STREAMSHIELD™ Vent Panels

Technology Driven EMI Airflow Solution

Customer Value Proposition:

With their exclusive designs (patent pending and manufacturing process, Parker Chomerics STREAMSHIELD vent panels have been developed as a high performance, economical solution to the EMI and airflow issues in information technology and telecommunications applications. Increased electromagnetic radiation and heat generation, together with intensified regulatory requirements for emissions suppression, necessitate a more sophisticated solution than simple perforations or louvers in electronic enclosures.

STREAMSHIELD vent panels deliver EMC and thermal management performance that meets the technology demands of today's electronic systems, including:

- Switches
- High speed routers
- Test equipment
- Cooling fan covers
- Indoor cellular base stations
- Wireless and wireline infrastructures
- Personal computers
- Network servers
- Network cabinets and enclosures
- Access equipment
- Rack mounted power amplifiers
- Storage cabinets

The STREAMSHIELD designs provide the same high performance as traditional honeycomb vent panels. Their honeycomb is 95% open area, minimizing pressure drop (Figure 3). The aperture size and cell depth provides the waveguide absorption and cut-off frequencies needed to solve even the most difficult EMI and airflow challenges.

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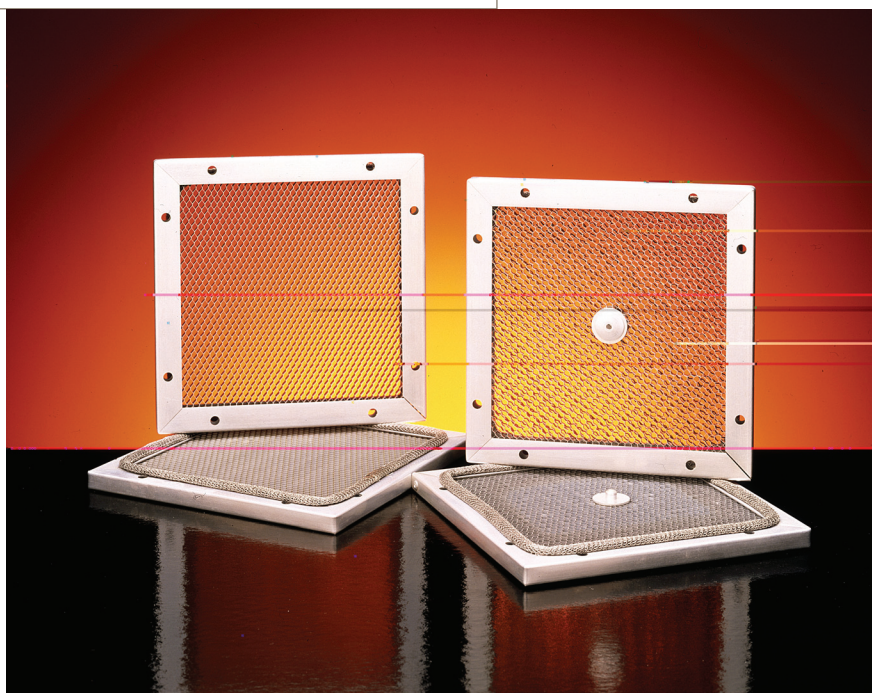

Product Features:

STREAMSHIELD vent panels are produced in two styles. In the first style, the honeycomb is incorporated into a stamped "tray" with integral tangs (fingers) around the periphery. The special mechanical process used to bend the tangs into the honeycomb ensures secure, consistent and reliable honeycomb-frame contact (see photo and Figure 1). This style is offered in two standard configurations that provide a square fan opening, or a round fan opening, as shown in Figure 4. In the second style, the honeycomb is incorporated into a roll-formed frame with a knitted aluminum wire mesh that maximizes contact (minimizes impedance) between the honeycomb and frame.

