

ACOUSTIC WELL-BEING



silence screen



silence wall



silence cabinets



sn silence



silence parasta

Keeping the noise at an acceptable level in offices has become a real stake

Open spaces allow companies to save office surfaces and to facilitate the share of information between their employees. But in most cases, due to these new configurations, it is often hard to concentrate on our work due to the background noise.

Working in a noisy environment can slow your work down but it can also bring plenty of other disadvantages such as: lower productivity, fatigue, stress, headaches, poor concentration and uncreativity.

It is therefore important to use adapted solutions to ensure the productivity of the employees while offering them a comfortable environment too.

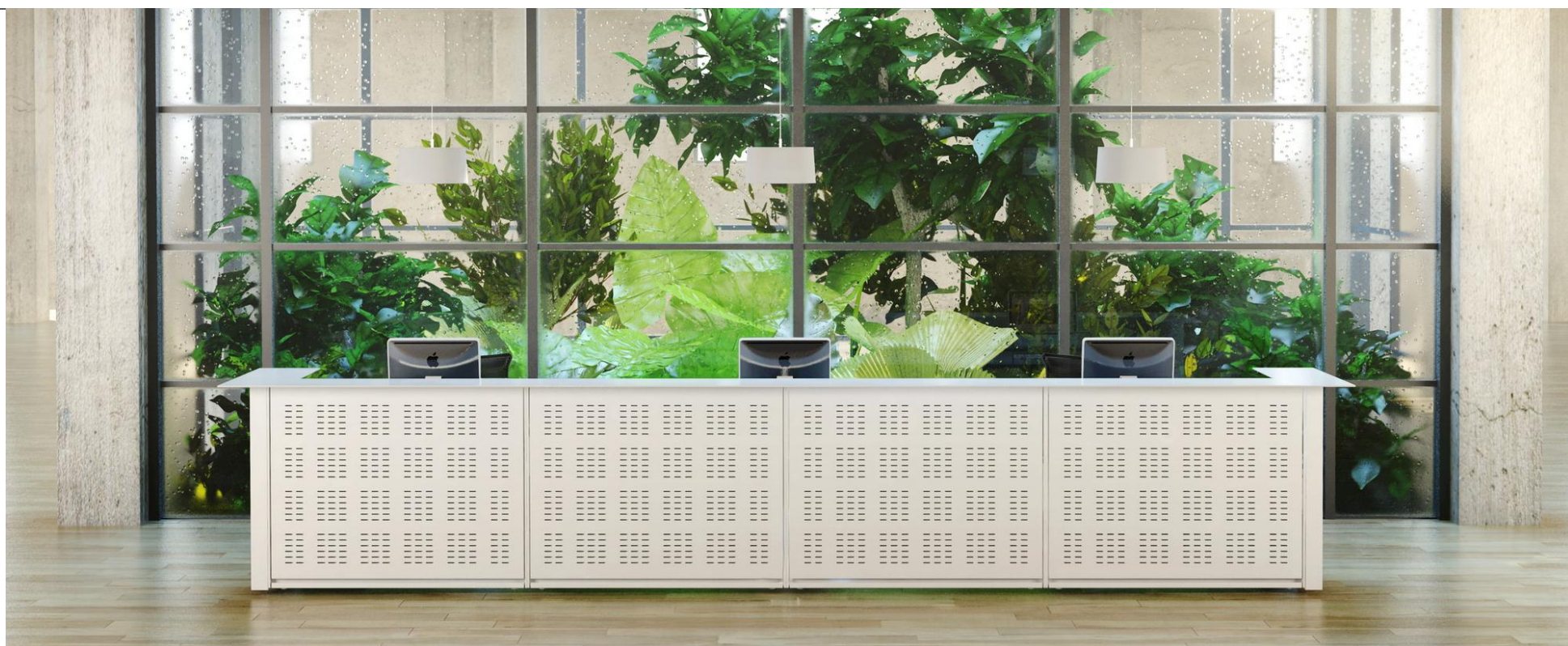
Less Noise and Less Reverberations = More Productivity + Better Comfort

Moreover, curtains and carpets were also good for absorbing the sound but have been progressively replaced for hygienic and aesthetic reasons. Concrete, steel and glass don't offer the same sound absorbing capacity but are nicer and easier to clean. But wouldn't it be possible to have a modern environment without giving up the sound absorption and cleaning issues?

