PREMIER™

CHOMERICS® Parker

Conductive Plastics for Reliable EMI Shielding

- High Performance EMI Shielding (85+ dB)
- Eliminate Secondary EMI Shielding Processes
- High Tensile and Flexural, Modulus and Strength
- Thermoplastic Design Freedom
- Recyclable Parts
- Global Pellets and Parts Availability

PREMIER™

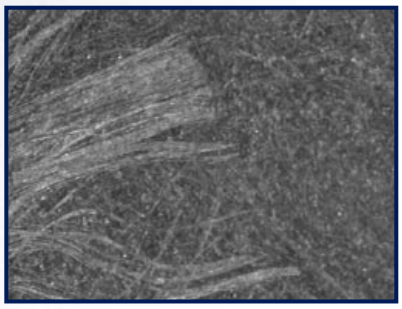
Electrically Conductive EMI Shielding Thermoplastics

PREMIER is the first commercially available conductive thermoplastic for real world EMI shielding solutions. It is a custom blend of thermoplastic resins and conductive fibers engineered for stable electrical, mechanical and physical performance. Finished PREMIER parts resist abrasion and corrosion.

Combined with standard injection molding processes, PREMIER technology maximizes the dispersion of conductive fibers in a resin matrix. Unlike typical conductive plastics, PREMIER material contains an entanglement of long, randomly oriented Ni-C (nickel-plated carbon) fibers evenly dispersed throughout a part's geometry. PREMIER parts have no resin rich areas prone to EMI leaks, and no brittle, resin poor areas that can break under mechanical stress. PREMIER requires no plating, painting, vacuum coating, or other added processing steps.

PREMIER parts provide shielding effectiveness up to 85 dB to meet global commercial EMC requirements. The parts provide the electrical conductivity, RF absorption, and mechanical durability to replace aluminum and plastic housings that have been metallized or conductively coated. The shielding effectiveness of PREMIER is far greater than that of carbon-filled ESD (electrostatic discharge) plastics.

By increasing the loading of Ni-C fibers, EMI shielding performance increases. Because not all applications require the same level of shielding, PREMIER is available with multiple levels of fiber loading to achieve the desired EMI shielding at the lowest possible material cost.



Typical conductive plastic - without proper dispersal, Ni-C fibers can form undesirable bundles in a polymer matrix. This can cause non-conductive areas to form elsewhere.

Shielding Breakthrough: The Three Elements

Three elements of PREMIER technology make it unique in the marketplace:

Fiber Material

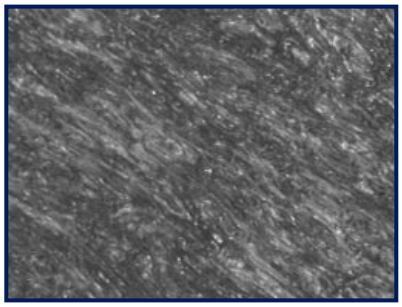
Nickel plating provides a stable, highly conductive surface on the carbon fiber. The Ni-C fibers locked in PREMIER's resin matrix act as small magnetic dipoles, making it a paramagnetic material with a relative permeability of 6.4 N/A^2. This imparts absorptive properties and increases PREMIER shielding performance far beyond values expected based on surface conductivity only. Combining this absorption property with the average 1.0 to 2.0 mm thickness of PREMIER parts provides EMI shielding equal to or better than typical 0.01 to 0.02 mm metallic plated surfaces. Additionally, to increase mechanical strength (and not cost), non-plated fibers can be blended with the Ni-C fibers imparting superior performance.

Dispersion Technology

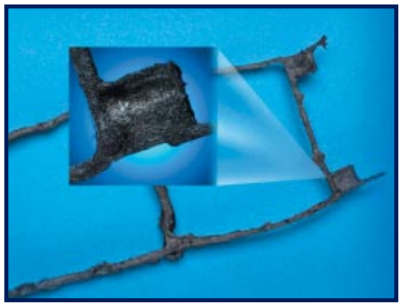
The Ni-C fibers are treated with a unique, proprietary dispersion technology. During injection molding, the system delivers a randomly oriented, uniformly dispersed and interlocked fiber matrix within the polymer, with multiple points of electrical contact. This process is unique to PREMIER technology.

Pelletizing

The treated fiber roving is jacketed within the polymer and cut to length as pellets, providing a single component system. Pelletizing optimizes the fiber aspect ratio to maximize performance. No separation of the fiber occurs during shipping and no dry blending is needed when molding. This eliminates fiber nesting and clogged extruder throats.



A PREMIER molded plaque surface containing fully distributed Ni-C fibers treated with Chomerics' dispersion technology.



A 0.5 mm wide section of a PREMIER conductive plastic part. Burn-off of the exterior polymer reveals the intricate part geometry and uniform fiber entanglement, with no areas of discontinuity.