Other construction features include:

- Aluminum alloy 3003 or 5052 framing
- Aluminum alloy 5052 honeycomb, 1/16 (1.6 mm) or 1/8 inch (3.2 mm) cells —1/8 inch (3.2 mm), 1/4 inch (6.35 mm) or 1/2 inch (12.7 mm) thickness
- 6.1 lb./ft.3 density, 0.0015 inch (0.38 mm) thick foil
- SOFT-SHIELD 5000 EMI Gasket
- Choice of surface finishes

Key Benefits:

- Lightweight design
- Economical construction
- Excellent shielding performance (>50 dB @ 10 GHz)
- Excellent dimensional aspect ratios for airflow - 95% open area honeycomb for maximum airflow
- Customization
- Rapid prototyping

Optional OMNI CELL® honeycomb construction (oriented 90° to counteract polarization effects) OMNI CELL honeycomb construction provides higher shielding effectiveness than standard honeycomb construction. Contained in the same standard thickness frame, it utilizes two parallel honeycomb panels, each of which is half the thickness of standard honeycomb. Foil directions of the two OMNI CELL layers are at right angles to each other to eliminate the polarized shielding characteristics of conventional honeycomb. Refer to Figure 1.

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CUSTOMIZATION OPTIONS

- Alternative honeycomb cell sizes and thicknesses
- Alternative EMI gaskets
- Custom sized frames
- Custom fastener hole patterns
- Chromate conversion coating —clear or yellow, provides corrosion resistance and paintable surface
- Electroless nickel or electrolytic tin plating — enhances EMI shielding and corrosion protection, but chromate conversion coating also required if parts are to be painted
- Conductive paint - alternative to plating
- Intumescent paint - see inset below.
- Foam filters - 30 pore per inch polyether filter foam, UL94 HF1 rated. Other pore densities are available.
- Protective grilles - 0.030 inch (0.76 mm) thick, 0.250 inch (6.35 mm) hex perforated metal with 0.281 inch (7.14 mm) centers, for harsh environments
- Special hardware - for example, selfclinching standoffs or nuts (Figure 1)

Figure 1 STREAMSHIELD Panel Construction (stamped tray) Example

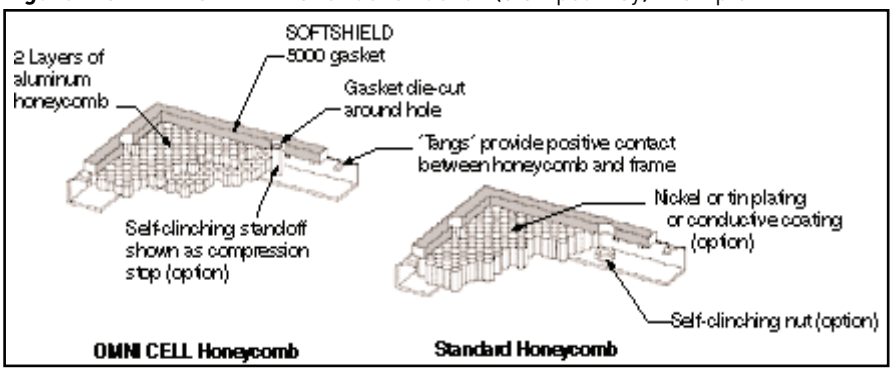


Figure 2 Shielding Effectiveness (dB) of STREAMSHIELD Vent Panel with OMNI CELL Construction