That's to answer to these needs that SAGSA has conceived the NEW SOUND OF SILENCE COLLECTION: high quality design steel furniture increasing the acoustic well being in the offices, fully recyclable, 0 class fire, maintenance free and 100% manufactured in Milan.



The London stock exchange in Milan furnished with Sagsa's furniture



Understanding the noise

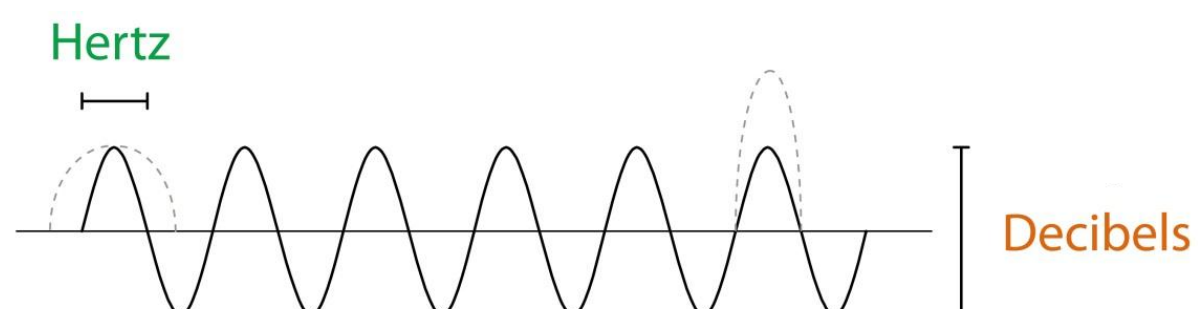
In order to improve the offices against the noise, It is important to understand what's the noise, how it behaves in different spaces and, thanks to a good understanding of it, how to manage to reduce it.

What are the Hertz and the Decibels ?

The Hertz are the number of variations of pressures throughout a certain period of time. It is calculated in second and it means that if there are 500 variations of pressures during one second, it will be a sound of 500 Hz. The more variations there are during one second, sharper the sound is. At the opposite, the less variations there are during one second, lower the sound is.

Humans have the ability to hear sounds from 20 Hz to up to 20.000 Hz but our voices have mostly emissions included between 100 to 1500 Hz.

The decibels are the intensity of the sound. Louder a sound is, higher will be the figure of the decibels. A noisy street can reach 90 to 95 Db, while for an inner workspace environment the figures reached are usually situated below or around 60 Db.



Closer are the waves, the more variations there are. It means that the Hertz are producing sharp sounds.

Higher the waves are, higher the level of decibels is. It means that the sound is loud.

Hertz and Decibels are different but are connected together

Hertz and decibels are however connected together as they are indicators of the noise level in offices and influence our sensation of the noise. Thus, 2 sounds of a same intensity (same level of Db) can give you a different noise sensation depending on the variations of pressures (Hz). A sound of 95 Db heard at 1000 Hz will only give the sensation of a sound of 70 Db at 31.5 Hz! That's the reason why the sounds included between 500 and 4000 Hz are the most unpleasant ones.

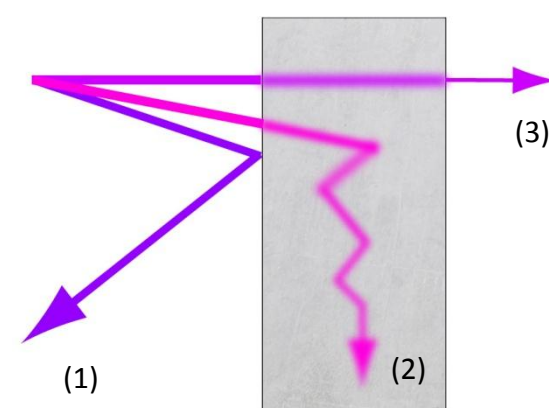


What is the absorption of the sound?