Critical differences between PREMIER Conductive Plastic Shielding Solutions and traditionally compounded or dry blended "conductive plastics"

	Product Characteristics	Resulting Part Characteristics
Traditional "Conductive" Plastic	Short fibers (<3 mm) Carbon powder or fiber Brittle stainless steel fibers Pelletized one component	Poor filler dispersion Poor EMI shielding and through conductivity SS fiber "cracking" Incidental particle or fiber contact Inconsistent material performance throughout part: • Fiber-rich areas prone to breakage • Localized non-conductive areas Mold maintenance down-time from clogged hot runner and valve gates
Traditional Dry Blending	Standard polymer systems Carbon powder or fiber Brittle stainless steel fibers Mixing and blending at press Inconsistent Mixing Settling	Same characteristics as traditional conductive plastic, listed above Nesting of fibers during molding
PREMIER Conductive Plastic Shielding	Industry-accepted polymer systems Flexible, stable, long Ni-C fibers Proprietary dispersion agent Single component pellet Optimized fiber length	Homogeneous dispersion High EMI shielding and excellent through conductivity High mechanical properties Maximum fiber-to-fiber and surface contact Homogeneous material performance throughout part

Lower System Cost

Use of PREMIER conductive plastics technology shortens design cycles and simplifies the supply chain. The single-step molding process eliminates costly steps such as machining of die-castings or conductive coating or plating. Production start-up is simple, with lower costs, fewer tools, and faster approvals. PREMIER technology eliminates the time, quality concerns, and logistical problems of using multiple vendors.

Design Freedom

PREMIER solutions give design engineers a flexible alternative to metal fabrication, die-casting, or metallizing non-conductive plastic parts. Formed or stamped metals restrict design approaches. Die cast parts are heavy, thick walled, and generally require secondary machining and an ecologically undesirable chromate conversion coating. Non-conductive plastics require masking and metallic coating or plating. Secondary operations add time, cost, and yield losses due to coating/plating issues.

PREMIER parts require no secondary operations. The technology allows for complex part geometry, thin walls, and improved aesthetics. Compared to aluminum die- castings PREMIER can reduce part weight up to 75%. Assembly components are easily integrated via insert molding, heat staking or ultra-sonic welding. Single-piece PREMIER PCB shields are a simple, economic alternative to multiple, soldered-on metal cans with one-step installation and easy reworkability.

Recyclable PREMIER Parts

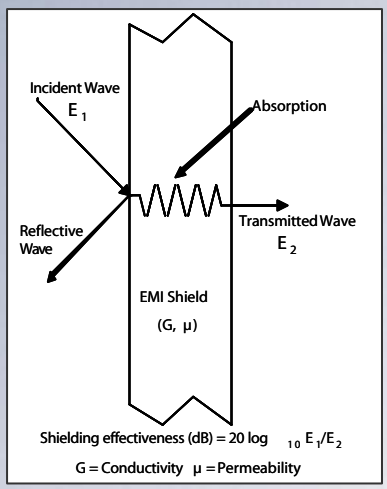
At the end of product life, PREMIER parts can be recycled through regrinding to comply with stringent disposal regulations. Unlike painting or planting, no costly stripping is required, making end-of-life issues disappear. PREMIER allows for cost effective compliance with end-of life vehicle and WEEE directives. It complies with worldwide directives for ecological compatibility, such as RoHS standards, by containing no halogenated or banned compounds. If a device's function includes prolonged skin contact, lower fill level PREMIER A220-HT material complies with EN1811 for Ni extraction, allowing for use on hand-held devices. Once cosmetically top coated, all PREMIER materials comply with EN1811.

Price and Performance Material Choices

PREMIER plastics are provided in three PC/ABS based families: **HT**, for 85°C RTI applications, **ST**, for 100°C RTI applications, and **FR**, for use where UL94 V-0 flammability grade material is required (the flame retardant is non-haloginated), **HM**, for 85°C RTI applications that require high flexural modulus. Each PREMIER family offers three standard material grades based on the level of Ni-C filler. Increasing Ni-C fiber loading increases EMI shielding performance. Multiple levels of fiber loading allow a cost effective match of the desired amount of EMI shielding with the lowest possible material cost. Fill levels are identified as follows: A220 = Low, A230 = Medium, and A240 = High. **HM** material is a custom blend of fibers and only available in the high level (A240).

SHIELDING EFFECTIVENESS

Fig 4 – Shielding effectiveness



The total amount of shielding effectiveness of any EMI shield is equal to the reflective and absorptive losses (Fig 4). The greater the conductivity, permeability, and thickness of the shield the greater the absorption of the electromagnetic energy by the shield.

Commonly used metals, such as aluminum and magnesium alloys, shield primarily based upon their conductivity. These materials have little to no permeability (see table 1). Shielding in these materials is achieved primarily by reflection (especially below 10 GHz) and absorption due to skin depths. Premier has both conductivity and permeability. Premier's permeability provides incremental shielding effectiveness with enhanced absorption at all frequencies. The added absorptive shielding effectiveness increases total shielding, thus overcoming lower conductivity. For this reason Premier delivers shielding effectiveness beyond what might be expected by conducting a surface resistance measurement.

