

ECCOSORB® VHP-NRL

VERY HIGH PERFORMANCE BROADBAND PYRAMIDAL ABSORBER

■ Description :

ECCOSORB VHP-NRL is a solid, pyramidal shaped, carbon loaded urethane foam absorber.

The main application for this material is in the construction of anechoic chambers, or for covering test equipment, pedestals, etc... within anechoic chambers.

It provides the highest broadband performance at both normal incidence and at wide incidence angles of all known absorbers.

The NRL suffix refers to its compliance with the fire retardancy requirements of the U.S. Naval Research laboratory (NRL) test 8093.



■ Application :

Eccosorb VHP is the preferred solution for Antenna , RCS and EW anechoic chambers because of excellent performance at microwave frequencies. While primarily designed for low forward scatter, i.e. angle of incidence equals angle of reflection, it offers favourable back scatter properties at off-normal incidence as well. It is thus well suited for use in all regions of anechoic chambers. It is available in a variety of thicknesses, giving the chamber designer the opportunity to choose grades appropriate for specific frequencies and incidence angles.

■ Physical properties :

	VHP-NRL
Standard Colour	Blue
Base size (cm)	61 x 61
Max Service Temperature	90°C
Power handling	1,5 kW/m ²
Fire retardancy	NRL8093 Tests 1, 2 & 3, DIN 4102 Class B2, ISO 11925-2

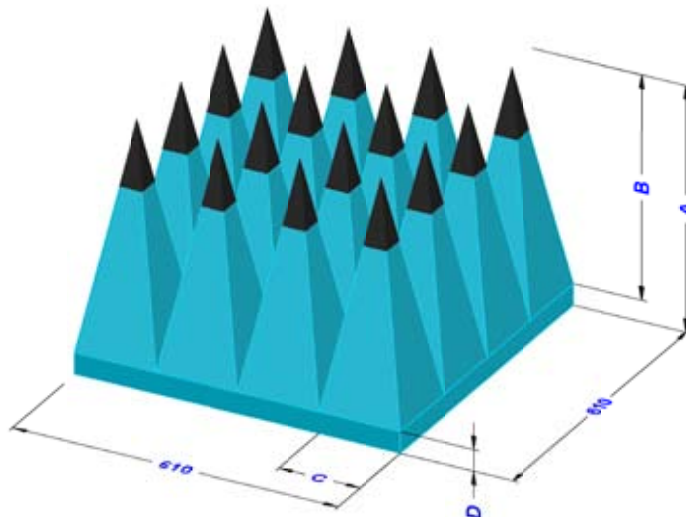
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■ Nominal dimensions and weights of Eccosorb VHP-NRL



