

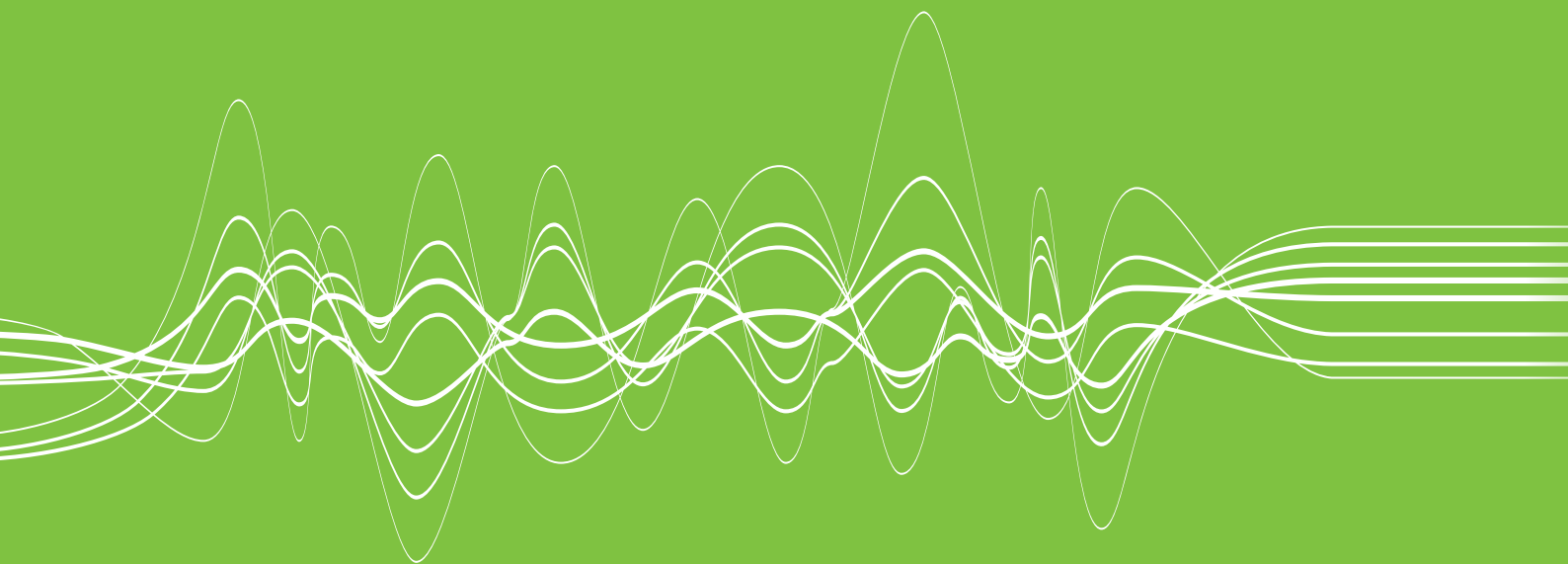


Professional hearing protection

The Collection

A Sonova brand

PHONAK



Introducing Phonak, the hearing protection and communications specialist

Dear Hearing Protection Customer,

The days in which hearing protection meant simply putting a foam plug in your ear are long gone. Science has proven that hearing protection has to be taken seriously and legislation is now in place to enforce the prevention of hearing loss.

The requirements for hearing protection devices have matured too.

Today hearing protection devices must:

- Deliver proven protection for each individual ear
- Be extremely comfortable to wear
- Be able to facilitate communication according to the individual user's needs

Phonak's professional hearing protection fulfills all of these modern demands:

- Phonak's family of modular Serenity hearing protection systems offers the options you need to combine protection and communication features
- Phonak's custom-made eShells provide micrometer precision and comfort thanks to 3D laser scanning and production technologies
- With Phonak's SafetyMeter system, the dampening of each individual protection device is reliably measured and documented

Phonak offers you the best possible hearing protection solutions. Our R&D and audiology teams are passionate about protecting the priceless sense of hearing. We invite you to try our professional hearing protection products, and we're sure you will be absolutely thrilled by their quality and flexibility.