Material	Surface Resistance (O/square)	Permeability (μ)	Typical Shield Thickness (mm)
Premier	0.030 to 4.5	6.5	0.8 to 3.0
Acrylic paint Ag/Cu filled	0.05 to 0.10	<<<<1	.0025 to .005
Vacuum Deposited Aluminum	0.01 to 0.20	1	.00025
Nickel over Copper Plating	0.01 to 0.10	~ 50	.0001
Aluminum Alloys	.005 to .050	1	1.5 to 3.0

Table 1 – Shielding effectiveness parameters

Although commonly used nickel over copper plating also has high permeability, it is typically applied as a very thin film. Ni/Cu plating is thousands of times thinner than Premier. Since the amount of absorption is directly proportional to the thickness of the shield, Premier's absorption is much greater than Ni/Cu plating, overcoming lower DC conductivity.

Premier's nickel, graphite and carbon fiber components all possess intrinsic lossy properties of electromagnetic energy. By using these materials, Premier's absorptive properties exceed any other low cost commercially available EMI shielding material. Excellent shielding effectiveness is obtained by adding Premier's conductivity and permeability together.

Graphs shown in Fig 6-8 present data on Premier performance. The graphs show SE per a free field antenna measurement and ASTM 4935 (transfer impedance). Each recognized procedure is designed for the frequency range reported and a test report can be supplied on request. Test procedure will affect the absolute attenuation reported, making the creation of a single continuous graph impractical.

An application's mechanical design is critical to optimizing the inherent shielding performance of a material. An effective EMI shielding scheme features a conductive shielding medium, electrical continuity 360 degrees around a radiating source or susceptible area, and termination of the shield at mating flanges. All components of the shield are tied to a common ground.

For applications that do not use an EMI shielding gasket at the seams of joints, or have large openings, PREMIER will perform comparably to other materials, including aluminum. The seam or opening provides less shielding than the housing material, making the seam or opening the determining component of the housing's overall shielding performance. Generally, a non-gasketed seam having good incidental contact will deliver 60 to 70 dB (800 MHz to 12 GHz) shielding effectiveness in both PREMIER and aluminum. Typically, plated housings will have 3 to 5 dB less shielding effectiveness than PREMIER. Copper-filled coatings will provide 5 to 10 dB less effectiveness

To optimize performance, a torturous path joint with a maximized surface area is suggested for seams instead of a simple butt joint. Five to fifteen dB of shielding performance can be added to a typical PREMIER housing using a fabric-over-foam gasket, such as Chomerics' SOFT SHIELD® 3500,500 or 4800 Series, or a form-in-place conductive elastomer gasket, such as Chomerics Cho-Form® family of materials. Contact Chomerics for test protocols and EMI design assistance.