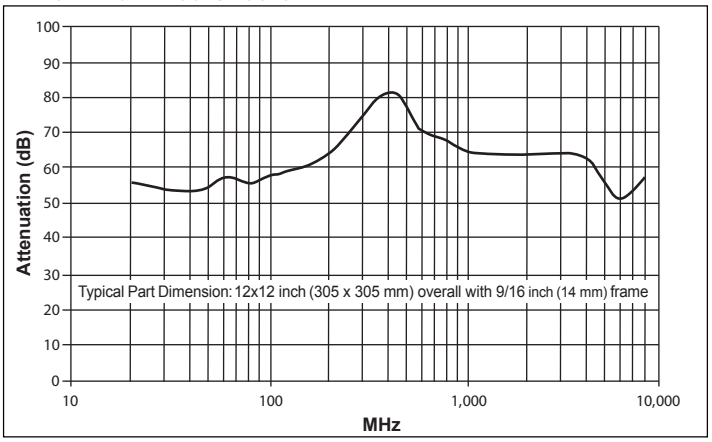
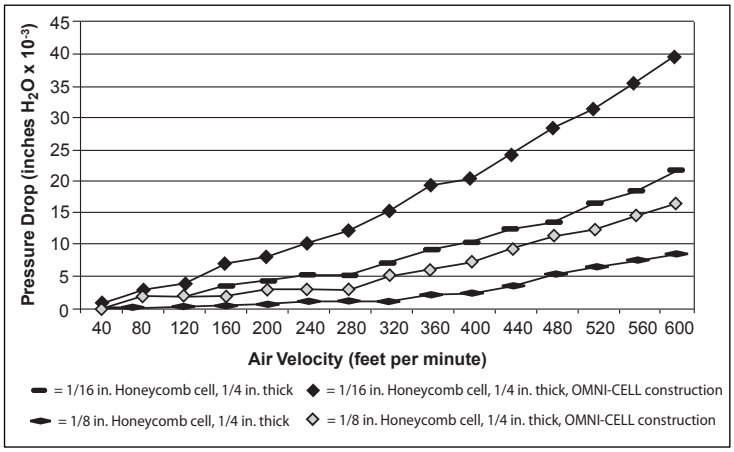
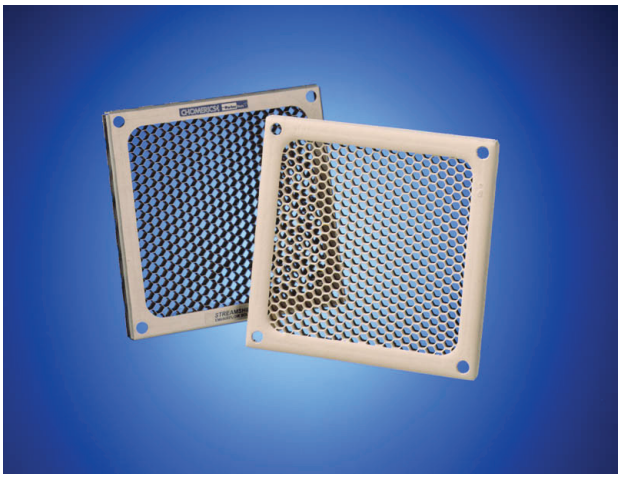


Figure 3 Pressure Drop Across Various Honeycomb Media



Fire Retardant HEICF 1594 Intumescent Coating System



Coated (right) and non-coated (left) STREAMSHIELD vent panels.
Intumescent coating of plain honeycomb pane (unframed) is also available.

Optional surface treatment for STREAMSHIELD panels or other honeycomb products
Parker Chomerics HEICF 1594 intumescent coating is a water-based system that is applied to honeycomb shielding vent panels to improve fire containment in electronic enclosures. A thin coating in the honeycomb cells reacts on exposure to flame or heat at 300°F (149°C) and expands rapidly, filling the cells with a carbonaceous foam that prevents flames from propagating through the honeycomb. This system can be invaluable in meeting the requirements for Network Equipment Building Systems (NEBS) compliance, and Bellcore GR-63-CORE Physical Protection Standards for Fire Resistance (Spread).

Fire Protection Performance
The HEICF 1594 coating system is based on the same fire retardant chemistry that meets the requirements of the ASTM E-84 Test Procedure and that is classified by UL as providing Class A (0-25) flame spread protection and low smoke density (15 on a scale of 0-450) on the standard test substrate.

Currently, there are no established test criteria for intumescent coatings on honeycomb vent panels. NOTE: Suitability of use for this product in a specific application must be determined by the user.