Your Phonak Team.

"At the beginning the tinnitus was unbearable. I heard the ringing night and day. Now I 'only' hear the tinnitus when I'm talking about it."

Hans Wenger, 63

Loud noise is dangerous

Exposing your ears to a 100 dB (decibel) noise – like that made by a chainsaw or an MP3 player at full volume – damages your inner ear, even if experienced for just 15 minutes. Working unprotected in loud environments for several hours at a time is even more risky.

The problem is that once destroyed, the microscopic hair cells of the inner ear do not grow back. And these crucial tiny hairs cannot be artificially recreated by any medical process.

The consequence is **permanent noise induced hearing loss (NIHL)** and a highly frustrating ringing in the ears (tinnitus).

In addition to reduced hearing capability, the consequences of exposure to noise include:

- Stress, nervousness, reduced concentration
- Reduced quality of sleep
- Degraded performance and productivity
- Increased risk of workplace accidents
- Communication difficulties, feeling of isolation
- Medical expenses, occupational disability costs.



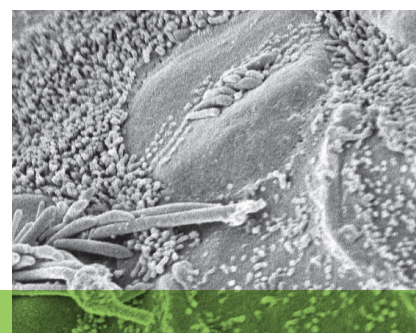
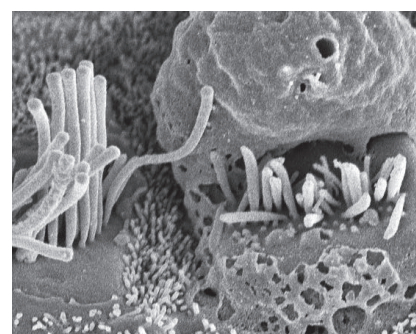
It's time to get protected

Noise-induced hearing loss is 100% preventable when the right hearing protection is worn consistently in dangerous noise. Governments are aware of this and are increasingly legislating to protect the hearing of workers. The table below shows how current hearing protection legislation compares.

Why companies must take protection seriously

In addition to abiding by the law, there are additional benefits employers can enjoy by protecting the hearing of at-risk employees:

- General wellbeing – it is an employer's moral responsibility to ensure that work isn't unnecessarily dangerous. Staff will harbor more positive feelings towards a caring organization.
- Improved performance and productivity – employees not disturbed by noise will concentrate better, feel less stressed and make fewer errors.
- Reduced medical costs – whether direct (fewer medical claims) or in the form of insurance premiums.



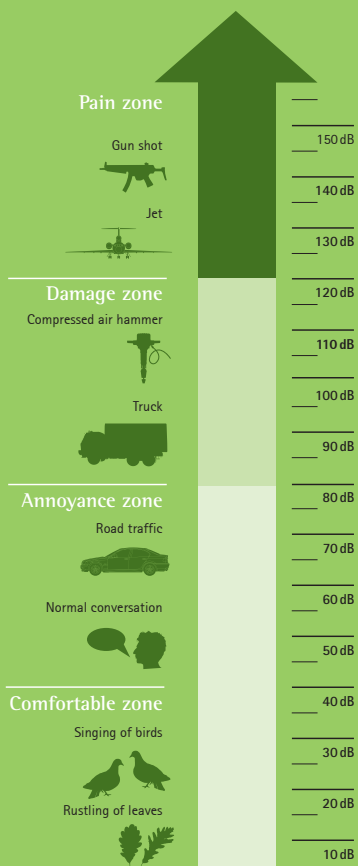
Healthy hair cells or stereocilia like those above do not grow back when damaged

Rask-Andersen H, Glueckert R, Annelies Schrott-Firscher A, Kristian Pfaller Uppsala, Sweden and Innsbruck Austria