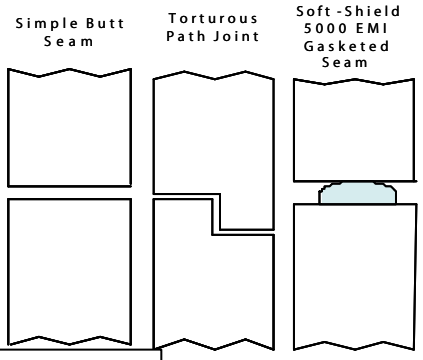
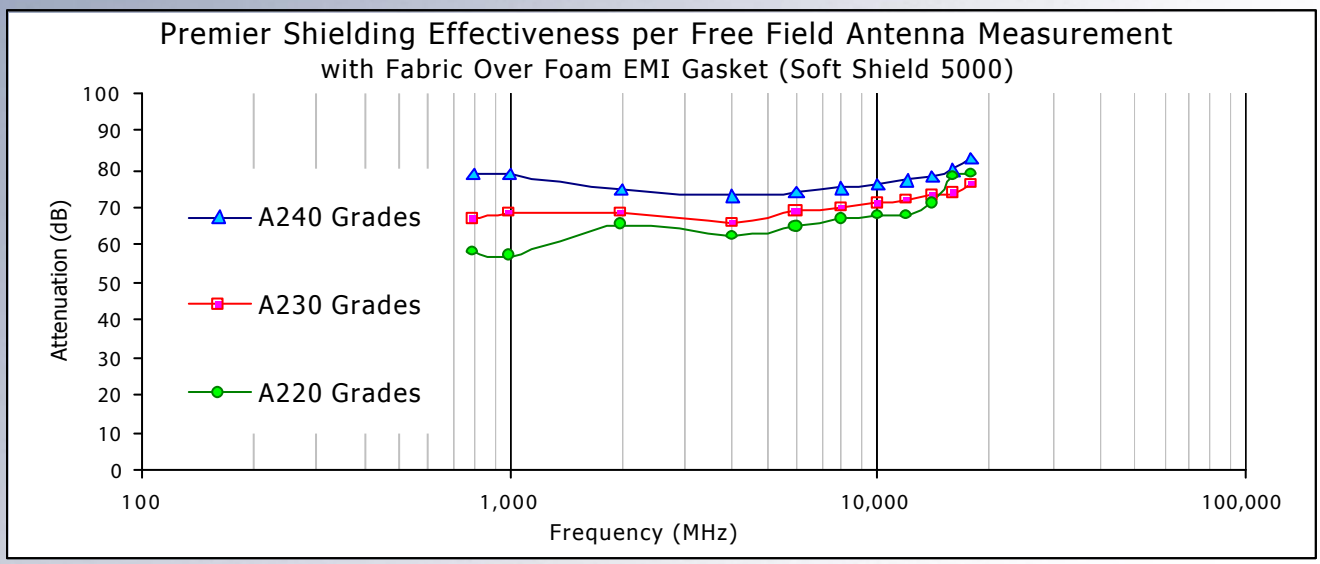
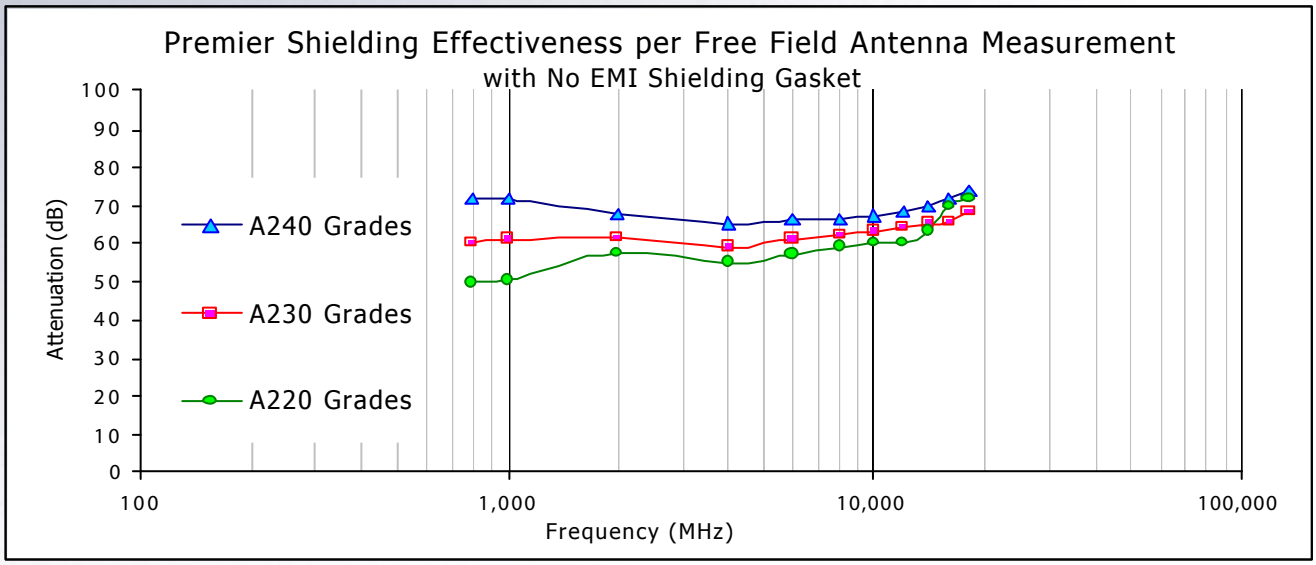
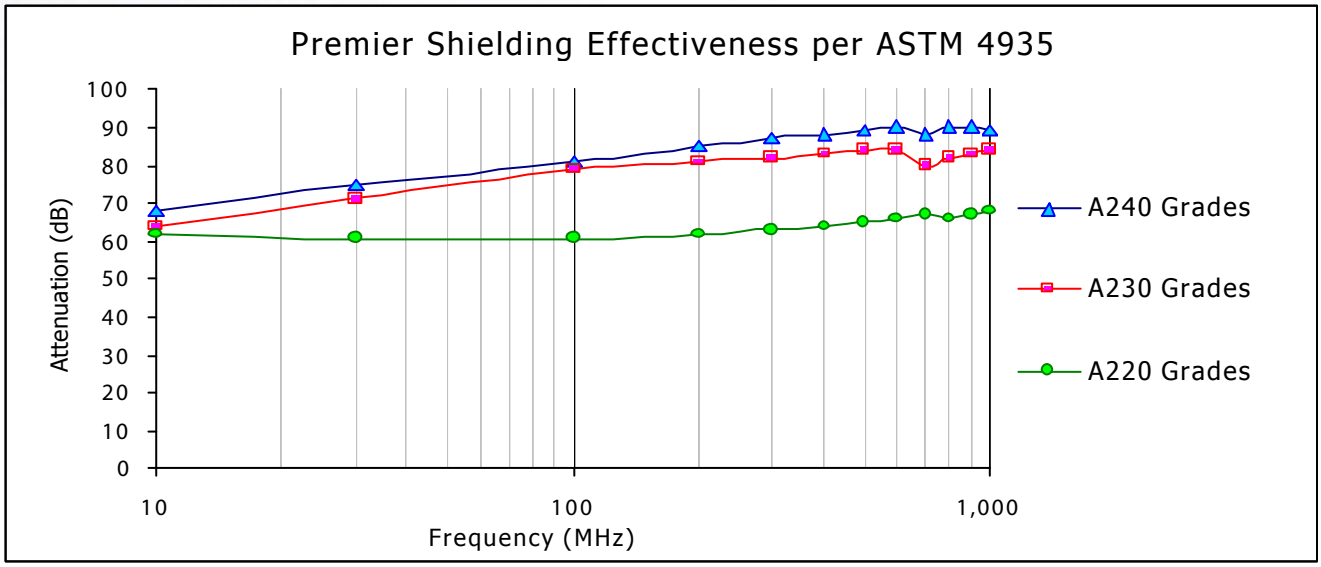


