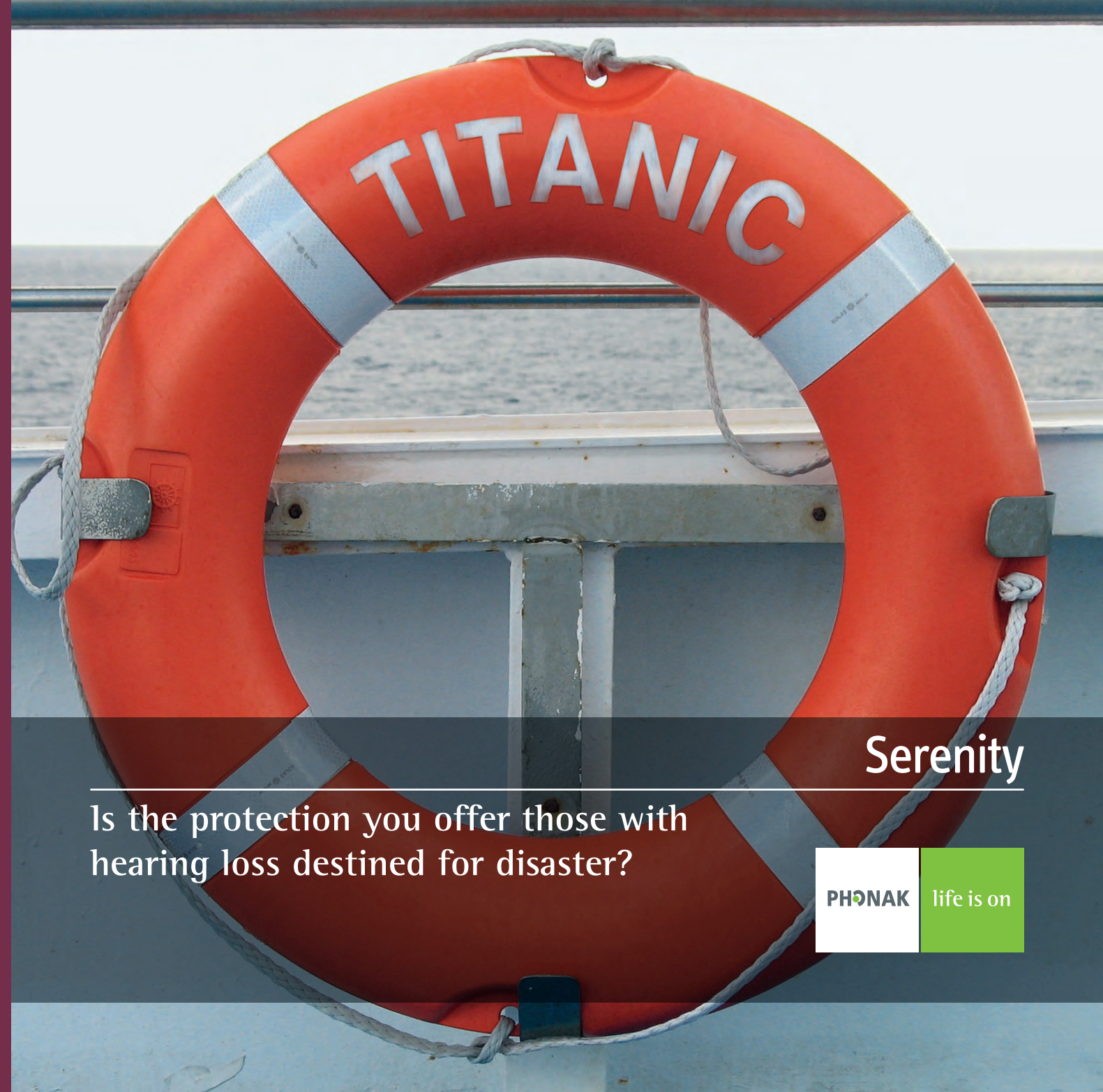

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Serenity

Is the protection you offer those with hearing loss destined for disaster?