Country	8-hour Exposure Limit	Impulse Noise Limit
EU	85 dBA	137 dBC _{pk}
Australia	85 dBA	140 dBC _{pk}
Canada	87 dBA	140 dBC _{pk}
New Zealand	85 dBA	140 dBC _{pk}
South Africa	85 dBA	135 dBC _{pk}
USA	85 – 90 dBA ¹	140 dBC _{pk}

¹NIOSH and Military: 85dBA, , OSHA: 90 dBA

pk = peak



During prolonged or repetitive exposure to sound levels above 80 dB, the effect of noise cannot be perceived immediately. Damage to hearing due to noise exposure is cumulative and gradual.

Icons explained



Static hearing protection for constant noise attenuation



Level-dependant electronic hearing protection



Modular system featuring ear shells and interchangeable earJack-based protection



Miniaturized headset



Connects to several types of radio



Connects to numerous cordless phones and cell-phones



Personal attenuation rating available

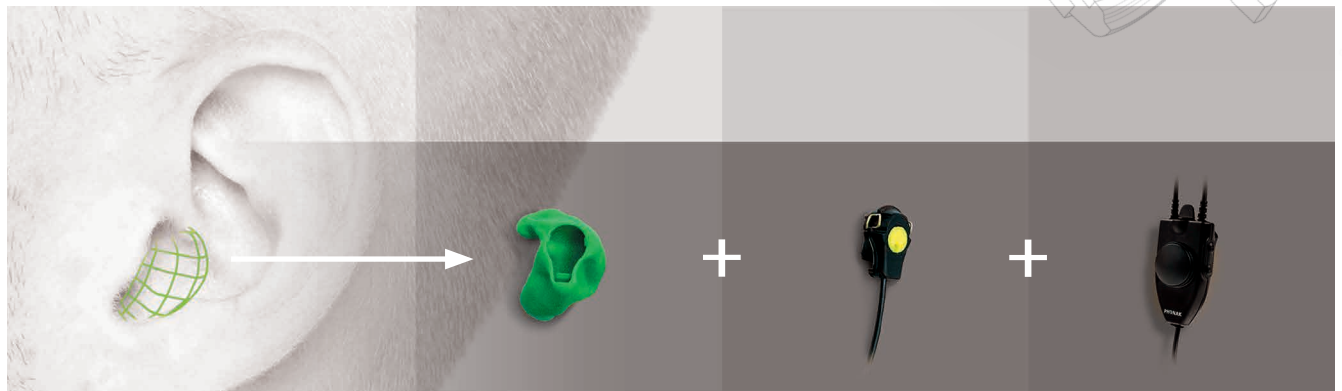




Maximum Single Number Rating (SNR) attenuation value in decibels (dB)

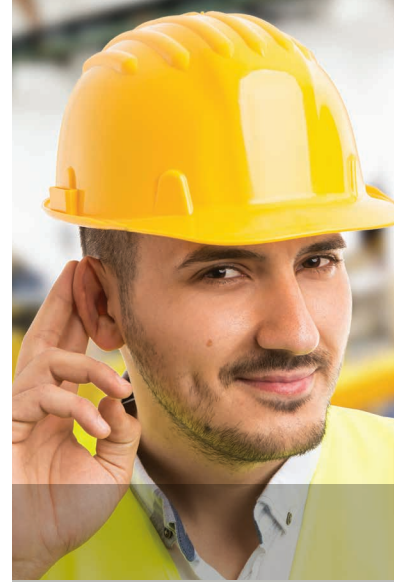


NRR (Noise Reduction Rating) is the decibel (dB) reduction provided by hearing protection based on laboratory test data.