Fig 5 – Joints/Seams

Fig 6-8 – Shielding Effectiveness Performance Graphs







PREMIER EMI Shielding Plastics – TYPICAL PROPERTIES

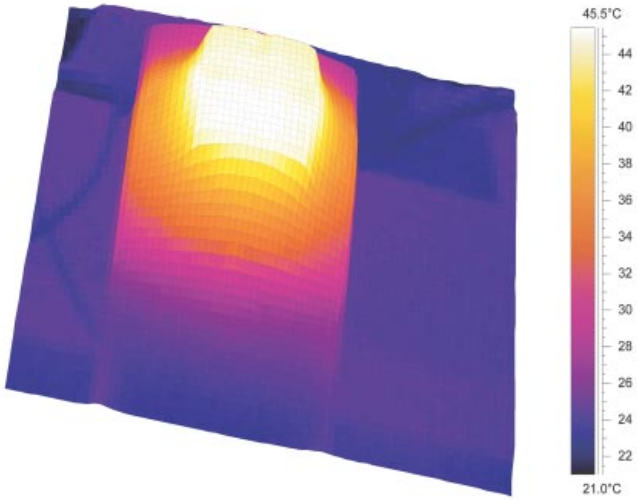
Property	Test Method	Units	A220-HT	A230-HTHF	A240-HTHF	A220-FR	A230-FRHF	A240-FRHF	A220-ST	A230-ST	A240-ST
Filler Level			Low	Medium	High	Low	Medium	High	Low	Medium	High
Electrical											
Surface Resistance		Ohm/sq	4.50	0.60	0.25	4.50	0.60	0.25	4.50	0.50	0.20
Through Resistance		Ohm	0.800	0.060	0.030	0.800	0.060	0.030	0.800	0.060	0.030
Mechanical											
Tensile Strength @ Break	ASTM D638	MPa (psi)	68 (9,850)	72 (10,295)	76 (10,435)	66 (9,700)	72 (10,295)	76 (10,435)	78.6 (11,400)	88.3 (12,800)	90.8 (13,170)
Tensile Elongation @ Break	ASTM D638	%	1.00	1.20	1.00	1.00	1.20	1.00	1.65	1.02	0.94
Tensile Modulus	ASTM D638	GPa (psiX10^6)	5.8 (0.84)	6.7 (0.97)	7.7 (1.17)	7.5 (1.00)	6.7 (0.97)	7.7 (1.17)	6.0 (0.88)	11.1 (1.62)	13.2 (1.92)
Flexural Strength	ASTM D790	MPa (psi)	110 (15,950)	100 (14,500)	113 (16,384)	108 (15,800)	100 (14,500)	113 (16,384)	121 (17,600)	142 (20,700)	151 (22,030)
Flexural Modulus	ASTM D790	GPa (psiX10^6)	5.2 (0.75)	6.3 (0.91)	8.0 (1.10)	5.2 (0.75)	6.3 (0.91)	8.0 (1.10)	5.4 (0.79)	9.1 (1.33)	12.6 (1.85)
RTI		ºC (ºF)	85 (185)	85 (185)	85 (185)	70 (158)	70 (158)	70 (158)	105 (221)	105 (221)	105 (221)
Izod Impact (Unnotched)	ASTM D412	J/m (ft-lb/in)	197 (3.69)	176 (3.30)	192 (3.60)	197 (3.69)	176 (3.30)	192 (3.60)	298 (5.59)	233 (4.37)	234 (43.9)
Izod Impact (Notched)	ASTM D412	J/m (ft-lb/in)	74.7 (1.40)	53.3 (1.0)	64 (1.20)	58 (1.10)	53.3 (1.0)	64 (1.20)	77 (1.45)	93 (1.75)	120 (2.25)
Thermal											
Thermal Conductivity	ASTM D3763	W/m-K	0.56	0.59	0.70	0.56	0.59	0.70	0.56	0.59	0.70
HDUL @ 18.2 bar (264 psi)	ASTM 648	ºC (ºF)	122 (251)	120 (248)	118 (244)	100 (212)	100 (212)	99 (210)	128 (262)	123 (253)	119 (246)
CLTE	ASTM D696	m/m/ºC x10^{-6} (in/in/ºFx10^6)	.26 (0.14)	0.30 (0.17)	0.18 (0.10)	0.50 (0.28)	0.30 (0.17)	0.18 (0.10)	0.29 (0.16)	0.15 (0.08)	0.13 (0.07)
Physical											
Specific Gravity	ASTM D3763		1.20	1.39	1.40	1.20	1.39	1.40	1.20	1.31	1.40
Flammability	UL 94	@ 1.5 mm	N/A	N/A	N/A	V0	V0	V0	N/A	N/A	N/A

Thermal Management Capabilities

Because their Ni-C fibers act as thermal conductors, PREMIER plastics have inherent thermal conductivity properties as high as 0.70 W/m-K. (See Typical Properties table on page 5.) This allows PREMIER parts to be used within many thermal management systems.