The absorption of the sound is important for a good understanding of what is said by other people by avoiding echo's.

A sound meeting a surface has 3 possibilities:

- It can be reflected (1)
- It can be absorbed by the surface and transformed into energy (2)
- It can pass through the surface (3)



When a sound is reflected by a surface (1) a reverberation is generated, creating echo and overlapping the sound waves. Longer is the reverberation, more difficult it will be to understand the others. That's why having surfaces absorbing the sound (= making short reverberation times) is particularly interesting.

In any case, the sound will always end up to be absorbed, but the time of absorption will vary depending on the type of surface met. The coefficient of absorption is called alpha. Higher the acoustic coefficient of absorption is, better the absorption is. It's a value that goes from 0 to 1 and it means that when a material absorbs 50% of the waves, Alpha is equal to 0.5.

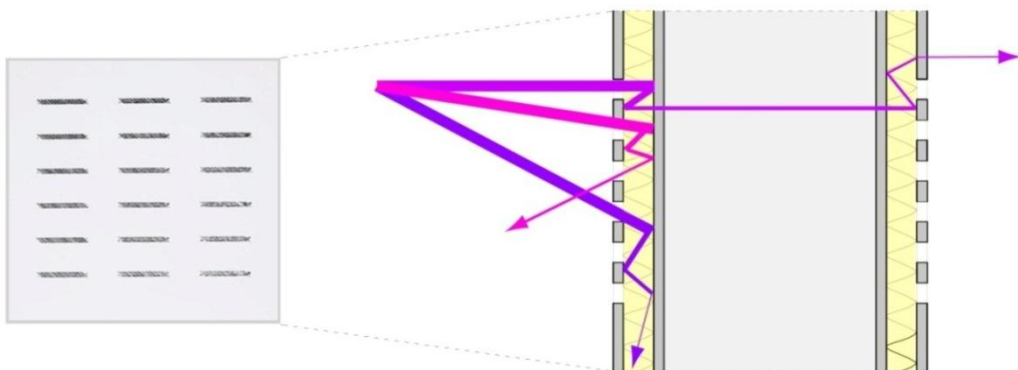
For example: a curtain or a carpet ($\alpha=0.3$ at 1000 Hz) absorb quite well the waves while a concrete wall reverberates many waves and only absorb a few of them ($\alpha=0.03$ at 1000 Hz). Wooden floors ($\alpha=0.07$ at 1000 Hz) and glazed surfaces ($\alpha=0.03$ at 1000 Hz) are high reverberations surfaces too.





What makes the furniture of SAGSA so efficient?

The furniture of SAGSA are characterized by a double layer of steel: the external layer is perforated while the internal layer is a solid surface. This special sandwich, having a polyurethane layer inside, allow the sound waves to be “captured” inside reducing the reverberation time. At the same time they can constitute a barrier in order to create areas of privacy.



Absorption and Insulation are therefore 2 different elements :

- Sound Absorption** is the ability of one material to absorb the waves into energy, and thanks to that process, to not reverberate the waves. However, avoiding the reverberations doesn't mean that the noise can't pass through.
- Sound Insulation**, at the opposite, may be a surface that can reverberate more or less the waves but that have the particularity to not let a high percentage of the sound going through.

For example: a curtain is a good absorbing surface (which doesn't reverberate much) but is a bad sound insulation surface as a high percentage of the sound will pass through. At the contrary, a concrete wall reverberates much (= bad absorption creating many reverberations) but does not let much of the sound go through which makes it a good sound insulation solution.

The sound of silence collection solve both of these disadvantages: It reduces the reverberations while providing good sound insulation too. Please see our results next page.