Serenity – intelligent modular protection



<p>Ear impression</p> <p>To produce custom-fitted Serenity protection an accurate impression of the user's ear canal and outside ear is taken.</p>	<p>eShell</p> <p></p> <p>This ear impression is used to produce comfortable clinical nylon eShells (see page 12).</p> <p>With these in hand, the user can choose the Serenity system that best suits his needs.</p>	<p>earJack</p> <p></p> <p>Phonak's earJack is a standard mechanical interface that clicks into an eShell, forming a perfect seal.</p> <p>The earJack contains different electro-acoustical components depending upon the Serenity system chosen.</p>	<p>Control box</p> <p>The Serenity control box is included with level-dependent Serenity systems.</p> <p>This contains special electronic filters and can interface with communication devices such as cell-phones or radios.</p>
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The right protection in every situation

Continuous noise

(e.g. in facilities where machines operate constantly)

Hearing protection must provide the correct amount of sound attenuation (dampening) to keep workers' hearing in the safe zone, while still allowing these employees to perceive warning signals. Over-attenuation should be avoided. All Phonak's static hearing protection systems, such as **Serenity SP**, provide uninterrupted noise attenuation, and their supplied acoustic filters provide fully customizable levels of protection.



Fluctuating noise

(e.g. airports, roads, construction sites, mines, forestry work etc.)

If loud noise occurs intermittently or the user frequently moves in and out of noisy areas, level-dependent hearing protection is the ideal solution. **Serenity DP** provides protection only when necessary by adapting its attenuation level to the surrounding noise. A user can comfortably wear this protection all the time.



Impulse noise

(e.g. gun shots, explosions, blasts)

Sudden loud noises must be instantly dampened as these can cause immediate irreparable damage to the inner-ear. Level-dependent hearing protection is the ideal solution. **Serenity DP's** electronic circuits suppress noise peaks within milliseconds, and then restore full ambient awareness once the dangerous noise has dissipated. **Serenity SP** provides static protection against impulse noises.



Communication in noise

In noisy environments maintaining communication via cellphones or radio systems is often important. By combining hearing protection with a headset, users of **Serenity SPC**, **Serenity DPC** and **primero DPC** can enjoy normal conversation while remaining fully protected.





Static hearing protection

Phonak's static hearing protection products are designed for use in workplaces with constant high noise levels. All of these products feature:

- Custom molded ear shells for perfect fit and optimum protection
- Biocompatible materials
- Multiple attenuation filters for different noise conditions
- Accurate user perception of warning signals
- Cost-effective replacement of lost earpieces
- No interference with other protective gear (helmets, gas masks, safety glasses)

silemo mini

This small, discrete hearing protection product is made from hypoallergenic silicone. Thanks to its snug in-ear fit and transparent finish, silemo mini is virtually invisible. It is the perfect protection for offices and other relatively clean work places. It is also suitable for private individual use.



Serenity Classic

Serenity Classic is best suited to use in rugged work environments. Its robust, machine-washable (up to 60° C), clinical nylon eShells are light and comfortable to wear over prolonged periods. These eShells are linked by a silicone cord, which features break points under each ear to ensure secure use in all work situations. Serenity is a super-durable, long lasting product that represents excellent value for money.



Modular hearing protection

Serenity SP – Static Protection

Serenity SP is a fully modular static hearing protection system. It is comfortable yet robust, and offers multiple attenuation filters for use in environments with varying noise levels.

Users can exchange Serenity SP for any other Serenity system (except Classic), while retaining their own custom-molded eShells, for example to add communication functionality, intelligent dynamic hearing protection or both.



Serenity DP – Dynamic Protection

Serenity DP offers electronic level-dependent attenuation, making it ideal for professionals who are exposed to varying noise levels.

With this dynamic system, dangerously loud sounds are instantaneously reduced to a safe in-ear level. Serenity DP's fast-acting electronics also ensure that impulse noises, such as shots or crashes, are dampened the moment they occur.

When surrounding noise levels return to a safe range, sound is no longer dampened, meaning the user is fully aware of his surroundings and can enjoy normal conversations without needing to remove his protection. Furthermore, thanks to Serenity DP's miniature binaural ear microphones, the wearer can still perfectly localize life-saving warning sounds.

Serenity DP is fully modular; users can exchange it for any other Serenity system (except Classic) while retaining their own custom-molded eShells.



