modulus	Mpa	2100		ASTM D790
Surface Resistivity	Ω <sup>2</sup>	10 <sup>15</sup>		ASTM D257
Thermal Expansion Coefficient	%	0.6		ASTM D1204
Thermal Conductivity	W/m°C	0.2		ASTM C177
Brittle Temperature	°C	-100		ASTM D746
Yield Strength	Mpa	55		ASTM D882
Flexural Strength	Mpa	90		ASTM D790
Flexural Modulus	Mpa	2200		ASTM D790
Compressive Strength	Mpa	76		ASTM D695

Boyd UL Rating #: QMFZ2.E151722



Properties	Unit	Product Type: Electrical Insulator		Test Method
		PC Clear Polish/Matte Finish		
		BOYD Part Number		
		BCPLA-810-2103	BCPLA-810-2104	
Thickness	mm	0.1	0.125	
Specific Gravity	g/cm <sup>3</sup>	1.2		ASTM D792
Water Absorption	%	0.2		ASTM D792
Oxygen Absorption	%	25		ASTM D570
Melting Temperature	°C	180 - 230		ASTM D2863
Vicat Softening Point	°C	135		ASTM D1238
Dielectric Strength	KV/mm	32		ASTM D1525
Volume Resistivity @ 25°C	Ω-cm	10 <sup>16</sup>		ASTM D149
Break Strength (Mpa)		58		
Ultimate Elongation	%	110		ASTM D882
Tensile Modulus	Mpa	2100		ASTM D790
Surface Resistivity	Ω <sup>2</sup>	10 <sup>15</sup>		ASTM D257
Thermal Expansion Coefficient	%	0.6		ASTM D1204
Thermal Conductivity	W/m°C	0.2		ASTM C177
Brittle Temperature	°C	-100		ASTM D746
Yield Strength	Mpa	55		ASTM D882
Flexural Strength	Mpa	90		ASTM D790
Flexural Modulus	Mpa	2200		ASTM D790
Compressive Strength	Mpa	76		ASTM D695

Boyd UL Rating #: QMFZ2.E151722



Properties	Unit	Product Type: Electrical Insulator		Test Method
		PC Clear Polish/Matte Finish		
		BOYD Part Number		
		BCPLA-810-2105	BCPLA-810-2106	
Thickness	mm	0.175	0.25	
Specific Gravity	g/cm <sup>3</sup>	1.2		ASTM D792
Water Absorption	%	0.2		ASTM D792
Oxygen Absorption	%	25		ASTM D570
Melting Temperature	°C	180 - 230		ASTM D2863
Vicat Softening Point	°C	135		ASTM D1238
Dielectric Strength	KV/mm	32		ASTM D1525
Volume Resistivity @ 25°C	Ω-cm	10 <sup>16</sup>		ASTM D149
Break Strength (Mpa)		58		
Ultimate Elongation	%	110		ASTM D882
Tensile Modulus	Mpa	2100		ASTM D790
Surface Resistivity	Ω <sup>2</sup>	10 <sup>15</sup>		ASTM D257
Thermal Expansion Coefficient	%	0.6		ASTM D1204
Thermal Conductivity	W/m°C	0.2		ASTM C177
Brittle Temperature	°C	-100		ASTM D746
Yield Strength	Mpa	55		ASTM D882
Flexural Strength	Mpa	90		ASTM D790
Flexural Modulus	Mpa	2200		ASTM D790
Compressive Strength	Mpa	76		ASTM D695

Boyd UL Rating #: QMFZ2.E151722

Properties	Unit	Product Type: Electrical Insulator		Test Method
		PC Clear Polish/Matte Finish		
		BOYD Part Number		
		BCPLA-810-2107	BCPLA-810-2108	
Thickness	mm	0.38	0.5	
Specific Gravity	g/cm <sup>3</sup>	1.2		ASTM D792
Water Absorption	%	0.2		ASTM D792
Oxygen Absorption	%	25		ASTM D570
Melting Temperature	°C	180 - 230		ASTM D2863
Vicat Softening Point	°C	135		ASTM D1238
Dielectric Strength	KV/mm	32		ASTM D1525
Volume Resistivity @ 25°C	Ω-cm	10 <sup>16</sup>		ASTM D149
Break Strength (Mpa)		58		
Ultimate Elongation	%	110		ASTM D882
Tensile Modulus	Mpa	2100		ASTM D790
Surface Resistivity	Ω <sup>2</sup>	10 <sup>15</sup>		ASTM D257
Thermal Expansion Coefficient	%	0.6		ASTM D1204
Thermal Conductivity	W/m°C	0.2		ASTM C177
Brittle Temperature	°C	-100		ASTM D746
Yield Strength	Mpa	55		ASTM D882
Flexural Strength	Mpa	90		ASTM D790
Flexural Modulus	Mpa	2200		ASTM D790
Compressive Strength	Mpa	76		ASTM D695

