

# CUMING MICROWAVE

Technical Bulletin 360-1

## C-RAM HC LIGHTWEIGHT, STRUCTURAL, BROADBANDED HONEYCOMB RADAR ABSORBER

RoHS  
Compliant

C-RAM HC is a series of radar absorbing products made from Nomex/phenolic or glass/phenolic honeycomb with a proprietary lossy coating. Typically, Nomex/phenolic is used in most applications. The hexagonal open cell structure provides a high strength-to-weight ratio, making C-RAM HC an ideal material for aircraft parts, such as fairings, covers, and leading edges, which must combine strength, light weight, and low radar reflections. Honeycomb is also ideal for cavity backed spiral antenna applications. The open cells permit forced air cooling, allowing high-power applications. On special order skins can be provided on the core, typically glass, Kevlar, or AstroQuartz skins can be provided. Custom composite shapes are also available per customer drawings.

### C-RAM HC TYPES

#### C-RAM HCGR X/Y:

Gradient loaded flat sheets with reflectivity as follows, where X = thickness and Y = reflectivity.

0.500" -15 dB minimum 10GHz to 18 GHz  
0.750" -15 dB minimum 8 GHz to 18 GHz  
1.000" -15 dB minimum 6 GHz to 18 GHz

#### C-RAM HCGI X/Y:

Gradient loaded flat sheets with insertion loss tuned to customer requirements, where X = thickness in inches and Y = insertion loss in dB/inch. Maximum insertion loss is 20 dB/inch. Note that, for instance, a .75 inch sheet specified with 20 dB/in, will have an insertion loss of 15 dB (.75 x 20)

#### C-RAM HCUI X/Y:

Uniformly loaded flat sheets with insertion loss tuned to customer requirements, where X = thickness and Y = insertion loss in



dB/inch. Maximum insertion loss is 30 dB/inch.

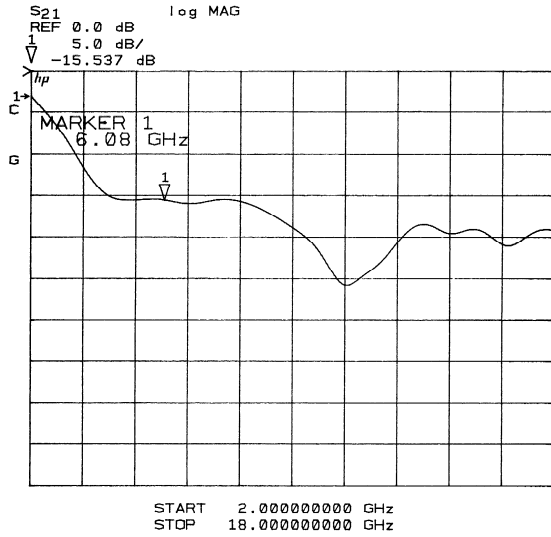
Note: pyramidal and wedge-shaped Honeycomb absorbers are also available, as C-RAM SFC-HC; see data sheet 390-16. These are typically used in anechoic chambers in areas where high RF power levels are seen and standard foam absorbers cannot be used.

### TYPICAL PROPERTIES

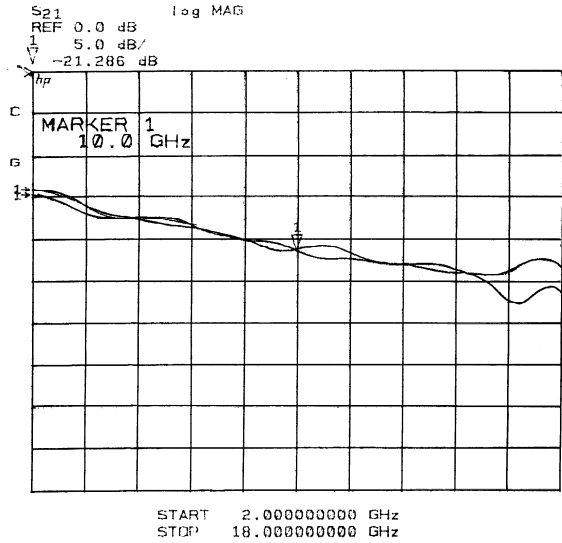
Nominal Density: 4.5 lbs./ft<sup>3</sup>  
Available thicknesses: 0.125, 0.250, 0.375, 0.500, 0.750, 1.000, 1.500, 2.000, 3.000, and 4.000 inches.  
Standard cell size: 3/16 inch (1/8 and 1/4 inch also available)  
Insertion loss: from 2 to 30 dB/inch  
Reflectivity: 15 dB minimum, 20 dB avg. over range  
Temperature range: -65 to +325 °F

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**Figure 1. Typical Reflectivity of C-RAM HCGR 1.00/15 3/16" cell, 1.00 inch thick**



**Figure 2. Typical Insertion Loss of C-RAM HCGR 1.00/20, 3/16" cell, 1.00 inch thick**



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