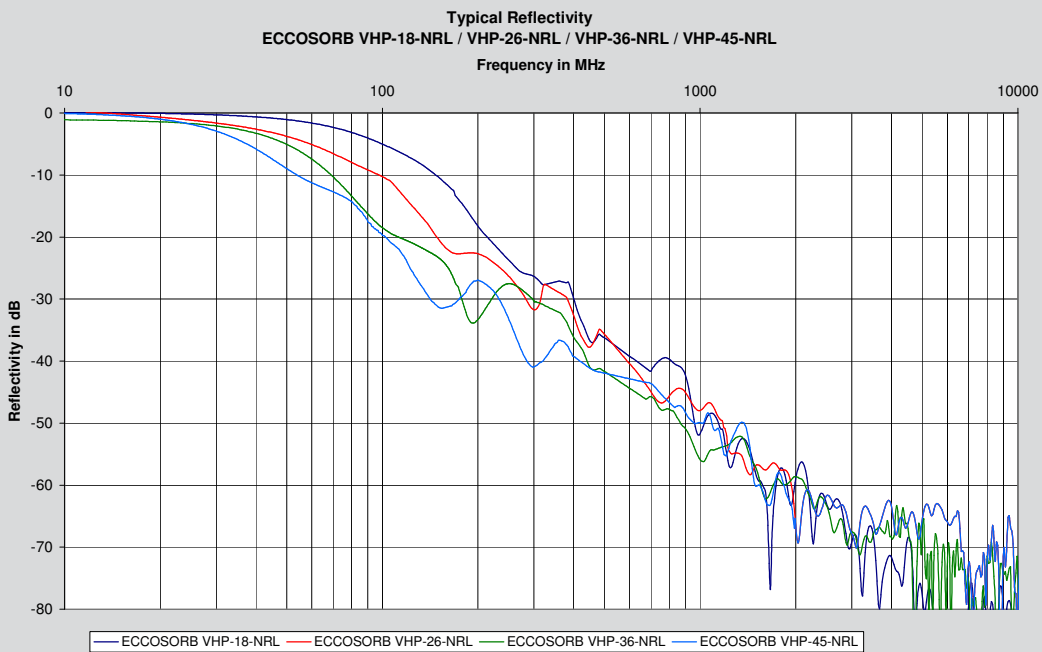
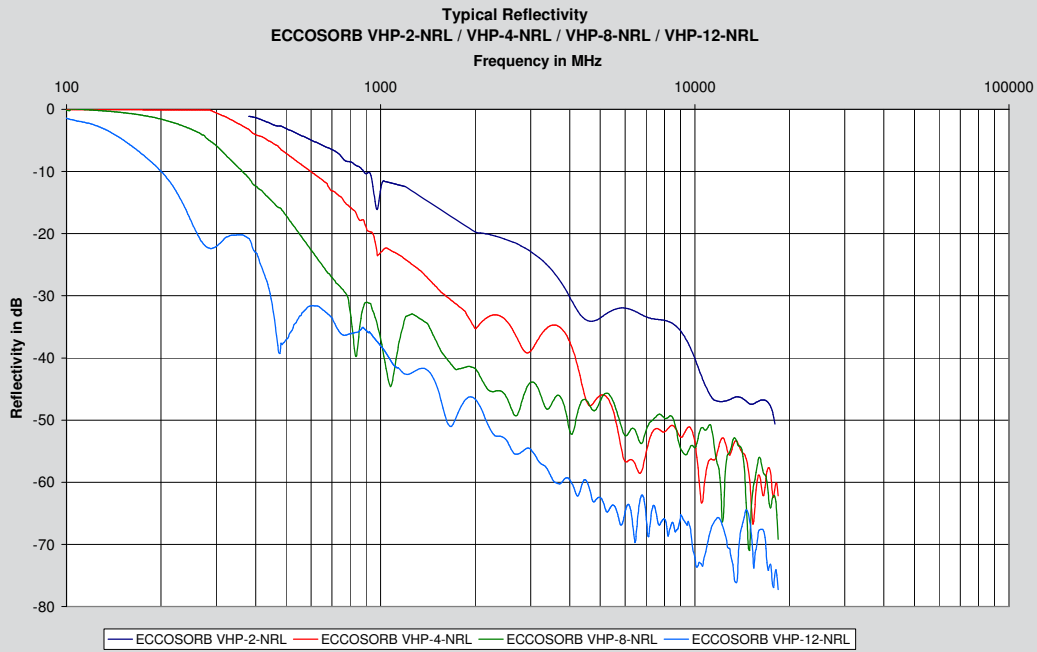
Eccosorb VHP grade	Total height A (cm)	Pyramid height, B (cm)	Pyramid width, C (cm)	Base height, D (cm)	Number of pyramids, per piece	Nominal weight, (kg)
VHP-2-NRL	5,6	4	1,9	1,6	1024	1,2
VHP-4-NRL	10,2	7,7	3,8	2,5	256	1,3
VHP-8-NRL	20,3	17,8	6,8	2,5	81	1,6
VHP-12-NRL	30,5	27,8	10,2	2,7	36	2,2
VHP-18-NRL	45,7	41,7	15,3	4	16	2,9
VHP-26-NRL	66,1	55,9	20,3	10,2	9	5,4
VHP-36-NRL	91,4	76,4	30,5	15	4	6,3
VHP-45-NRL	114	93,7	30,5	20,3	4	9

■ Electromagnetic properties :

The table below indicates normal incidence reflectivity of the various grades of ECCOSORB VHP at various frequencies.