Thermal conductivity results improve when a metal heat sink or spreader is used with a PREMIER part to maximize heat dissipation. Tests by Chomerics show that by embedding an aluminum heat spreader/heat sink into Ni-C filled PREMIER plastic there are significant reductions in junction and skin temperatures. Transistor power also increases when compared to results using a non-conductive PC/ABS plastic. The image demonstrates effective thermal management of a 10W source.

Heat spreaders and heat sinks can also be employed with PREMIER parts by using Chomerics' THERMATTACH, double-sided, thermally conductive adhesive tape.



Thermal image of PREMIER conductive plastic with inserted aluminum heat sink with 10W of power applied to under surface.

PREMIER EMI Shielding Solutions

Chomerics can make PREMIER your EMI shielding solution through the supply of molded parts or raw pellets into your supply chain. Chomerics has extensive in-house capabilities to design, prototype, and manufacture PREMIER parts with optimum mechanical and electrical characteristics. As the leading provider of quality shielding solutions, hundreds of millions of Chomerics parts and materials are employed in consumer, military, automotive and industrial electronics around the globe.

To verify your product's product performance, Chomerics has in-house EMC test services that are globally certified to FCC, EC, VCCI, IEC 1000, EN61000 Series, CISPR, Austel and EU regulations. Chomerics also performs certified product safety testing.

PREMIER and Your Supply Chain

Our unique EMI shielding design experience is a true asset to your supply chain team. We leverage our knowledge in the tool design and molding processes to ensure excellent performance of your design in production. Your parts are optimized for EMI shielding, and mechanical and environmental performance.

For customers with limited experience or resources, Chomerics can manage dynamic supply chains. We are a global manufacturer that routinely coordinates multiple vendors, locations, shipping and import/export procedures.

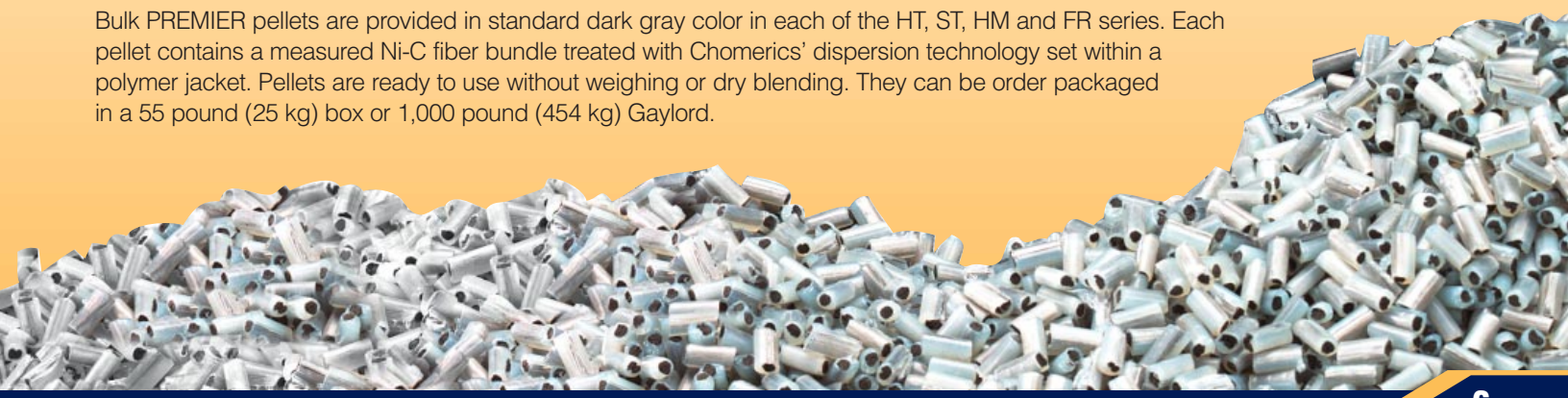
Direct Part Supply from Chomerics

Our customers routinely enjoy significant cost savings and convenience using Chomerics as a single point of contact. PREMIER molded parts can be produced worldwide at Parker locations in the Americas, Asia and Europe. Chomerics works with global manufacturers to make the availability of PREMIER conductive plastic shielding solutions as convenient as possible.

Bulk PREMIER Pellets

Chomerics provides PREMIER pellets to let injection molders offer true shielding parts to their customers. We support each step of the sales and production process to assure the highest quality parts for your shielding customers.

Bulk PREMIER pellets are provided in standard dark gray color in each of the HT, ST, HM and FR series. Each pellet contains a measured Ni-C fiber bundle treated with Chomerics' dispersion technology set within a polymer jacket. Pellets are ready to use without weighing or dry blending. They can be order packaged in a 55 pound (25 kg) box or 1,000 pound (454 kg) Gaylord.



Part numbers for PREMIER pellets are built from WW-A2XX-YY-Z where XX is the filler level descriptor and YY is the family descriptor:

WW	—	A2XX	—	YY	—	Z
PREMIER Pellets Unit of Measure		**Filler Level**		**Family Descriptor**		**Package Container**
CK = Kilograms		A220 = Low		HT = Standard Temperature		B = Box, 55 lb (25 kg)
CP = Pounds		A230 = Medium		ST = High Temperature		G = Gaylord, 1,000 lb (454 kg)
		A240 = High		FR = Flammability Rated, UL94 V-0		
				HM = High Modulus		

Example: CP-A240-HT-B is Ni-C fiber in a PC/ABS resin, with high filler level of 85°C RTI grade, supplied as pellets in a 55 pound box. Contact Chomerics for pricing information.

