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Technical Data | June 2020

3M™ EMI Absorber AB1000XHF

Product Description

3M EMI Absorber AB1000XHF is a composite material consisting of a carrier resin, magnetic fillers and an optional acrylic pressure sensitive adhesive (PSA) layer. This magnetic material is designed to interact and influence an Electro-Magnetic (EM) field. The EM field could be generated for various reasons and in many applications.

3M EMI Absorber AB1000XHF typical use is in the frequency range above the 500 MHz range and is typically used as an absorber for the 1.5-6GHz range.

Key Features

- Excellent absorbing performance from 1 GHz to 6 GHz
- High performance absorber
- Multiple thickness options
- Pressure sensitive acrylic adhesive (optional)
- Supplied on a removable liner for ease handling
- Halogen Free per IEC-61249-2-21 and limits noted in definition*

3M™ EMI Absorber AB1000XHF

Product Construction/ Materials Description

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Note: A = product configuration code for Adhesive layer, B = Black Film Layer on top side

3M™ EMI Absorber AB1000XHF*			
Product Code	**Magnetic Layer Thickness**	**PSA Thickness**	**Black Film Layer Thickness**
AB1010XHF-A30	100um	30µm	----------
AB1020XHF-A30	200um	30um	----------
AB1030XHF-A30	300um	30um	----------
AB1010XHF-A30-B10	100um	30µm	10um
AB1020XHF-A30-B10	200um	30um	10um
AB1030XHF-A30-B10	300um	30um	10um

* Halogen Free per IEC-61249-2-21. Halogen free is defined as having maximum 900ppm bromine, maximum 900ppm chlorine, and maximum 1500ppm total bromine and chlorine, per 61429-2-21.

3M™ EMI Absorber AB1000XHF

Application Ideas

3M™ EMI Absorber AB1000XHF has potential to be used for:

- EMI Absorber for GHz frequency EMI noise reduction
- Potential devices include mobile phone, computers, tablets, measurement and sensors.
- Electronic equipment protection for automobile applications

As an initial design, it is suggested to test the 3M EMI Absorber AB1000XHF at the greatest thickness allowed (1x, 2x, 3x layers, etc.), largest XY dimension, in multiple locations or use multiple parts to determine a potential maximum performance level associated with the material and the end use assembly. Once a baseline level of performance is established, the 3M EMI Absorber AB1000XHF XY shape, location, etc. can be reduced or changed to determine the minimum material needed to meet a specification.

It should be noted that once a maximum performance level is established for the end use device using 3M EMI Absorber AB1000XHF the overall design can be reviewed to understand if other, absorber changes not initially considered, but now possible with the new performance level associated with using the 3M EMI Absorber AB1000XHF materials could be considered. An example would be the absorber reducing EMI noise levels to allow for improved antenna Signal to Noise (SNR) ratio that could allow for higher data transfer speeds and/or longer range performance.

Effectiveness

3M EMI Absorber AB1000XHF performance and effectiveness is based on several application considerations:

1) Permeability (u') and Loss (u") of this material at the frequency range or frequency peak of the intended application can affect the performance. Permeability and Loss of the 3M EMI Absorber AB1000XHF varies with frequency and is a measure of how well the EM material may couple with the EM field and impact performance.
2) Thickness of the 3M EMI Absorber AB1000XHF product can be used to optimize an applications performance.
3) End use application orientation and location affects the products interaction with an EM field.

Typical Physical Properties and Performance Characteristics

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes. Final product specifications and testing methods will be outlined in the products Certificate of Analysis (COA) that is provided once the product is approved by 3M for general commercialization and development work is completed.

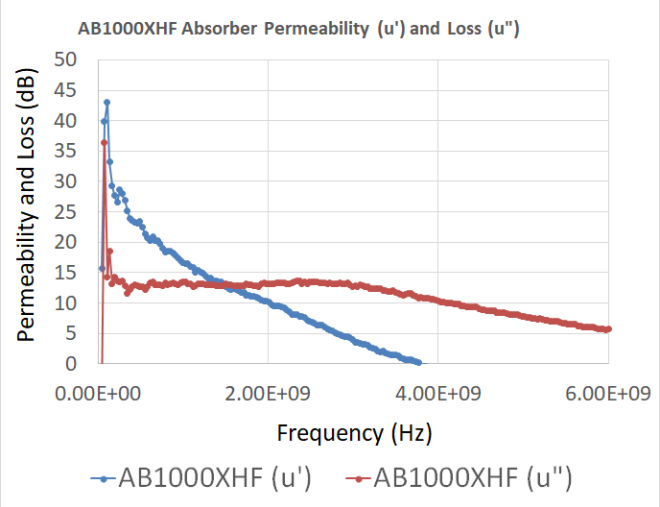
3M™ EMI Absorber Magnetic Composite AB1000XHF	
Property	**Value**
Electrical Resistivity* **	2×10^4 Ωm
Typical Permeability (@1 MHz)*	70u'
Temperature Range **	1) -25 ~ 85°C **

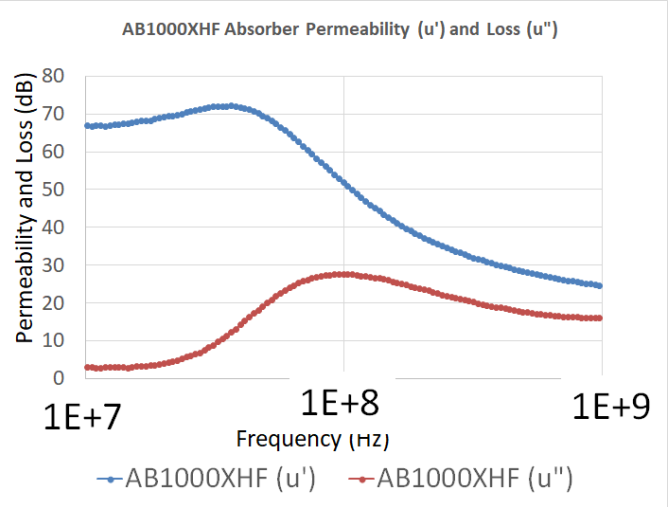
*Permeability and noted results of Vibrating Sample Magnetometers (VSMs) can vary with test method and/or equipment used for testing at different test sites. Permeability can vary with thickness of MC-7T.
** Based on general environmental performance characteristics of the polymer binder resin type. Each application should verify temperature and environmental performance in the end-use specific configuration.
*** ASTM D257 Type Test Method

3M™ EMI Absorber AB1000XHF

Figure 1. Real and Imaginary Part of Permeability with Frequency

3M™ EMI Absorber Magnetic Composite AB1000XHF





Storage and Shelf Life

The shelf life of 3M™ EMI Absorber AB1000XHF is 12 months from the date of manufacture when stored in the original packaging materials and stored at 21°C (70°F) and 50% relative humidity.

Certificate of Analysis (COA)

The 3M Certificate of Analysis (COA) for this product is established when the product is manufactured and deemed commercially available from 3M. The COA contains the 3M test methods, specifications limits and test results for the products performance attributes that the product will be supplied against. Contact your local 3M representative for this product's COA.

3M™ EMI Absorber AB1000XHF

Safety Data Sheet: Consult Safety Data Sheet before use.

Regulatory: For regulatory information about this product, contact your 3M representative.

Technical Information: The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

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