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Hearing protection and hearing loss



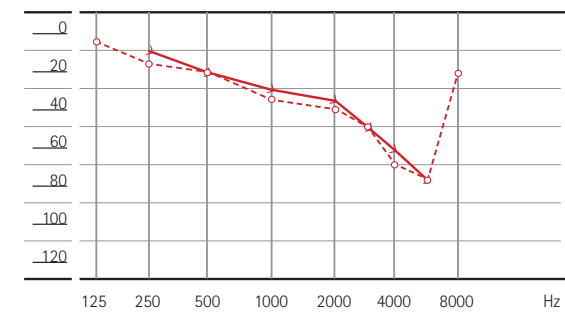
People with hearing loss need special hearing protection

Many of the people seeking hearing protection have already been exposed to excessive noise, indeed it is not uncommon for them to already have a noise-induced hearing loss. The onset of this hearing loss might even be the reason for them seeking protection.

What users with a hearing loss need is safe and adaptable protection, protection that will not endanger their hearing further but allows communication and awareness; an impenetrable icebreaker of a product, rather than tickets for the Titanic.

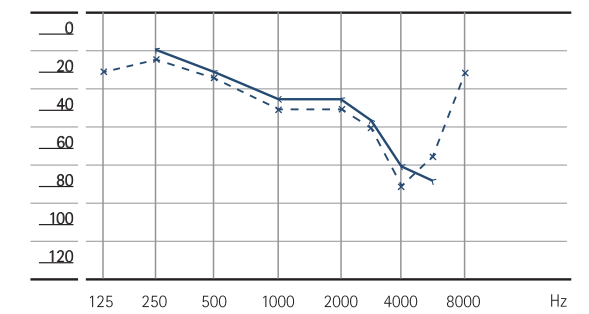
It is estimated that up to 50% of those looking to buy hearing protection already have some kind of hearing loss. And people with hearing loss who are in need of protection against noise need special care. Put simply, traditional "passive" hearing protection can do more harm than good.

Noise induced hearing loss



AC BC

AC = Air conduction BC = Bone conduction



AC BC

What is wrong with passive hearing protection?



Passive protection dampens all sound, irrespective of its level

Ideally a hearing protection product should provide its user with optimal protection, while still allowing communication and ensuring environmental awareness during quieter "safe" moments. After all, noise levels can fluctuate drastically: industrial machines are turned on and off, and a person's proximity to noise sources varies when they are moving around. So the noise level at the actual ear is seldom constant.

During quiet "safe" periods there is no need for sound damping. However so-called passive hearing protection dampens all sound, all the time, irrespective of its level. At lower, safe sound levels this means overdamping takes place, and for those with a hearing loss this is no use. During a short break for example, if the noise level drops and a conversation takes place at 65 dB SPL, passive dampers may reduce the level to just 45 dB, which is already too soft for those with a small hearing loss let alone those with a mild to moderate loss.

This resulting lack of comprehension almost forces these users to take out their hearing protection each time they need to hear, placing their hearing protection back in the ears when the noise level next increases. This approach is not only cumbersome, but it can lead to dissatisfaction with the protection, leading to its insufficient usage and therefore reducing its effectiveness, leading to a progression of that person's hearing loss. This is the very real risk of offering passive hearing protection to people with hearing loss.

Dynamic protection ensures that the sound pressure level is only reduced when it is dangerously loud, and then only to the necessary level (i.e. a maximum residual in-ear level of 80~85 dB for noise levels above 85 dB SPL). This way, warning signals from such noisy environments are not over-dampened and can be easily perceived by the protection user.

When noise levels are safe, sound is not dampened at all. In fact in the case of a user with only a slight hearing loss, ambient sound is slightly amplified to give speech understanding a boost and ease understanding. A volume control can provide this flexibility.



What product offers dynamic protection, with variable amplification?



Serenity DP offers dynamic protection with variable amplification

Its custom-made eShells provide optimal comfort, while the electronics inside **Serenity DP** provide dynamic, level-dependent protection with incredibly fast response times. Even impulse noises such as crashes and bangs are dampened instantly and effectively.

During safe noise periods meanwhile, no damping is applied, meaning full ambient awareness is guaranteed. Speech and warning signals from all sides can be heard and localized thanks to Serenity's miniaturized binaural microphones, but dangerous noise is blocked instantaneously.

Serenity DP also includes a valuable volume control, allowing the hearing impaired user to adjust the volume of ambient sounds, such as conversation, in order to

understand every word. In each case the sound pressure level at the ear drum remains safe, as only softer sounds are amplified and the damping of dangerous loud noise cannot be overridden by the volume control.

In short, **Serenity DP** offers people with a hearing loss icebreaker-strong, dependable hearing protection, not a frustrating-to-use product destined for disaster.