"Serenity eShells are easy to use and very comfortable. You can wear them the whole day without noticing: just put them on in the morning and take them out in the evening."

Claude Brocard,
Security Coordinator,
Holcim

Protection and communication

Serenity SPC – Static Protection with Communication

This static hearing protection system includes an integrated communication headset. Designed for use in the most demanding constant-noise environments, Serenity SPC offers day-long comfort and uninterrupted protection, even during phone calls.

Features:

- Changeable acoustic filters
- Flexible connection to a number of wireless phones
- Clear phone conversations in noise
- Fully modular; easy to exchange with other Serenity systems (except Classic)



"With Serenity DPC I now have exceptional hearing when I am flying and can communicate normally. It's like flying in cotton wool."

Steve Locher,
Rescue Helicopter
Pilot, Air Glaciers

Serenity DPC – Dynamic Protection with Communication

Serenity DPC combines electronic level-dependent protection with a communication headset. This makes it suitable for use in challenging environments where loud noises fluctuate but clear communication is always required, such as special intervention and rescue situations, shooting arenas, airports, industrial settings and more.

Features:

- Automatic attenuation of all dangerous sounds (including impulse noises) to a safe in-ear level
- Natural hearing in quiet environments with adjustable ambient volume
- Localization of life-saving warning signals
- Flexible connection to various radios
- Optimum protection and perfect understanding of radio conversations in noise



primero DPC – Extreme noise, natural communication

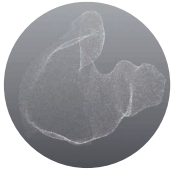
primero DPC is Phonak's breakthrough radio headset with dynamic protection for use in the very loudest environments.

Instead of using a cumbersome boom microphone, primero DPC employs a tiny microphone - situated within the earJack - and an innovative signal processing algorithm that picks up the user's voice from inside his ear canal.

As a result the system can operate in environments of up to 115dB (the same noise level as a very loud rock concert), while ensuring that the surrounding noise is never sent to the radio listener.

Thanks to primero DPC's level-dependent attenuation, the user is only protected when sound levels are dangerous, allowing natural, directional hearing at quieter times.

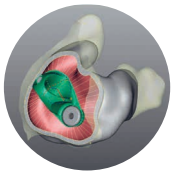




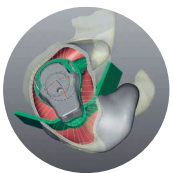
A user's scanned ear geometry is the starting point for the eShell modelling process. This data is digitally stored to enable future remakes.



Custom shells based on this exact ear geometry are individually created using Digital Modelling Software.



Serenity Classic's eShell is a one-piece mold containing the acoustic filter and a handle for the security cord.



Other Serenity protection systems feature open eShells, into which an earJack is fitted that includes either an acoustic or electronic filter.

Phonak eShells

The ultimate in customized ear protection

Custom-made eShells, available with all Phonak's Serenity hearing protection systems, are hollow molds made from robust clinical nylon and manufactured using a digital 3-step process.

Phonak's eShells offer several benefits

- Perfect comfort - no sweating, itching or sticking
- Suitable for widespread industrial use - outstanding chemical and mechanical resistance
- Ensure effective use - consistent attenuation equals better compliance
- Easy-to-use - proper insertion is less dependent on individual user skill
- Easy-to-maintain - completely machine-washable
- Cost-efficient - quick eShell reproduction in case of damage or loss

3-Step Digital Manufacturing Process

1. The anatomy of the ear is digitized and electronically stored
2. Custom shells are designed using CAD to perfectly fit the ear
3. eShells are manufactured using a high-precision SLS laser machine

The Phonak eShells are available in the following colours



Since the launch of Serenity in 2005, Phonak's hearing protection products have been well received and employed by many well-known, respected companies.

These include Procter & Gamble, Philip Morris, Alstom, Bobst, Implen, Cardinal, Holeim, Air Glaciers, Nestlé, Michelin, ThyssenKrupp, Jet Aviation, Roche, Gillette and many more.