GUARANTEED MAXIMUM REFLECTIVITY OF ECCOSORB® VHP GRADES										
	120 MHz	200 MHz	300 MHz	500 MHz	1 GHz	3 GHz	5 GHz	10 GHz	15 GHz	24 GHz
VHP-2-NRL							-30	-40	-45	-50
VHP-4-NRL						-30	-40	-45	-50	-50
VHP-8-NRL					-30	-40	-50	-50	-50	-50
VHP-12-NRL				-25	-35	-40	-50	-50	-50	-50
VHP-18-NRL				-30	-40	-45	-50	-50	-50	-50
VHP-26-NRL			-25	-35	-40	-50	-50	-50	-50	-50
VHP-36-NRL		-20	-30	-35	-45	-50	-50	-50	-50	-50
VHP-45-NRL	-20	-25	-35	-40	-45	-50	-50	-50	-50	-50

■ Electromagnetic properties :



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■ Availability :

ECCOSORB VHP-NRL is available in pieces with base dimensions of 61 cm x 61 cm. There are eight standard grades ranging from ECCOSORB VHP-2-NRL with a height of 5,6 cm to ECCOSORBVHP-45-NRL with a height of 114 cm.

The number of individual pyramids on a piece increases with decreasing piece height, keeping the aspect of the individual pyramids fairly constant independent of grade. The reflectivity versus frequency is dependent upon the height of the particular grade, with larger pieces giving better absorption performance at lower frequencies. In addition to the standard grades, for sizeable orders, special sizes may be available to attain specific reflectivity performance at certain frequencies.

This includes sizes larger than ECCOSORB VHP-45-NRL. For specific applications, i.e. : EMC, applications with weight restrictions or with high power demands, we recommend hollow type absorbers.

ECCOSORB VHP-NRL is also available on special order as corner and edge blocks. These are made by cutting pieces at 45 degree angles and adhering two or three pieces together to be used at the intersections of walls and ceiling. A floor version, ECCOSORB VHP-FL-NRL, is also available (See Technical Bulletin EB-105 for details). ECCOSORB VHP-NRL is a black material. The pyramidal surfaces are painted with a fire retardant light blue paint. On special order, other colours, such as white, can be made available, or the pieces can be left unpainted.

Leaving the absorbers unpainted is especially important for millimeter wave applications. At 94 GHz, for example, painting the pyramids deteriorates the performance by about 5 dB. Therefore the standard ECCOSORB VHP-2-NRL is delivered unpainted for millimeter wave applications.

■ Instructions for use :

ECCOSORB VHP-NRL is typically bonded to metallic surfaces using either ECCOSTOCK Adhesive 13111, Velcro fasteners or Z-bar mounting if the pieces are going to be changed. Velcro fasteners should only be used on grades up to ECCOSORB VHP-18-NRL.

Pieces to cover the floor may simply be put into place, or may be bonded to the surface. The material is designed for indoor use only.

Safety Considerations : It is recommended to consult the EMERSON & CUMING MICROWAVE PRODUCTS product literature, including material safety data sheets, prior to use EMERSON & CUMING MICROWAVE PRODUCTS products. These may be obtained from your local sales office.

WARRANTY : Values shown are based on testing of laboratory test specimens and represent data that falls within the normal range of properties of the material. These values are not intended for use in establishing maximum, minimum or ranges of values for specification purposes. Any determination of the suitability of the material or any use contemplated by the user and the manner of such use is the sole responsibility of the user who must assure that the material as subsequently processed meets the needs of this particular product or use. We hope the information given here will be helpful. It is based on data and knowledge considered to be true and accurate and is offered for the user's consideration, investigation and verification but we do not warrant the results to be obtained. Please read all statements, recommendations or suggestions in conjunction with our conditions of sale INCLUDING THOSE LIMITING WARRANTIES AND REMEDIES which apply to all goods supplied by us. We assume no responsibility for the use of these statements, recommendations or suggestions nor do we intend them as a recommendation for any use which would infringe any patent or copyright.

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