Chomerics provides start-up assistance on prototyping, tool design and processing. If required, custom PREMIER material blends can be formulated. Contact Chomerics to discuss the full range of PREMIER support services available.

Molding with PREMIER

As with other filled thermoplastic polymers, PREMIER pellets must be adequately dried prior to use. In most cases, pre-existing tooling is usable. Parts can be molded with wall thicknesses down to 0.8 mm, and localized areas can be 0.5 to 0.8 mm thick. Draft angles should be 1.5 degrees or greater.

Equipment Requirements

PREMIER does not require specialized injection molding equipment. However, it is recommended to use a press with as large a daylight clearance as possible to allow room for a hot runner system and a valve gate manifold. Tooling of this nature is common with PREMIER to reduce process scrap to a minimum. Chomerics recommends a tiebarless press with valve gate control. In order to control PREMIER processing parameters a close loop control system for injection speed, injection pressure, feed throat control and back pressure is strongly recommended. A process variable recording system tied to inspection data is very helpful tool for trouble shooting production. Press clamp tonnage should be three to five tons per project shot area in square inches. Barrel size should be 30 to 80% of shot size and a variety of screw diameters should be available to insure compliance. A hardened general purpose screw with a diameter greater than 22 mm and compression ratio of 2.30:1 to 2.50:1 is recommended. For example, an Engle's screw with a 280 mm feed zone/225 mm transition zone/140 mm feed zone with a 25 mm nominal screw diameter and 2.35:1 compression ratio works well. The injection molding equipment should have a free flow check ring.

Injection Molding Tooling

PREMIER works well with injection molding tooling made in accordance with SPE/SPI Class 101 tooling standards. For production tooling a hardened steel should be used (S7, H11, or P20). For prototyping of less than 1,000 pieces aluminum (7075-T651) tooling can be used.

- PREMIER is not highly abrasive to tooling, and a minimum of one million shots is easily achievable as molds perform similarly to those produced to run glass-filled polycarbonate.
- Textured or polished cavity surfaces are acceptable. Draft angles of 1.5° to 2.0° are recommended for EDM or SPE/SPI #2 cavities. Higher draft angles are recommended for textured surfaces and design should follow low shrink material guidelines.
- Cold runners with sub-gating or edge gating or fan gating will lower tooling costs and produce runner scrap. Hot runners with valve gating or direct gating will avoid runner scrap and raise tooling costs. Although runner scrap may be re-ground and re-used Chomerics recommends a hot runner system whenever possible to eliminate runner scrap, labor time and cost associated with gate and runner removal. As always a cost justification should occur to determine the most economical runner system based upon anticipated run quantity.

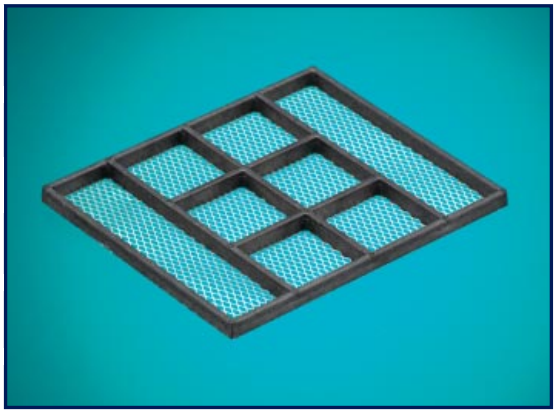
Gating

As with any design, a mold flow analysis should be used to validate material flow within the tool. It must be evaluated to insure proper fill.

- Valve gating is a viable option. Direct gating is preferred. A sub-gate design will provide little or no gate vestige, and when combined with a nylon tip, excellent processing is obtained.
- Gating systems like those used with glass fiber-filled polymers work well.
- Gate size is part dependent. Recommended gate size is between 0.81mm^2 and 4.10mm^2 (0.00126 in^2 and 0.00636 in^2).
- Various gate designs such as edge, fan, and sub-gates have been proven in real applications.
- PREMIER mold filling and warp data are available from Chomerics.

Premier PCB Shield

There are a number of options for screen materials with aluminum being the most popular choice. Screen thickness can be as low as 0.005 inches (0.13mm). The Premier frame may have a wall thickness as little as 0.032 inches (0.8mm) wide. Premier shields use less space and are lighter than traditional formed metal cans. The expanded aluminum has the added benefit of allowing airflow for heat dissipation. Injection molding allows for complex frame geometry freeing PCB layout from metal forming limitations. Multiple “can” insertions on a single board can be simplified with a one piece Premier design reducing assembly costs. The Premier can may be attached mechanically with molded in clips, heat-staked or bonded using robotically applied conductive adhesives.



Premier multi-compartment, PCB EMI Shielding can. Using state of the art insert molding technology a Premier frame is combined with an expanded metal screen.