Boyd UL Rating #: QMFZ2.E151722

Properties	Unit	Product Type: Electrical Insulators		Test Method
		PP Black Velvet/Matte Finish		
		BOYD Part Number		
		BCPLA-811-1101	BCPLA-811-1102	
Thickness	mm	0.125	0.175	ASTM D638
Tensile Strength	kgf/cm <sup>2</sup>	260		ASTM D256
Impact Strength	kgf/cm	7		ASTM D1922
Tear Strength	g/mil	50		ASTM D792
Specific Gravity	g/cm <sup>3</sup>	0.95		ASTM D792
Water Absorption	%	0.1		ASTM D570
Oxygen Absorption	%	33		ASTM D2863
Melting Temperature	°C	168		ASTM D2117
Melt Flow Index	g/10 min.	2.8		ASTM D1238
Vicat Softening Point	°C	160		ASTM D1525
Dielectric Strength	KV/mm	60		ASTM D149
Volume Resistivity @ 25°C	Ω-cm	7 x 10 <sup>14</sup>		ASTM D257
UL Flammability				
<.25mm		VTM-0		
>.25mm		V-0		
Ultimate Elongation	%	200		ASTM D882
Tensile Modulus	Mpa	2300		ASTM D790
Surface Resistivity	Ω <sup>2</sup>	10 <sup>15</sup>		ASTM D257
Thermal Expansion Coefficient	%	0.5		ASTM D1204
Thermal Conductivity	W/m°C	0.18 - 0.2		ASTM C177
Brittle Temperature	°C	-30		ASTM D746

Boyd UL Rating #: QMFZ2.E151722

Properties	Unit	Product Type: Electrical Insulators		Test Method
		PP Black Velvet/Matte Finish		
		BOYD Part Number		
		BCPLA-811-1103	BCPLA-811-1104	
Thickness	mm	0.25	0.43	ASTM D638
Tensile Strength	kgf/cm <sup>2</sup>	260		ASTM D256
Impact Strength	kgf/cm	7		ASTM D1922
Tear Strength	g/mil	50		ASTM D792
Specific Gravity	g/cm <sup>3</sup>	0.95		ASTM D792
Water Absorption	%	0.1		ASTM D570
Oxygen Absorption	%	33		ASTM D2863
Melting Temperature	°C	168		ASTM D2117
Melt Flow Index	g/10 min.	2.8		ASTM D1238
Vicat Softening Point	°C	160		ASTM D1525
Dielectric Strength	KV/mm	60		ASTM D149
Volume Resistivity @ 25°C	Ω-cm	7 x 10 <sup>14</sup>		ASTM D257
UL Flammability				
<.25mm		VTM-0		
>.25mm		V-0		
Ultimate Elongation	%	200		ASTM D882
Tensile Modulus	Mpa	2300		ASTM D790
Surface Resistivity	Ω <sup>2</sup>	10 <sup>15</sup>		ASTM D257
Thermal Expansion Coefficient	%	0.5		ASTM D1204
Thermal Conductivity	W/m°C	0.18 - 0.2		ASTM C177
Brittle Temperature	°C	-30		ASTM D746

Boyd UL Rating #: QMFZ2.E151722

Properties	Unit	Product Type: Electrical Insulators		Test Method
		PP Black Velvet/Matte Finish		
		BOYD Part Number		
		BCPLA-811-1105	BCPLA-811-1106	
Thickness	mm	0.76	1.02	ASTM D638
Tensile Strength	kgf/cm <sup>2</sup>	260		ASTM D256
Impact Strength	kgf/cm	7		ASTM D1922
Tear Strength	g/mil	50		ASTM D792
Specific Gravity	g/cm <sup>3</sup>	0.95		ASTM D792
Water Absorption	%	0.1		ASTM D570
Oxygen Absorption	%	33		ASTM D2863
Melting Temperature	°C	168		ASTM D2117
Melt Flow Index	g/10 min.	2.8		ASTM D1238
Vicat Softening Point	°C	160		ASTM D1525
Dielectric Strength	KV/mm	60		ASTM D149
Volume Resistivity @ 25°C	Ω-cm	7 x 10 <sup>14</sup>		ASTM D257
UL Flammability				
<.25mm		VTM-0		
>.25mm		V-0		
Ultimate Elongation	%	200		ASTM D882
Tensile Modulus	Mpa	2300		ASTM D790
Surface Resistivity	Ω <sup>2</sup>	10 <sup>15</sup>		ASTM D257
Thermal Expansion Coefficient	%	0.5		ASTM D1204
Thermal Conductivity	W/m°C	0.18 - 0.2		ASTM C177
Brittle Temperature	°C	-30		ASTM D746

