

Absorbing lining for acoustic measurement rooms and test benches

When one is looking to develop a testing room, ITS offers a wide range of **absorbing wedges for anechoic chambers** for many applications of soundproofing / acoustic insulation related to the **construction of anechoic rooms** or of **semi-anechoic rooms**, **as well as of aero-acoustic wind tunnels (aerodynamic wind tunnels)**.

Range of applications:

- obtaining in an acoustic measurement room an environment for tests providing a free field (i.e. an acoustic field without any unwanted acoustic reflection by the envelope of the room) or a free field on a reflective floor
- the **absorbing wedges for anechoic chambers** offered by ITS allow to obtain free field conditions (when applicable: on a reflecting floor) meeting the requirements of standard NF EN ISO 3745 Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Precision methods for anechoic rooms and hemi-anechoic rooms.

Benefits:

- excellent technical characteristics and robustness (in case of perforated metallic protection)
- ease of implementation (vertical or horizontal using, easy assembly/disassembly)
- high adaptability of acoustic performance

Presentation:

- block made of rock wool, of polyester wool or of foam constituting a dihedral (i.e. having a tip of triangular cross section with a parallelepipedic basis), such staggered subsets allowing the completion of sets with a relief - macro-waves in 3 dimensions increasing the overall area of the acoustic treatment)
- dimensions, geometry, surface adapted to the desired performance (color of the foam in the mass: gray, color of surfacing and perforated protection where applicable: usually white)

Standard constitution :

- **absorbing wedges for anechoic chambers** made of foam
 - *chemical constitution : melamine foam resin*
 - *density : 8 - 11 kg/m³*
 - *temperature resistance : from -40°C to +150°C*

- **absorbing wedges for anechoic chambers** made of mineral wool

- *chemical constitution : glasswool / rockwool*
- *density : 45 kg/m³ or different depending on the requested acoustic performance*
- *temperature resistance : from -40°C to +150°C*

Anti-corrosion :

- for typical applications, the metallic elements of the **absorbing wedges for anechoic chambers** are protected by a multilayer coating system in accordance with ISO 12 944 C2, with high durability (above 15 years).

- for more demanding applications, the metallic elements of the **absorbing wedges for anechoic chambers** are protected by a multilayer coating system in accordance with ISO 12944 C4 or even C5 with high durability (above 15 years).

Weather resistance :

- indoor or outdoor use in normal environments (other finish for different uses: on request)

Fire behavior (reaction to fire of ingredients according to standard NF F16-101):

- metallic elements:

- *galvanized finish: rating M0*
- *powdercoating finish: rating M1*

- filling:

- *rockwool : rating M0*
- *polyester wool : rating M1*
- *foam : rating M1*

Miscellaneous :

- in case of a filling made of rock wool, or of polyester wool, the **absorbing wedges for anechoic chambers** are equipped with a textile cover

- whatever the filling is, the **absorbing wedges for anechoic chambers** contain no element favorable to microbial growth

Thermal performance :

- not applicable

Acoustic performance :

- sound absorption coefficient according to the standards NF EN ISO 354 Acoustics - Measurement of sound absorption in a reverberation room and NF EN ISO 11654 Sound absorbers for use in buildings
- Rating of sound absorption

- sound absorption coefficient for normal incidence according to the standard NF EN ISO 10534-1 Acoustics - Determination of sound absorption coefficient and impedance in impedance tubes - *Part 1: Method using standing wave ratio*

In order to enable the achievement in an acoustic measurements room of a test environment providing a free field (i.e. an acoustic field without any unwanted acoustic reflection by the envelope of the room) or a free field on a reflective floor, it is necessary to implement an acoustic treatment having a sound absorption coefficient for normal incidence greater than or equal to 0.99 in the frequency range of interest when measured in an impedance tube to plane waves: sizing on request.

Some **absorbing wedges for anechoic chambers** can have an absorption coefficient for normal incidence α close to 100% from 50 Hz (higher performance in relation to a lower cutoff frequency can be obtained by using special designs).

Implementation :

- the **absorbing wedges for anechoic chambers** must be installed on the inner walls of the anechoic (or semi anechoic) chamber and oriented towards the inside of the room. They can be mounted with a small layer of air at the rear. The total depth of each element (spacer layer and air) must exceed $\lambda / 4$ where λ is the wavelength of the sound corresponding to the center frequency of the lowest useful frequency band
- the **absorbing wedges for anechoic chambers** must be uniformly distributed over the surfaces. In an anechoic chamber, the element used for the walls and ceiling must also be applied on the ground (in a semi-anechoic room, the soil should consist of a slick and hard plane)
- in case of small rooms (sometimes: transportable), the implementation of the **absorbing wedges for anechoic chambers** is performed by single or double stick (depending of the considered support)
- in the case of large rooms: the implementation is generally carried out using a metal frame for holding (the acoustic treatment of walls being performed by removable subsets allowing disassembly and any eventual subsequent transfer).

Basic product : absorbing wedge



absorbing wedge

Favorite and related products : BCA, ASA, CPA (range Faist)

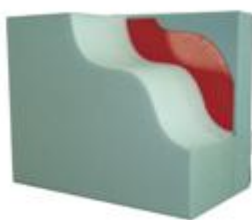


photo credit FAIST

BCA
(Broadband Compact Absorber)



photo credit FAIST

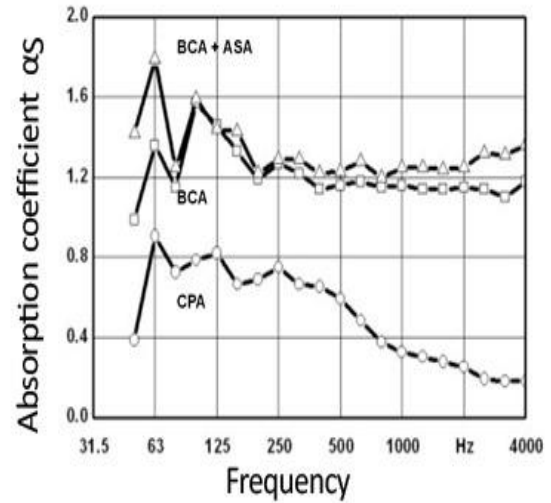
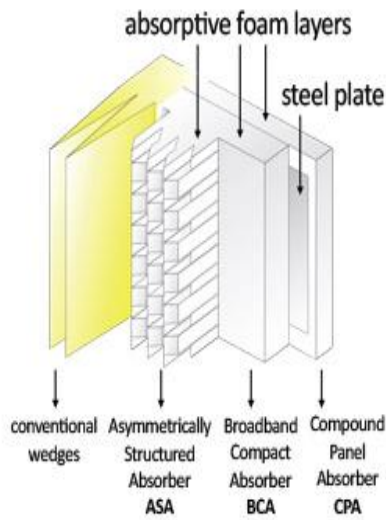
ASA
(Asymmetrically Structured Absorber)



photo credit FAIST

CPA
(Compound Plate Absorber)

Comparison



Associated products and services (on request) :

- absorbing treatments of every geometry and of every constitution for adaptation at the desired level of acoustic performance, protection covers, perforated metallic protection, frames, mobile structures in front of openings, acoustic door sets, silencers for equipment under test in measurement room, delivery as a kit with assembly instructions (national and international). Complete study. On-site installation (national and international).