Heat and Humidity Resistance
The HEICF 1594 coating system has been tested for heat and humidity aging in Chomerics' laboratories. Heat aging at 185°F (85°C) for 168 hours caused slight darkening of the coating, but had no effect on the intumescent properties. Humidity aging at 185°F (85°C) and 85% relative humidity for 168 hours also had no effect on the intumescent properties of the coating system.

Mechanical Considerations
There is a reduction in the open area of the honeycomb when the coating system is applied. The coating system has approximately 4 mils (0.10 mm) dry film thickness. Standard 6.1 lb., 1/8 inch cell (3.18 mm) honeycomb is 96% open before coating. After coating, it is 84% open.

The addition of the coating increases the structural strength/ stiffness of the honeycomb.

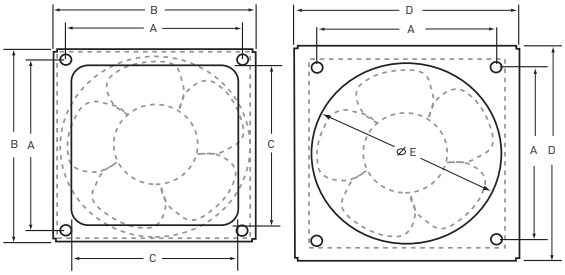
Colors
The HEICF 1594 coating system is off-white in color as a standard, but is compatible with universal colorants within limits. Many colors, therefore, can be offered on a custom option basis.

In addition to coating EMI shielded vents, Parker Chomerics extends its Intumescent Coating capabilities to unframed honeycomb paneling. Contact Parker Chomerics for more information.

ORDERING PROCEDURE

Use the following part number system to order STREAMSHIELD vent panels. For alternative frame and honeycomb cell sizes or additional customization, part numbers will be assigned by Parker Chomerics.

Figure 4 Standard STREAMSHIELD Configurations



Configuration 1 (square opening)

Configuration 2 (round opening)

FPCV - XXXXX - X X X X X X

Part Number from Table 1

Honeycomb Cell Size
A = 1/16 inch (1.59 mm)
B = 1/8 inch (3.18 mm)

Honeycomb Thickness
A = 1/8 inch (3.18 mm) (N/A with OMNI CELL)
B = 1/4 inch (6.35 mm)
C = 1/2 inch (12.7 mm)

Honeycomb Style
A = Straight (single layer)
B = OMNI CELL (two layers, oriented)

Surface Treatment
A = Mill Finish
C = Clear Chromate
D = YellowChromate
E = Electroless Nickel
H = ROHS Clear Chromate

Finish
A = No Paint
C = Intumescent Paint (H-COMB only)
D = Intumescent Ecoplate (H-COMB Only)
E = Ecoplate (H-COMB Only)

Miscellaneous Options
F = Foam Filter
G = Protective Grille
H = Foam and Grille

Table 1

STREAMSHIELD VENTS FOR STANDARD FAN SIZES							
	Dimensions, inch (mm)					Part Numbers	
Fan Size	A	B	C	D	E (dia.)	Config. 1	Config. 2
25 mm	0.79 (20.00)	NA	NA	1.38 (35.05)	0.90 (22.86)	——	11025
40 mm	1.26 (25.28)	1.58 (40.13)	1.18 (29.97)	1.96 (49.78)	1.50 (38.10)	10040	11040
60 mm	1.97 (50.04)	2.29 (58.17)	1.79 (45.47)	2.47 (62.74)	2.05 (52.07)	10060	11060
80 mm	2.81 (71.37)	3.13 (79.50)	2.63 (66.80)	3.51 (89.15)	3.00 (76.20)	10080	11080
92 mm	3.25 (82.55)	3.57 (90.68)	3.07 (77.98)	3.94 (100.08)	3.40 (86.36)	10092	11092
120 mm	4.13 (104.90)	4.45 (113.03)	3.95 (100.33)	4.82 (122.43)	4.20 (106.68)	10120	11120
150 mm	6.38 (162.05)	6.70 (170.18)	6.20 (157.48)	6.70 (170.18)	5.40 (137.16)	10150	11150

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