

C-RAM HFP

RoHS
Compliant

TECHNICAL BULLETIN 390-6

HYBRID RF ABSORBER FOR LOW FREQUENCIES

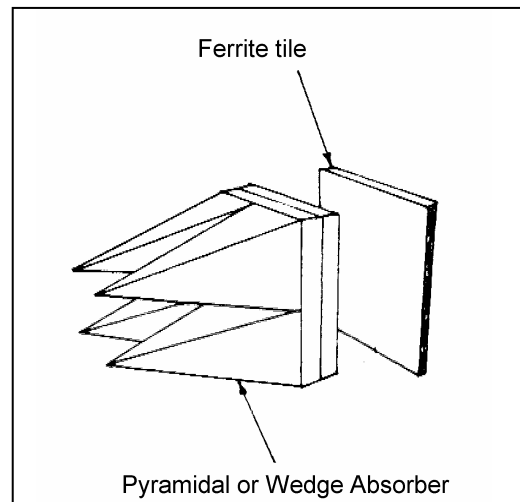
C-RAM HFP is a unique hybrid radar absorber designed for low-frequency EMI test rooms and anechoic chambers. The “hybrid” construction consists of specially-formulated pyramidal absorber panels mounted on ferrite tiles, resulting in almost all the performance normally seen with ferrite tiles alone in the 30 – 1000 MHz range, plus up to -30dB reflectivity from 1 – 20GHz. For many testing applications, C-RAM HFP achieves comparable performance in less than half volume occupied by conventional pyramidal absorbers.

One should note that the pyramidal foam component of C-RAM HFP is specially designed to match the impedance of the ferrite tiles, and is not the same material as standard C-RAM SFC pyramidal foam absorbers. Customers are invited to discuss application details with Cuming Microwave engineers to arrive at optimal solutions to their problems.

TYPICAL PROPERTIES

The table on the reverse side gives dimensions, weights and reflectivity characteristics of the various grades of C-RAM HFP.

C-RAM HFP grades can typically handle up to 1.0 W/in² (1.5 kW/m²) of RF power in a temperature controlled room. Actual limits will depend upon frequency and application.



FIRE RETARDANCY

C-RAM HFP meets the fire retardancy requirements of NRL Specifications 8093, Tests 1, 2, and 3, as well as those of MIT Document MS-8-21 tests 1, 2, and 3, T.I. drawing 2693066. and ASTM E-84-97a, Class A.

METHOD OF APPLICATION

C-RAM HFP is supplied in two separate components, the ferrite tile panels, mounted onto plywood, and the matching pyramidal or wedge shaped foam section. The ferrite tile panels are 600 x 600 mm (23.62 x 23.62 inches). They are first mechanically fastened to the chamber using screws – care must be taken that the screws do not penetrate the shielding of the chamber. It is also possible to construct a grid within the chamber to hold panels.

The pyramidal foam component, which comes in a standard 24 in x 24 in (610 x 610 mm) base, is then bonded to the front of the ferrite tiles, using adhesive or Velcro fasteners, in the same way as normal C-RAM SFC pieces would be mounted.

AVAILABILITY

C-RAM HFP comes in 5 height grades as given in the table below. Typically, the larger

the chamber, the lower are the resonant frequencies of concern, and so a larger absorber grade must be used. Generally, HFP-48 is needed in 10-meter test length chambers, HFP-18, -24 and -36 used in 3-meter chambers, depending upon the room size, and HFP-12 is used in small IEC-801-3 rooms. Depending upon the application and the room dimensions, Cuming Microwave engineers can provide full chamber design and computer molded chamber performance.

One should note that the ferrite tiles are sold in 600 mm arrays, and the pyramidal materials is a 24 inch square, so quantities must be figured carefully. Ferrite panels must be cut with a ceramic tile wet saw -- Cuming Corporation can precut or field cut during installation for you.

It is possible to buy just the front pyramidal or wedge shaped section, to upgrade chambers already lined with ferrite tiles. The exact brand, grade and performance of the tiles must be known.

GRADE	HEIGHT in. (mm)	WEIGHT lbs. (kg)	TIPS PER PIECE	Reflectivity in dB at Frequency (GHz)					
				0.03	0.10	0.30	1.0	3.0	10.0+
HFP-12 pyramidal	13 (330)	50 (23)	36	-12	-17	-16	-10	-10	-17
HFP-18 wedge	18 (457)	55 (25)	3 wedges	-15	-18	-20	-13	-12	-17
HFP-24 wedge	26 (660)	58 (26)	3 wedges	-15	-18	-20	-15	-12	-17
HFP-36 pyramidal	38 (965)	60 (27)	4	-20	-24	-23	-18	-20	-30
HFP-48 pyramidal	50 (1270)	66 (30)	4	-22	-24	-25	-23	-25	-30

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