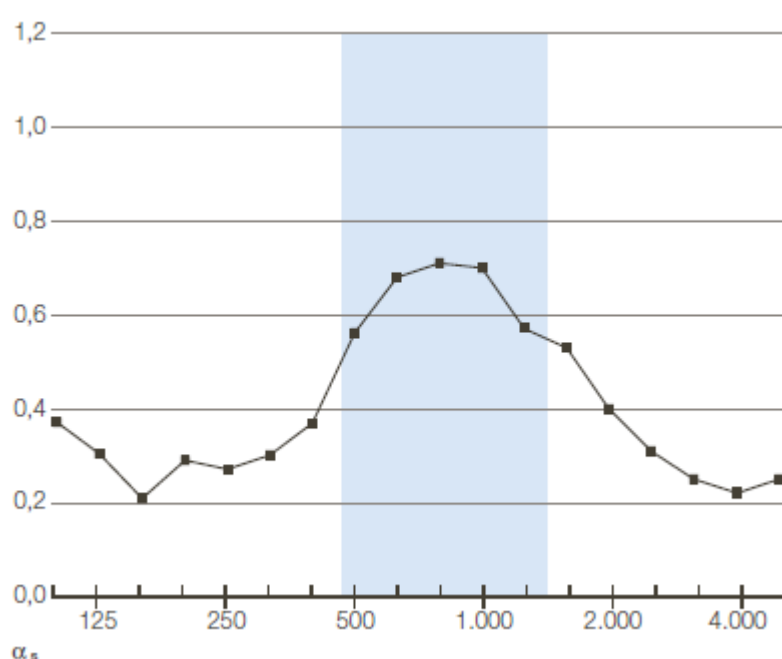




SOUND OF SILENCE COLLECTION'S EFFICIENCY

Sagsa comes up with a collection of furniture particularly efficient to decrease the reverberations in offices and improving the sound insulation between your different spaces.

Sound Absorption Coefficient – UNI EN ISO 354:2003



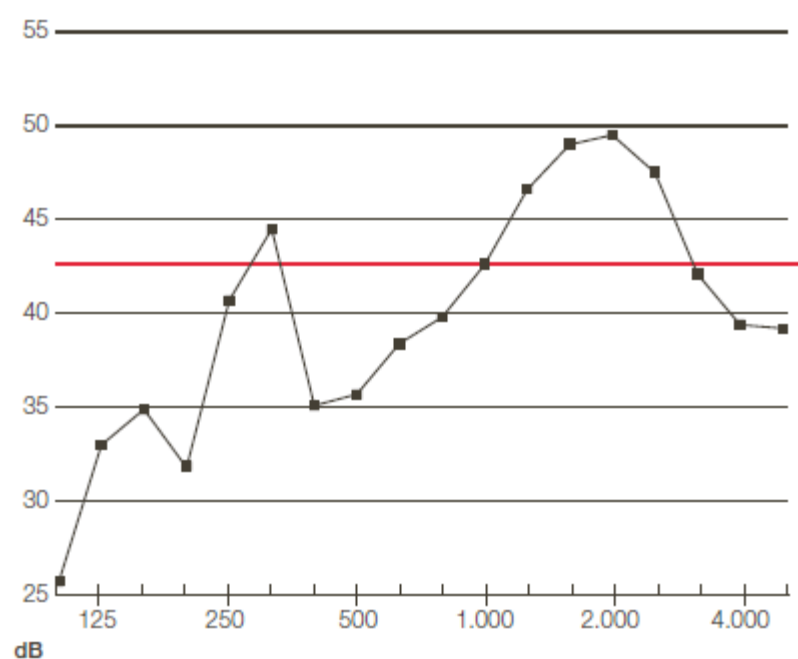
Typical frequencies of the human voice and generally of all workplaces