Boyd UL Rating #: QMFZ2.E151722

Properties	Unit	Product Type: Electrical Insulators		Test Method
		PP White Velvet/Matte Finish		
		BOYD Part Number		
		BCPLA-811-2101	BCPLA-811-2102	
Thickness	mm	0.125	0.175	ASTM D638
Tensile Strength	kgf/cm <sup>2</sup>	260		ASTM D256
Impact Strength	kgf/cm	7		ASTM D1922
Tear Strength	g/mil	50		ASTM D792
Specific Gravity	g/cm <sup>3</sup>	0.95		ASTM D792
Water Absorption	%	0.1		ASTM D570
Oxygen Absorption	%	33		ASTM D2863
Melting Temperature	°C	168		ASTM D2117
Melt Flow Index	g/10 min.	2.8		ASTM D1238
Vicat Softening Point	°C	160		ASTM D1525
Dielectric Strength	KV/mm	60		ASTM D149
Volume Resistivity @ 25°C	Ω-cm	7 x 10 <sup>14</sup>		ASTM D257
UL Flammability				
<.25mm		VTM-0		
>.25mm		V-0		
Ultimate Elongation	%	200		ASTM D882
Tensile Modulus	Mpa	2300		ASTM D790
Surface Resistivity	Ω <sup>2</sup>	10 <sup>15</sup>		ASTM D257
Thermal Expansion Coefficient	%	0.5		ASTM D1204
Thermal Conductivity	W/m°C	0.18 - 0.2		ASTM C177
Brittle Temperature	°C	-30		ASTM D746

Boyd UL Rating #: QMFZ2.E151722

Properties	Unit	Product Type: Electrical Insulators		Test Method
		PP White Velvet/Matte Finish		
		BOYD Part Number		
		BCPLA-811-2103	BCPLA-811-2104	
Thickness	mm	0.25	0.43	ASTM D638
Tensile Strength	kgf/cm <sup>2</sup>	260		ASTM D256
Impact Strength	kgf/cm	7		ASTM D1922
Tear Strength	g/mil	50		ASTM D792
Specific Gravity	g/cm <sup>3</sup>	0.95		ASTM D792
Water Absorption	%	0.1		ASTM D570
Oxygen Absorption	%	33		ASTM D2863
Melting Temperature	°C	168		ASTM D2117
Melt Flow Index	g/10 min.	2.8		ASTM D1238
Vicat Softening Point	°C	160		ASTM D1525
Dielectric Strength	KV/mm	60		ASTM D149
Volume Resistivity @ 25°C	Ω-cm	7 x 10 <sup>14</sup>		ASTM D257
UL Flammability				
<.25mm		VTM-0		
>.25mm		V-0		
Ultimate Elongation	%	200		ASTM D882
Tensile Modulus	Mpa	2300		ASTM D790
Surface Resistivity	Ω <sup>2</sup>	10 <sup>15</sup>		ASTM D257
Thermal Expansion Coefficient	%	0.5		ASTM D1204
Thermal Conductivity	W/m°C	0.18 - 0.2		ASTM C177
Brittle Temperature	°C	-30		ASTM D746

Boyd UL Rating #: QMFZ2.E151722



Properties	Unit	Product Type: Electrical Insulators		Test Method
		PP White Velvet/Matte Finish		
		BOYD Part Number		
		BCPLA-811-2105	BCPLA-811-2106	
Thickness	mm	0.76	1.02	ASTM D638
Tensile Strength	kgf/cm <sup>2</sup>	260		ASTM D256
Impact Strength	kgf/cm	7		ASTM D1922
Tear Strength	g/mil	50		ASTM D792
Specific Gravity	g/cm <sup>3</sup>	0.95		ASTM D792
Water Absorption	%	0.1		ASTM D570
Oxygen Absorption	%	33		ASTM D2863
Melting Temperature	°C	168		ASTM D2117
Melt Flow Index	g/10 min.	2.8		ASTM D1238
Vicat Softening Point	°C	160		ASTM D1525
Dielectric Strength	KV/mm	60		ASTM D149
Volume Resistivity @ 25°C	Ω-cm	7 x 10 <sup>14</sup>		ASTM D257
UL Flammability				
<.25mm		VTM-0		
>.25mm		V-0		
Ultimate Elongation	%	200		ASTM D882
Tensile Modulus	Mpa	2300		ASTM D790
Surface Resistivity	Ω <sup>2</sup>	10 <sup>15</sup>		ASTM D257
Thermal Expansion Coefficient	%	0.5		ASTM D1204
Thermal Conductivity	W/m°C	0.18 - 0.2		ASTM C177
Brittle Temperature	°C	-30		ASTM D746

Boyd UL Rating #: QMFZ2.E151722