Additional PREMIER Design Options

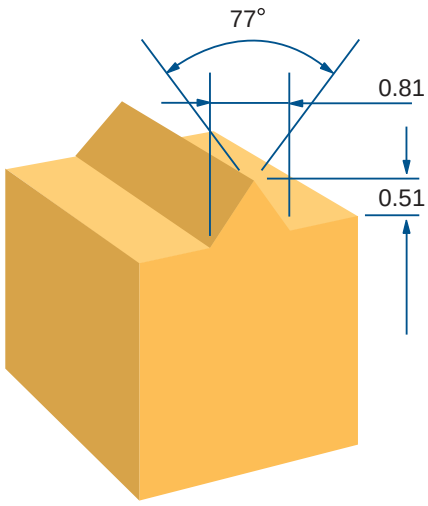
Chomerics or any molder can supply parts using specialized production techniques.

- Insert molding of either non-conductive plastic or metallic items can eliminate secondary assembly operations. Common examples include pin connector blocks and heat sinks, however almost any secondary component can be molded in.
- Multiple-material molding allow for both conductive and non-conductive areas on a single part.

Post-Molding Operations

Once molded, PREMIER parts can be further processed like any thermoplastic material.

- Automated gasket dispensing with Chomerics' Cho-Form™ Form-In-Place silicone gasket technology onto the flange surfaces is possible. Filled with either silver plated copper or nickel-graphite particles Cho-Form gasketing has been field proven as an effective shielding and environmental sealing gasket. Attachment with pressure sensitive adhesive of Chomerics' fabric-over-foam Soft Shield® family of gaskets provides high EMI shielding and low closure force. Soft Shield is offered in three grades, standard Soft Shield 5000, low cost Soft Shield 3500, or the high performance ultra-low compression set silicone foam based Soft Shield 7000. All of these gasket options add 5 to 15 dB of shielding to PREMIER by providing 360° sealing and decreasing the interfacial resistance at the joint. Chomerics has been the world's leader in EMI shielding gasketing for over 35 years and has many options for gasketing solutions. Contact Chomerics for material choice or design assistance.
- Painting parts can provide a cosmetic finish. As with any long fiber, filled polymer system the only avenue to reach a highly cosmetic finish or to color match to a standard is through the application of a surface coating. The choice of coatings that are compatible with PREMIER is limitless with cross linked urethane coatings a recommended choice. Contact Chomerics for assistance in material choice.
- Silk screening or pad printing or decal application are all possible and do not effect the performance of PREMIER.
- Sonic Welding for assembly of PREMIER to itself, and PREMIER to other like thermoplastics is an excellent attachment method. Testing indicates a 77° energy director butt joint design gives tensile strength equivalent to base material (see figure). Lap joints and double shear joints can be use effectively with tensile strength within 10% of base material. Specific designs will vary based upon part configuration, contact Chomerics for assistance. Sonic welding can be used to attach non-conductive PC/ABS or PC containing thermoplastics to PREMIER with acceptable performance.
- Heat staking or sonic welding of threaded inserts for final assembly of the PREMIER housing for subsequent assembly is possible. Thread forming screws can also be used, contact Chomerics for detailed information.



Recommended sonic welding energy director profile (all dimensions mm)

Cycle Time

Cycle times with PREMIER are similar to those used with any highly filled polymer system. Due to PREMIER's high thermal conductivity and high ejection modulus, cycle times can be aggressive. A nine second cycle is possible for an eight gram shot into a four-cavity tool. When combined with a valve gate no secondary work operation is required delivering 1,600 parts per hour. Chomerics is ready and willing to assist in tool design using mold flow analysis. On request Chomerics can manufacture the tool or will work closely with your current tooling sources to supply the tool to you.

In addition to Premier Conductive Plastic, Chomerics offers the following full range of EMI shielding and thermal management solutions

EMI

- Conductive elastomers – Molded, extruded, and form-in-place (FIP)
- Conductive foam based gaskets – Fabric-over-foam and z-axis foam
- Conductive compounds – Adhesive, sealants and caulks
- Coatings – Ecoplate direct metallization and conductive paints
- Metal gaskets – Springfingers, metal mesh and combination gaskets
- Foil laminates and conductive tapes
- EMI shielding vents – Commercial and military honeycomb vents
- Shielded windows
- Cable shielding – Ferrites and heat-shrink tubing

Thermal

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- Gap filling sheets, pads and compounds
- Thermally conductive adhesive tape
- Insulator pads
- Heat spreaders
- Thermal grease

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PREMIER Conductive Thermoplastics – from Chomerics, the EMI Shielding Leader

PREMIER™ conductive plastics are among the latest innovations in Chomerics' partnership with the electronics packaging industry. With more than 40 years of conductive composite technology development experience, we have been helping manufacturers of electronic equipment around the globe meet their performance and compliance goals for EMC.

■ Our Applications Engineering strength is without equal in the industry. You are just a call or e-mail away from reliable advice on material selection and design that can make a real difference to the success of your products.

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Chomerics is a division of the Seal Group of Parker Hannifin Corporation. Parker Seal is one of the world's largest and most experienced manufacturers of elastomer and other sealing and shielding devices.

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