SOUND ABSORPTION UP TO

70%

IN THE MOST COMMON FREQUENCIES

Aerial noise insulation – UNI EN ISO 10140-2



Test realized on the partition silence wall

AVERAGE INSULATION OF

- 42 db

WHEN THE PARTITION IS USED TO SEPARATE 2 ROOMS

Absorption: results certification

I.N.R.I.M.
ISTITUTO NAZIONALE DI RICERCA METROLOGICA
Strada delle Cacce, 91 - 10135 TORINO (Italia)



+39 011 3919.1
+39 011 346384
inrim@inrim.it - www.inrim.it

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RAPPORTO DI PROVA

N. 12-0620-01 emesso il 2012-09-11

Oggetto Misurazione in laboratorio dell'isolamento acustico per via aerea
Calcolo dell'indice di valutazione del potere fonoisolante

Modello/Tipo Parete attrezzata

Identificazione Space Emotion

Costruttore SAGSA S.p.A.

Data della prova 2012-09-06

Procedura applicata PT-AC-01-P-05
Determinazione del potere fonoisolante di componenti di edifici e di barriere autostradali

Registro di laboratorio AC-Edil-2012

Committente SAGSA S.p.A.

Indirizzo Ripa Ticinese 111 - 20143 Milano

Responsabile della prova

(Francesco Russo)

Firmatario autorizzato
Responsabile della Divisione Termodinamica

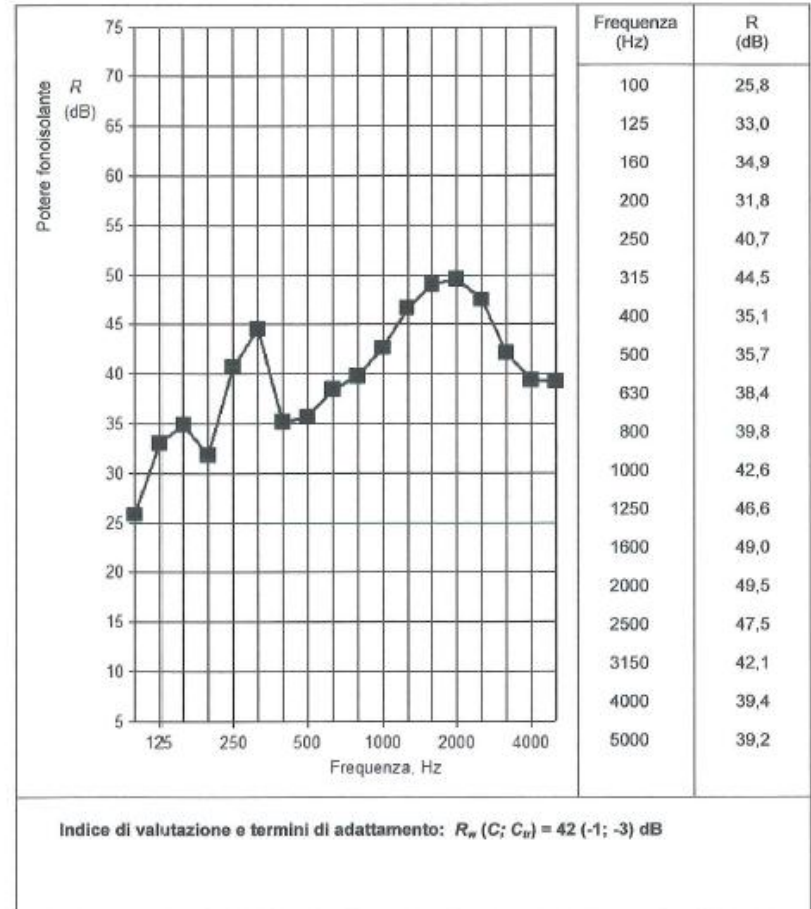
(Vito Ferricola)

Potere fonoisolante, R, conforme alla norma internazionale UNI EN ISO 10140-2:2010

Space Emotion

Temperatura dell'aria negli ambienti di prova: 23,7 °C
Umidità relativa dell'aria negli ambienti di prova: 62,9 %
Pressione atmosferica: 980,7 hPa

Grafico 1 e Tabella 1



Controllato:
(Andrea Pavoni Belli)

Insulation: results certification

I.N.R.I.M.
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+39 011 3919.1
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inrim@inrim.it - www.inrim.it

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RAPPORTO DI PROVA

N. 12-0621-01 emesso il 2012-09-10

Oggetto Misura dell'assorbimento acustico in camera riverberante

Modello/Tipo Parete attrezzata

Identificazione Space Emotion

Costruttore SAGSA S.p.A.