SafetyMeter



Personal Attenuation Control

Every certified form of hearing protection includes a published attenuation value, which takes the form of an SNR (Single Number Rating).

This rating is based on average figures that are measured via several users wearing the same protection.

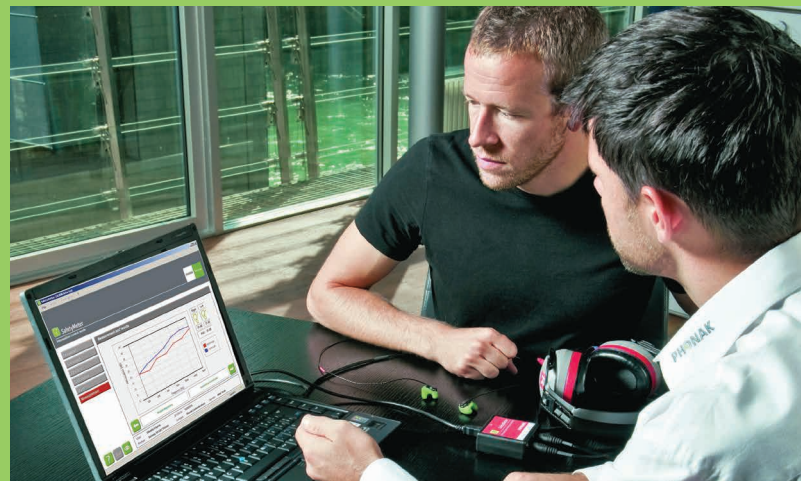
However the amount of attenuation an individual receives depends upon:

- The protection – its shape, material and production quality
 - Proper fit – how well the user can insert and position the protection in the ear
- Deviations therefore exist between one user and the next.








Phonak has developed a special testing system – named SafetyMeter – that controls and documents the actual attenuation a user receives when wearing his hearing protection.

Valuable SafetyMeter benefits :

- Personal validation – every Serenity protection product can be professionally validated using SafetyMeter. The output is a personal attenuation rating (PAR)
- Confidence – at risk employees are assured of receiving protection that performs well within required specifications
- Training tool – SafetyMeter can be used to train workers how to properly insert and remove protection products from the ear
- Cost savings – more accurate protection means fewer cases of hearing loss, leading to lower compensation costs



Product summary

							
	Serenity Classic	silemo mini	Serenity SP	Serenity DP	Serenity SPC	Serenity DPC	primero DPC*
Protection type							
Static protection	■	■	■	■	■	■	■
Level dependent				■		■	■
Earpiece							
Silicone shell		■					
eShell (nylon)	■		■	■	■	■	■
Attenuation verification							
SafetyMeter	■		■	■	■	■	■
Communication							
Phone					■		
Radio						■	■

* Boomless headset with in-ear voice pickup (compatible with helmets and gas masks)

More Phonak communication products

ComCom

ComCom is the ultimate headset for use with cordless phones and cellphones, and provides the user with total freedom of movement. ComCom is super-lightweight, offers crystal-clear audio, and employs custom-made eShells to guarantee long-lasting comfort and isolate surrounding noise.

Features:

- Noise-cancelling microphone
- Feather-weight
- Excellence speech clarity
- Fits and stays perfectly in the ear



ComCom Listen

ComCom Listen by Phonak is an ultra-light and highly comfortable headset for reliable and clear listening. ComCom Listen ComCom Listen is designed to connect to various Radio Speaker microphones.

Features:

- Long-lasting comfort
- Excellent speech intelligibility
- Crystal-clear sound
- Feather-weight and total freedom
- Connectors are available for certain two-way radios, phones and smartphones



About Phonak Communications

Since 1992 Phonak Communications has helped professionals to communicate effectively in challenging environments. Thanks to our working closely with end users to develop solutions that perfectly meet their needs, our miniaturized wireless earpieces, headsets and professional hearing protection devices are used and trusted by demanding customers around the world. Based in Murten, Switzerland, Phonak Communications is a member of Sonova Group, the world's leading hearing healthcare company.

www.phonak-communications.com