Data della prova 2012-09-05

Procedura applicata PT-AC-01-P-06
Misura dell'assorbimento acustico in camera riverberante

Registro di laboratorio AC-Edil-2012

Committente SAGSA S.p.A.

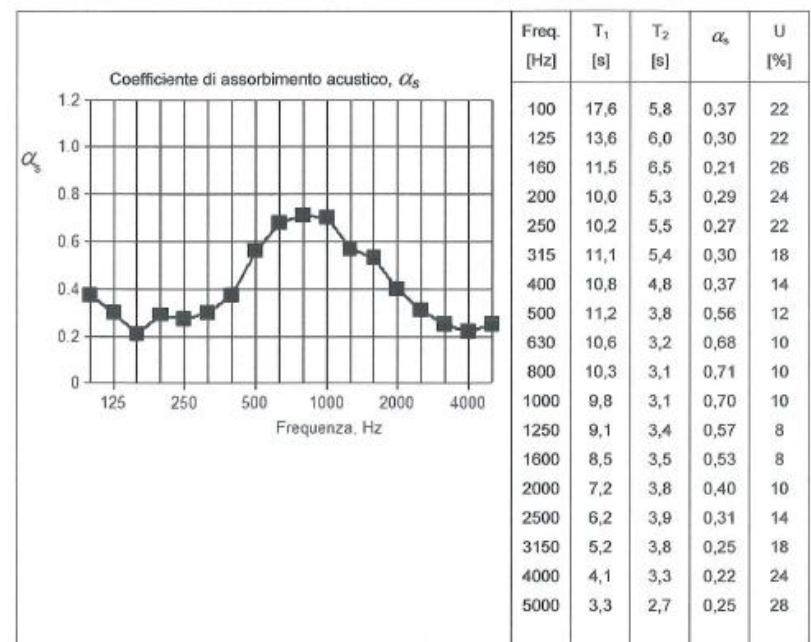
Indirizzo Ripa Ticinese 111 - 20143 Milano

Parete attrezzata - Space Emotion

Condizioni climatiche all'atto della prova:
- temperatura senza il campione: 23,7 °C
- temperatura con il campione: 23,6 °C
- umidità senza il campione: 58,0 %
- umidità con il campione: 64,6 %
- pressione atmosferica senza il campione: 988,2 hPa
- pressione atmosferica con il campione: 988,3 hPa

I risultati della misura si riferiscono alla configurazione del campione indicata in figura di pagina 3.

Superficie del campione: 14,8 m².



Responsabile della prova

(Francesco Russo)

Firmatario autorizzato
Responsabile della Divisione Termodinamica

(Vito Ferricola)

Controllato:
(Andrea Pavoni Belli)

*Test and figures certified by I.N.R.I.M. (Istituto Nazionale Di Ricerca Metrologica).
Test recorded on 4 silence walls of 100 cm x 270 cm high each.



THE SOUND OF SILENCE COLLECTION

Thanks to the use of the SOUND OF SILENCE COLLECTION, your office spaces will become a better place to work in. Indeed, the sound of silence collection decreases much the reverberations in offices while improving much the sound insulation between your different spaces too, simply by using “intelligent” furniture. It improves your sensation of comfort and your productivity as well. The furniture of the SOUND OF SILENCE COLLECTION, entirely manufactured in Milan with first quality steel are also:

- very easy to work with
- high quality Italian design
- 100% fully recyclable
- class 0 of resistance to fire
- maintenance free

